PROGRESSIVE COMPANIES

PROJECT MANUAL FOR:

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE
LANSING, MI 48933
PROJECT NO. 75820023
ISSUED FOR BID SET / PERMIT SET
JULY 24, 2026
JULY 27, 2026 RELEASED FOR BID

This page intentionally left blank

PROJECT MANUAL FOR:
CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE
LANSING, MI 48933

PREPARED FOR:
CAPITAL AREA TRANSPORTATION AUTHORITY
4615 TRANTER STREET
LANSING, MI 48910

PREPARED BY:
(PROGRESSIVE COMPANIES)
616/361-2664 (TELEPHONE)

PROJECT NO: 75820023

JULY 24, 2026 - ISSUED FOR BID SET / PERMIT SET
JULY 27, 2026 RELEASED FOR BID

THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE COMPANIES AS AN INSTRUMENT OF SERVICE, AND PROGRESSIVE COMPANIES SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.

This page intentionally left blank

TABLE OF CONTENTS

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

00 0102	PROJECT INFORMATION
00 0107	SEALS PAGE
00 1113	ADVERTISEMENT FOR BIDS
00 2113	INSTRUCTIONS TO BIDDERS
00 3100	AVAILABLE PROJECT INFORMATION
00 4000	PROCUREMENT FORMS AND SUPPLEMENTS
00 4100	BID FORM
00 4322	UNIT PRICES FORM
00 4323	ALTERNATES FORM
00 4325	SUBSTITUTION REQUEST FORM
00 4336	PROPOSED SUBCONTRACTORS FORM
00 5000	CONTRACTING FORMS AND SUPPLEMENTS
00 5433	AVAILABILITY OF DIGITAL DATA
00 5433.13	SAMPLE DIGITAL DATA LICENSING AGREEMENT
00 6325	SUBSTITUTION REQUEST FORM - DURING CONSTRUCTION
00 7200	GENERAL CONDITIONS
00 7200.13	SAMPLE AIA A201-2017 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

DIVISION 01 - GENERAL REQUIREMENTS

01 1000	SUMMARY
01 2000	PRICE AND PAYMENT PROCEDURES
01 2100	ALLOWANCES
01 2200	UNIT PRICES
01 2300	ALTERNATES
01 2500	SUBSTITUTION PROCEDURES
01 3000	ADMINISTRATIVE REQUIREMENTS
01 3219	SUBMITTALS SCHEDULE
01 4000	QUALITY REQUIREMENTS
01 4100	REGULATORY REQUIREMENTS
01 4216	DEFINITIONS
01 4533	CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES
01 5000	TEMPORARY FACILITIES AND CONTROLS
01 5100	TEMPORARY UTILITIES
01 5713	TEMPORARY EROSION AND SEDIMENT CONTROL
01 6000	PRODUCT REQUIREMENTS
01 7000	EXECUTION AND CLOSEOUT REQUIREMENTS
01 7419	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
01 7610	TEMPORARY PROTECTIVE COVERINGS
01 7800	CLOSEOUT SUBMITTALS
01 7900	DEMONSTRATION AND TRAINING

DIVISION 02 - EXISTING CONDITIONS

02 4100	DEMOLITION

DIVISION 03 - CONCRETE

03 1000	CONCRETE FORMING AND ACCESSORIES
03 2000	CONCRETE REINFORCING
03 3000	CAST-IN-PLACE CONCRETE
03 3543	POLISHED CONCRETE FINISHING

DIVISION 04 - MASONRY

04 0100	MAINTENANCE OF MASONRY
04 0511	MASONRY MORTARING AND GROUTING
04 2000	UNIT MASONRY
04 4200	EXTERIOR STONE CLADDING
04 7200	CAST STONE MASONRY

TABLE OF CONTENTS

DIVISION 05 - METALS
05 1200 STRUCTURAL STEEL FRAMING
05 3100 STEEL DECKING
05 4000 COLD-FORMED METAL FRAMING
05 5000 METAL FABRICATIONS
05 5100 METAL STAIRS
05 5133 METAL LADDERS

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES
06 0660 PLASTIC FABRICATIONS - 3FORM TRANSLUCENT RESIN PANEL SYSTEM
06 1000 ROUGH CARPENTRY
06 2000 FINISH CARPENTRY
06 4100 ARCHITECTURAL WOOD CASEWORK

DIVISION 07 - THERMAL AND MOISTURE PROTECTION
07 0553 FIRE AND SMOKE ASSEMBLY IDENTIFICATION
07 1113 BITUMINOUS DAMPPROOFING
07 1713 BENTONITE PANEL WATERPROOFING
07 2100 THERMAL INSULATION
07 2500 WEATHER BARRIERS
07 2700 AIR BARRIERS
07 4213.23 METAL COMPOSITE MATERIAL WALL PANELS
07 5300 ELASTOMERIC MEMBRANE ROOFING
07 6200 SHEET METAL FLASHING AND TRIM
07 7100 ROOF SPECIALTIES
07 7123 MANUFACTURED GUTTERS AND DOWNSPOUTS
07 7200 ROOF HATCH OPENER
07 8400 FIRESTOPPING
07 9100 PREFORMED JOINT SEALS
07 9200 JOINT SEALANTS

DIVISION 08 - OPENINGS
08 1113 HOLLOW METAL DOORS AND FRAMES
08 1116 ALUMINUM DOORS AND FRAMES - INSULATED CORE
08 1213 HOLLOW METAL DOOR FRAMES WITH APPLIED CASINGS
08 1416 FLUSH WOOD DOORS
08 3100 ACCESS DOORS AND PANELS
08 4313 ALUMINUM-FRAMED STOREFRONTS
08 6200 UNIT SKYLIGHTS
08 7100 DOOR HARDWARE
08 8000 GLAZING
08 8856.11 SECURITY AND BALLISTIC-RESISTANT FILMS - CLEAR ARMOR, LLC

DIVISION 09 - FINISHES
09 0561 COMMON WORK RESULTS FOR FLOORING PREPARATION
09 2116 GYPSUM BOARD ASSEMBLIES
09 3000 TILING
09 5100 ACOUSTICAL CEILINGS - ARMSTRONG
09 6500 RESILIENT FLOORING
09 6813 TILE CARPETING
09 6816 SHEET CARPETING
09 9113 EXTERIOR PAINTING
09 9123 INTERIOR PAINTING
09 9300 STAINING AND TRANSPARENT FINISHING
09 9600 HIGH-PERFORMANCE COATINGS

DIVISION 10 - SPECIALTIES
10 2600 WALL AND CORNER PROTECTION
10 2800 TOILET, BATH, AND LAUNDRY ACCESSORIES
10 4400 FIRE PROTECTION SPECIALTIES

TABLE OF CONTENTS

DIVISION 11 - EQUIPMENT
11 3013 RESIDENTIAL APPLIANCES

DIVISION 12 - FURNISHINGS
12 3600 COUNTERTOPS

DIVISION 14 - CONVEYING EQUIPMENT
14 2123 ELECTRIC TRACTION PASSENGER ELEVATORS
14 2700 ELEVATOR CAB INTERIOR SYSTEMS

DIVISION 22 - PLUMBING
22 0513 COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT
22 0517 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING
22 0529 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT
22 0719 PLUMBING PIPING INSULATION
22 1005 PLUMBING PIPING
22 1119 DOMESTIC WATER PIPING SPECIALTIES
22 1319 SANITARY WASTE PIPING SPECIALTIES
22 1423 STORM DRAINAGE PIPING SPECIALTIES
22 1429 SUMP PUMPS
22 4000 PLUMBING FIXTURES

DIVISION 23 - HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)
23 0513 COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT
23 0529 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT
23 0553 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT
23 0593 TESTING, ADJUSTING, AND BALANCING FOR HVAC
23 0713 DUCT INSULATION
23 0716 HVAC EQUIPMENT INSULATION
23 0913 INSTRUMENTATION AND CONTROL DEVICES FOR HVAC
23 0993 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS
23 2300 REFRIGERANT PIPING
23 3100 HVAC DUCTS AND CASINGS
23 3300 AIR DUCT ACCESSORIES
23 3700 AIR OUTLETS AND INLETS
23 7416 PACKAGED ROOFTOP AIR-CONDITIONING UNITS
23 8126.13 SMALL-CAPACITY SPLIT-SYSTEM AIR CONDITIONERS
23 8200 CONVECTION HEATING AND COOLING UNITS

DIVISION 26 - ELECTRICAL
26 0505 SELECTIVE DEMOLITION FOR ELECTRICAL
26 0519 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
26 0526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 0529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
26 0533.13 CONDUIT FOR ELECTRICAL SYSTEMS
26 0533.16 BOXES FOR ELECTRICAL SYSTEMS
26 0553 IDENTIFICATION FOR ELECTRICAL SYSTEMS
26 0583 WIRING CONNECTIONS
26 0923 LIGHTING CONTROL DEVICES
26 2726 WIRING DEVICES
26 2816.16 ENCLOSED SWITCHES
26 5100 INTERIOR LIGHTING

DIVISION 28 - ELECTRONIC SAFETY AND SECURITY
28 1000 ACCESS CONTROL

DIVISION 31 - EARTHWORK
31 1000 SITE CLEARING
31 2200 GRADING
31 2316 EXCAVATION

TABLE OF CONTENTS

31 2323 FILL

DIVISION 32 - EXTERIOR IMPROVEMENTS
32 1120 SUBBASE AND AGGREGATE BASE COURSES
32 1216 ASPHALT PAVING
32 1313 CONCRETE PAVING
32 1723 PAVEMENT MARKINGS

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

A. The Owner, hereinafter referred to as Owner: Capital Area Transportation Authority

1.02 PROJECT DESCRIPTION

A. Summary Project Description: Interior and exterior renovations to the building located at 511 Washington Ave in Lansing, MI. Site work includes modifications to existing pavement, striping, and sidewalks. Building renovations include the creation of a new board room and resource center with a new exterior glass storefront vestibule. Roof and mechanical systems will be replaced. Exterior work consists of masonry repointing and painting the building. Documents include alternates for a new elevator / stair and replacement of parking lot asphalt.

B. Contract Terms: Lump sum (fixed price, stipulated sum).

C. The currently occupied premises at the project site are open for examination by bidders only during the Pre-Bid meeting listed below.

1.03 PROJECT CONSULTANTS

A. The Progressive Companies, hereinafter referred to as Architect.
   1. Address: 1811 4 Mile Road NE.
   2. City, State, Zip: Grand Rapids MI 49525.
   3. Phone/Fax: 616.361.2664.

1.04 PROCUREMENT TIMETABLE

A. Pre-Bid Meeting: 511 Washington Avenue, Lansing MI at 10:30 AM local standard time on Monday, August 3, 2026.

B. Last Request for Substitution Due: 18 days prior to due date of bids.

C. Last Request for Interpretation Due: 18 days prior to due date of bids.

D. Bid Due Date: 31st day of August, 2026, before 9:00 AM local time.

E. Bid Opening: Same day, 9:00 AM local time.

F. Notice to Proceed: Within 14 days after contract execution..

G. Bids May Not Be Withdrawn Until: 90 days after due date.

H. Contract Time: To be stated in bid documents.

I. Anticipated Construction Start: Not later than 10-26-2026.

J. Desired Final Completion Date: Not later than 182 calendar days from Notice to Proceed.

K. The Owner reserves the right to change the schedule or terminate the entire procurement process at any time.

1.05 PROCUREMENT DOCUMENTS

A. Availability of Documents: Complete sets of procurement documents may be obtained:
   1. From Owner at the Project Manager's address listed above.

1.06 BID SECURITY

A. Bids shall be accompanied by a security deposit as follows:
   1. Bid Bond of a sum no less than 5 percent of the Bid Amount on AIA A310 Bid Bond Form.
   2. Security made payable to Owner in an amount of five percent of proposer's maximum proposal sum.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

This page intentionally left blank

This page intentionally left blank

SECTION 00 1113 ADVERTISEMENT FOR BIDS

FROM:

1.01 THE OWNER (HEREINAFTER REFERRED TO AS OWNER):

A. Capital Area Transportation Authority

1.02 AND THE ARCHITECT (HEREINAFTER REFERRED TO AS ARCHITECT):

A. Progressive Companies

B. Address:

1811 4 Mile Road NE
Grand Rapids, MI 49525

1.03 DATE: JULY 27, 2026

1.04 TO: POTENTIAL BIDDERS

A. Bidders are invited to submit an offer under seal to Owner for exterior and interior renovations to the building located at 511 Washington Ave, Lansing, MI 48933 before 9:00 am local standard time on the 31st day of August, 2026, for the CATA Renovation.

B. Bid Documents may be obtained at the office of the Architect electronically. Contact Gary Runions at grunions@weareprogressive.com and Pam Young at pyoung@weareprogressive.com. Inquires should list the project name and number in the subject line.

C. Pre-Bid Conference: A non-mandatory Pre-Bid Conference will be held at 511 Washington Avenue, Lansing, MI at 10:30 am local standard time on the 3rd day of August, 2026.

D. Project: CATA Renovation 511 S. Washington

E. Architect's Project Number: Design Professional's Project Number 75820023.

F. Project Description: Interior and exterior renovations to the building located at 511 S Washington Ave in Lansing, MI. Site work includes modifications to existing pavement, striping, and sidewalks. Building renovations include the creation of a new board room and resource center with a new exterior glass storefront vestibule. Roof and mechanical systems will be replaced. Exterior work consists of masonry repointing and painting the building. Documents include alternates for a new elevator / stair and replacement of parking lot asphalt.

G. Bid Documents for a Stipulated Sum contract may be obtained from the office of the Owner free of charge upon receipt of a refundable deposit, by cash, in the amount of $0 for one set.

H. Bidders will be required to provide Bid security in the form of a Bid Bond of a sum no less than 5 percent of the Bid Amount.

I. Submit your offer on the Bid Form provided. Bidders may supplement this form as appropriate.

J. Your offer will be required to be submitted under a condition of irrevocability for a period of 90 days after submission.

K. The Owner reserves the right to accept or reject any or all offers.

END OF SECTION

This page intentionally left blank

SECTION 00 2113 INSTRUCTIONS TO BIDDERS

SUMMARY

1.01 THE INSTRUCTIONS IN THIS DOCUMENT AMEND OR SUPPLEMENT THE INSTRUCTIONS TO BIDDERS AND OTHER PROVISIONS OF THE BIDDING AND CONTRACT DOCUMENTS.

1.02 DOCUMENT INCLUDES

A. Bid Documents and Contract Documents
   1. Definitions
   2. Contract Documents Identification
   3. Availability
   4. Examination
   5. Inquiries/Addenda

B. Bid Submission

C. Bid Enclosures/Requirements
   1. Security Deposit
   2. Bid Form Requirements

INVITATION

2.01 BID SUBMISSION

A. Bids signed and under seal, executed, and dated will be received at the office of the Owner at 4615 Tranter Street, Lansing, MI 48910 before 9:00 a.m. local standard time on 31st day of August, 2026.

2.02 INTENT

A. The intent of this Bid request is to obtain an offer to perform work to complete project named CATA Renovation 511 S. Washington for a Stipulated Sum contract, in accordance with Contract Documents.

2.03 WORK IDENTIFIED IN THE CONTRACT DOCUMENTS

A. Work of this proposed Contract comprises site development and demolition, including general construction Work.

2.04 CONTRACT TIME

A. Perform the Work in 182 calendar days.

BID DOCUMENTS AND CONTRACT DOCUMENTS

3.01 CONTRACT DOCUMENTS IDENTIFICATION

A. Contract Documents are identified as Owner's Project Number 75820023, as prepared by Architect, and with contents as identified in the Project Manual.

3.02 AVAILABILITY

A. Bid Documents may be obtained at the office of the Architect, electronically. Contact Gary Runions at grunions@weareprogressive.com and Pam Young at pyoung@weareprogressive.com.

3.03 INQUIRIES/ADDENDA

A. Direct questions to Gary Runions at grunions@weareprogressive.com and Jeff Cangro at jcangro@weareprogressive.com. Provide project name and subject matter in email heading.

B. Addenda may be issued during the bidding period. All Addenda become part of Contract Documents. Include resultant costs in the Bid Amount.

C. Verbal answers are not binding on any party.

D. Clarifications requested by bidders must be in writing not less than 18 days before date set for receipt of bids. The reply will be in the form of an Addendum, a copy of which will be forwarded to known recipients and plan holders.

3.04 PRODUCT/ASSEMBLY/SYSTEM SUBSTITUTIONS

A. General Requirements for Substitution Requests:

B. Substitution Request Time Restrictions:
   1. Where the Bid Documents stipulate a particular product, substitutions will be considered up to 18 days before receipt of bids.

C. Substitution Request Form:

1. Submit substitution requests by completing the form in Section 00 4325; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

D. Review and Acceptance of Request:
1. Architect may or may not approve the proposed substitution. If approved, the request will issue an Addendum to known bidders.
2. For approved substitutions, include representation of changes in the bid, if any, required in the work and changes to Contract Time and Contract Sum to accommodate such substitutions. A later claim by the bidder for an addition to the Contract Time or Contract Sum because of changes in work necessitated by use of substitutions will not be considered.

SITE ASSESSMENT

4.01 SITE EXAMINATION

A. Examine the project site before submitting a bid.

B. A visit to the project site has been arranged for bidders as follows: Immediately following the Pre-bid Meeting

4.02 PREBID CONFERENCE

A. A bidders conference has been scheduled for 10:30 a.m. on the 3rd day of August, 2026 at the location of 511 Washington Ave, Lansing, MI.

B. All general contract bidders and suppliers are invited.

C. Representatives of Architect will be in attendance.

D. Summarized minutes of this meeting will be circulated to attendees. These minutes will not form part of Contract Documents.

QUALIFICATIONS

5.01 EVIDENCE OF QUALIFICATIONS

A. To demonstrate qualification for performing the Work of this Contract, bidders may be requested to submit written evidence of financial position, license to perform work in the State of MI.

5.02 SUBCONTRACTORS/SUPPLIERS/OTHERS

A. Owner reserves the right to reject a proposed subcontractor for reasonable cause.

B. Refer to General Conditions.

BID SUBMISSION

6.01 SUBMISSION PROCEDURE

A. Bidders shall be solely responsible for the delivery of their bids in the manner and time prescribed.

B. Submit one copy of the executed offer on the Bid Forms provided, signed and sealed with the required security in a closed opaque envelope, clearly identified with bidder's name, project name and Owner's name on the outside.

6.02 BID INELIGIBILITY

A. Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may at the discretion of the Owner, be declared unacceptable.

BID ENCLOSURES/REQUIREMENTS

7.01 SECURITY DEPOSIT

A. Bids shall be accompanied by a security deposit as follows:
1. Bid Bond of a sum no less than 5 percent of the Bid Amount on AIA A310 Bid Bond Form.

B. Endorse the Bid Bond in the name of the Owner as obligee, signed and sealed by the principal (Contractor) and surety.

C. The security deposit will be returned after delivery to the Owner of the required Performance and Payment Bond(s) by the accepted bidder.

D. Include the cost of bid security in the Bid Amount.

E. After a bid has been accepted, all securities will be returned to the respective bidders and other requested enclosures.

F. If no contract is awarded, all security deposits will be returned.

7.02 PERFORMANCE ASSURANCE

A. Include the cost of performance assurance bonds in the Bid Amount.

7.03 FEDERAL CERTIFICATIONS

A. Bidders must submit the following with their bid if it is considered to be responsive:
   1. Certification of Primary Contractor Regarding Debarment, Suspension and Other Responsbility Matters
   2. Cerification of Lower-Tier Participants (Sub-Contractors) Regarding Debarment, Suspension and Other Responsibility Matters
   3. Iran Economic Sanctions Act Certificate
   4. Terms and Conditions
   5. Certificate Regarding Lobbying
   6. Build America Buy America Certification
   7. Davis-Bacon Act Wage Rates
   8. Document 00 4322 - Unit Prices Form: Include a listing of unit prices specifically requested by Contract Documents.
   9. Document 00 4323 - Alternates Form: Include the cost variation to the Bid Amount applicable to the Work described in Section 01 2300.

7.04 SELECTION AND AWARD OF ALTERNATES

A. Bids will be evaluated on the base bid price. After determination of a successful bidder, consideration will be given to Alternates and bid price adjustments.

OFFER ACCEPTANCE/REJECTION

8.01 DURATION OF OFFER

A. Bids shall remain open to acceptance and shall be irrevocable for a period of 90 days after the bid closing date.

8.02 ACCEPTANCE OF OFFER

A. Owner reserves the right to accept or reject any or all offers.

B. After acceptance by Owner, Architect on behalf of Owner, will issue to the successful bidder, a written Bid Acceptance.

END OF SECTION

CERTIFICATION OF PRIMARY CONTRACTOR REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

The Primary Contractor, _____, certifies to the best of its knowledge and belief, that it and its principals:

1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

2. Have not within a three (3) year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

3. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or Local) with commission of any of the offense enumerated in paragraph (2) of this certification; and

4. Have not within a three (3) year period preceding this application/proposal had one (1) or more public transactions (Federal, State, or Local) terminated for cause or default.

If the above named Primary Contractor is unable to certify to any of the statements in this certification, the Primary Contractor shall attach an explanation to this certification.

The Primary Contractor, _____, certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification and understands that the provision of 31 U.S.C. Section 3801 et seq. are applicable thereto.

Bidder: _____

Signature: _____

Printed Name: _____

Title: _____

Date: _____

CERTIFICATION OF LOWER-TIER PARTICIPANTS (SUB-CONTRACTORS) REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

Debarment and Suspension Certification (Lower-Tier Covered Transaction)

This form is to be submitted by each Subcontractor receiving an amount exceeding $25,000.

The prospective lower-tier participant (Proposer) certifies, by submission of this Proposal, that neither it nor its "principals" as defined at 49 CFR § 29.105(p) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

If the prospective Proposer is unable to certify to the statement above, it shall attach an explanation, and indicate that it has done so by placing an "X" in the following space: _____

THE PROPOSER, _____, CERTIFIES OR AFFIRMS THE TRUTHFULNESS AND ACCURACY OF EACH STATEMENT OF ITS CERTIFICATION AND EXPLANATION, IF ANY. IN ADDITION, THE PROPOSER UNDERSTANDS AND AGREES THAT THE PROVISIONS OF 31 USC §§ 3801 *ET SEQ*. APPLY TO THIS CERTIFICATION AND EXPLANATION, IF ANY.

Name and title of the Proposer's authorized official:

_____

Authorized signature Date

IRAN ECONOMIC SANCTIONS ACT CERTIFICATE

In accordance with the Iran Economic Sanctions Act, Michigan 2012 PA 517, effective April 1, 2013, (MCL 129.311, *et seq*.), the undersigned certifies in support of its bid or proposal that it is not an Iran linked business as such is defined in the Act.

Bidder: _____

Signature: _____

Printed Name: _____

Title: _____

Date: _____

SUPPLIER INFORMATION FORM

Instructions: This form is to be completed and included in the proposal submission.
Attach additional pages if necessary.

1. **Name of firm:** _____
2. **Address:** _____
3. □ **Individual** □ **Partnership** □ **Corporation** □ **Joint Venture**
4. **Date organized:** _____
   State in which incorporated: _____
5. **Names of officers or partners:**
   a. _____
   b. _____
   c. _____
   d. _____
6. **How long has your firm been in business under its present name?** _____

7. Have you been terminated or defaulted in the past five (5) years on any contract you were awarded? Have you been barred by Federal process or any State? Has your firm ever defaulted on a performance bond?
□ Yes □ No If YES, then attach as **SCHEDULE ONE** the full particulars regarding each occurrence.

8. In the past five (5) years, have you failed to complete any contract on which you were awarded?
□ Yes □ No If YES, then attach as **SCHEDULE TWO** the full particulars regarding each occurrence.

9. Have you had any litigation within the past (5) years involving any current or former projects with clients or government agencies?
□ Yes □ No If YES, then attach as **SCHEDULE THREE** the findings of any litigation including the status of each case.

The undersigned certifies the accuracy of all information:

Name and title: _____

Company: _____

Authorized signature: Date:

CAPITAL AREA TRANSPORTATION AUTHORITY

STANDARD TERMS AND CONDITIONS OF PROCUREMENT

1. CHANGES. CATA, at any time, by a written order, and without notice to the sureties, may make changes within the general scope of this contract, in (a) drawings, designs or specifications where the supplies to be furnished are specifically manufactured for CATA in accordance therewith; (b) method of shipment or packing; and (c) place of delivery. If any such change causes a substantial increase or decrease in the cost of, or the time required for performance of this contract, whether changed or not changed by such order, the parties shall agree to an equitable adjustment by written modification of the contract. If the parties cannot so agree, CATA shall have the option to terminate the contract. Any claim by the Contractor for adjustment under this clause must be asserted within thirty (30) days from the date of receipt by the Contractor of the notification of change.

2. TERMINATION FOR DEFAULT. CATA, by written notice, may terminate the contract, in whole or in part, for failure of the Contractor to perform any of the provisions of the contract. In such event, the Contractor shall be liable for all damages CATA incurs, including the excess cost of reprocuring similar supplies or services, provided, that if (a) it is determined for any reason that the Contractor was not in default or, (b) the Contractor's failure to perform is without his control, fault or negligence, the termination shall be deemed to be a termination for convenience under the following Paragraph 3.

3. TERMINATION FOR CONVENIENCE. CATA, by written notice, may terminate the contract, in whole or in part, for any reason when it determines it is in the best interest of CATA. If this contract is so terminated, the Contractor shall be compensated only for costs actually incurred and/or services actually performed prior to the time of notification of termination.

4. TRANSITION RESPONSIBILITIES. Upon termination of the contract for any reason, if CATA requests Contractor must reasonably assist with restoring CATA's data and/or materials to CATA and with any mandatory activities required for transition.

5. ADDITIONAL INFORMATION. The Contractor shall promptly furnish any additional information requested by CATA.

6. CONTRACTOR RESPONSIBILITY. The Contractor shall assume responsibility to ensure all materials used are suitable for CATA's needs whether the same is manufactured by the Contractor or purchased ready made from a source outside Contractor's company.

7. DELIVERY. Service and/or equipment will be delivered to Capital Area Transportation Authority, 4615 Tranter Street, Lansing, Michigan 48910. Invoices shall be furnished with the delivery of each item, service, or as otherwise specified in the contract. CATA reserves the right to inspect, but is not required to so inspect, all deliveries or services before acceptance.

8. BREACH OF CONTRACT. If the Contractor shall fail, refuse or neglect to comply with the terms of these contract conditions, such failure shall be deemed a total and material breach of the contract. Contractor shall be subject to all legal causes of actions, rights, and remedies that CATA may have and CATA may recover, in addition to any damages or costs relating to Contractor's breach, its reasonable attorneys' fees resulting from Contractor's breach.

9. DISPUTES (AFTER BID AWARD). Except as otherwise provided in the contract, any dispute concerning a question of fact arising under the contract which is not disposed of by agreement between CATA and Contractor shall be decided by CATA's Program Manager in writing, with a copy mailed or otherwise furnished to the Contractor. The decision of CATA shall be final and conclusive unless within ten (10) days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to CATA a written appeal addressed to CATA's Chief Executive Officer for the determination of such appeal, which shall be final and conclusive, unless determined by a court of competent jurisdiction to have been fraudulent or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of its appeal. Pending a final decision of the dispute, the Contractor shall proceed diligently with the performance of the contract and in accordance with CATA's decision.

10. DELIVERY EXTENSION AND DELAYS. CATA reserves the right to extend, postpone or reschedule delivery in case the delivery of service equipment, under this contract, shall be necessarily delayed because of strike, injunction, civil disturbance, pandemic/endemic, force majeure, government controls, or by reason of any cause or circumstance beyond the control of the Contractor. In the event of such a delay, Contractor must notify CATA in writing. CATA shall reasonably extend the time of completion or a delivery by a number of days to be determined in each instance by CATA.

11. INSTALLATION. If specified in the contract, the Contractor shall install and place in operation, subject to approval by CATA, the equipment at the Contractor's expense within thirty (30) days from issuance of a notice to install issued by CATA.

12. INSTALLATION EXTENSION AND DELAYS. CATA reserves the right to extend, postpone, or reschedule installation in case the installation of equipment under this contract shall be necessarily delayed because of strike, injunction, civil disturbance, pandemic/endemic, force majeure, government controls, or by reason or cause or circumstances beyond the control of the Contractor. The time of completion or installation shall be extended by a reasonable number of days to be determined in each instance by CATA.

13. ASSEMBLY. If required for the equipment to be operational and suitable for CATA's purposes, the Contractor shall assemble the equipment at its expense prior to installation.

14. ACCESSORIES. The Contractor shall furnish, without additional cost, all accessories required to permit CATA to operate any equipment being provided.

15. COMMUNICATION AND TRAINING. Contractor shall confer as necessary and cooperate with CATA in order that the services performed under the contract may proceed in an efficient and satisfactory manner. Contractor's work will include all conferences, consultations, hearings, or appearances deemed necessary by CATA to ensure that Contractor will be able to properly and fully perform the objectives as set forth in the contract. The Contractor, without additional cost, shall properly train CATA personnel in the operation and maintenance of the equipment provided.

16. SERVICE MANUAL AND WIRING SCHEMATIC. If specified, the Contractor will provide at least one copy of a service manual and at least one copy of a wiring schematic for individual components and other schematics and drawings.

17. WARRANTY. Contractor unconditionally guarantees that the quality of its work and warrants all work, services, and equipment it performs and/or provides under the contract will meet or exceed CATA's requirements and expectations. In addition to any other warranty, Contractor shall perform all obligations under the contract in a satisfactory manner as shall be determined within the sole and reasonable discretion of CATA. If CATA is dissatisfied with the quality of Contractor's work or Contractor's performance under the contractor for any reason, CATA shall provide written notice to Contractor. If Contractor fails to remedy any quality or performance issue within 30 days from the date of this written notice, CATA shall have the right to immediately terminate the contract with no further obligations to Contractor, financial or otherwise. The Contractor shall describe its policy or warranty(s) both on workmanship and material as applying to the equipment, along with the method or adjustment, and shall be further subject to warranty requirements of CATA as set forth in the following Paragraph 17. The Contractor agrees that the supplies or services furnished under this contract shall be covered by the most favorable warranties the Contractor gives any customer for such equipment and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to CATA by any other clause of this contract.

18. PERFORMANCE GUARANTY. Contractor must at all times have financial resources sufficient, in the opinion of CATA to ensure performance of the contract and must provide proof upon request. CATA may require a performance bond if, in the opinion of the CATA, it is necessary to ensure performance of the contract. If required, as provided in federal regulations and modified by FTA guidance, for each Project or related activities implementing the Underlying Agreement that involve construction, it will provide bid guarantee bonds, contract performance bonds, and payment bonds.

19. INSURANCE. The Contractor shall place and maintain with responsible insurance carriers the following insurance.

The Contractor shall deliver to CATA, upon request, certificates of insurance which shall provide thirty (30) days' written notice to be given to CATA in the event of cancellation. Contractor shall require all Subcontractors to maintain adequate insurance coverage.

(a) Workers' Compensation and Employer's Liability Insurance.

(1) Workers' Compensation in compliance with the applicable state and federal laws.
(2) Employer's Liability. Limit $1,000,000.

(b) Commercial General Liability Insurance, including Professional Liability, Blanket contractual, XCU Hazards, Broad Form Property Damage, Completed Operations, and Independent Contractor's Liability, all applicable to Personal Injury, Bodily Injury and Property Damage to a combined single limit of $1,000,000 each occurrence/claim, subject to a $2,000,000 annual aggregate for Professional Liability, Completed Operations and Personal Injury other than Bodily Injury.

(c) Automobile Liability Insurance, including owned, hired and non-owned automobiles, Bodily Injury and Property Damage, to a combined single limit of $1,000,000 each occurrence.

(d) Cyber Liability Insurance, to a combined single limit of $1,000,000 each occurrence/claim.

Occurrence-based policies must be maintained for the duration of the contract. Claims-made policies must be maintained for that period and until all applicable statutes of limitations have expired. Contractor's insurance must be primary so that any CATA insurance is excess, secondary, and non-contributing. Contractor agrees to name CATA as an additional insured on any applicable policies including, but not limited to the liability insurance policy, to provide the fullest insurance and indemnification to CATA allowed by the policy and applicable law. Contractor's insurance must be written by carrier's authorized to write insurance in Michigan and having at least an A- rating in the most recently published version of A.M. Best Company Insurance Ratings. Contractor's insurance must be endorsed to provide that the policy will not be canceled or materially changed without 30 days written notice to CATA (or if this endorsement cannot be obtained, Contractor will give CATA at least 30 days' advance notice before any policy is cancelled or its terms are materially altered). Each of Contractor's insurance policies must waive all of their subrogation rights with respect to losses payable under the policy.

Contractor must provide a copy of its insurance policies complying with the terms of the contract to CATA if CATA so requests. CATA is under no obligation to request such policies.

20. INDEMNIFICATION, HOLD HARMLESS, DEFENSE, AND WAIVER OF CLAIMS. While insurance can be used to satisfy this obligation, not limited by the protection afforded by any policy of insurance, to the fullest extent permitted by law Contractor agrees to indemnify, defend, and hold harmless CATA and, if applicable, the Michigan Department of Transportation, the Federal Transit Administration, and all of each of their officers, agents, and employees thereof, without reservation, from and against any and all liabilities, obligations, penalties, claims, charges, demands, causes of action, losses, damages, costs and expenses, whether determined to be valid or only alleged, in any way related to Contractor's obligations and/or performance of the contract including, but not limited to: (a) any breach by Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable) of any of the promises, agreements, representations, warranties, or insurance requirements contained in the contract; (b) any infringement, misappropriation, or other violation of any intellectual property right or other right of any third party; (c) any bodily injury, death, or damage to real or tangible personal property occurring wholly or in part due to action or inaction by Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable); and (d) any acts or omissions of Contractor (or any of Contractor's employees, agents, subcontractors, or by anyone else for whose acts any of them may be liable).

CATA shall promptly notify Contractor of any claim as to which it seeks defense and indemnification and provide reasonable cooperation. Contractor shall have the right to select counsel and to control the defense, so long as CATA consents and agrees to the counsel, such approval within the sole discretion of CATA.

To the fullest extent permitted by law, Contractor hereby waives any and all claims against CATA and agrees not to hold CATA liable for any damages including, but not limited to, personal injury or property damage incurred by

Contractor or its employees while performing services under the contract.

21. CATA will not be subject to any obligations or liabilities by Subcontractors of the Contractor or their Subcontractors or any other person not a party to this contract without its specific consent and notwithstanding its concurrence in or approval of the award of any contract or subcontract or the solicitation thereof.

22. ACCEPTANCE OF MATERIAL - NO RELEASE. Unless CATA otherwise agrees in writing, acceptance of any portion of the material prior to final acceptance shall not release the Contractor from liability for faulty workmanship or materials or for failure to fully comply with all of the terms of this contract. CATA reserves the right and shall be at liberty to inspect all materials and workmanship at any time during the manufacturing process, and shall have the right to reject all materials and workmanship which do not conform with the contract requirements and specifications; provided, however, that CATA is under no duty to make such inspection and no inspection so made shall relieve Contractor from any obligation to furnish materials and workmanship in accordance with the contract requirements and specifications.

23. FINAL ACCEPTANCE. All services performed by Contractor under the contract are subject to review and approval of CATA for completeness and fulfillment of the requirements of the contract. CATA's review, approval, or payment for any services shall never be construed to operate as a waiver of any rights under the contract, and Contractor shall be and will remain liable in accordance with applicable law for all damages to CATA caused by Contractor's negligent performance or nonperformance of any services furnished under the contract or any representations made under or in performance of the contract. Final undisputed payment for services or equipment under the contract shall commence the warranty period.

24. NO ASSIGNMENT OF CONTRACT. The contract is only with Contractor and may not be assigned by Contractor to any other person or entity without CATA's written consent. Any assignment in violation of this paragraph shall be void and shall provide the opportunity to CATA to void the contract, at its sole choice and election.

25. DEFECTIVE WORKMANSHIP AND MATERIAL. When and as often as CATA determines that the work done or being done under the contract or the kind of quality or materials supplied in connection therewith are not fully and completely in accordance with any requirement of the contract documents, it may give notice of such noncompliance to the Contractor in writing and the Contractor shall immediately upon receipt of such notice do all things required to remedy such noncompliance without additional cost to CATA. If the Contractor fails to comply with such written notice, then CATA, upon written notice to the Contractor, shall deduct the cost of repair, replacement or correction of defective or damaged work from the compensation due or to become due to the Contractor, or terminate the contract in its sole discretion.

26. WAIVER. No failure by CATA to insist upon the strict performance of any covenant, duty, obligation, agreement, or condition of the contract or to exercise any right or remedy consequent upon a breach thereof shall constitute waiver of any such breach of any other covenant, duty, obligation, agreement, or condition. Neither the assessment of liquidated damages or penalties nor any failure to assess liquidated damages or penalties shall be construed to waive or excuse performance requirements or any rights CATA has to damages or penalties under the contract.

27. CONFIDENTIALITY AND OWNERSHIP OF DATA AND DOCUMENTS.

    (a) All original documents, calculations, and work product produced by Contractor, whether produced on paper or electronic media or otherwise in performance of the contract, and all data gathered through provision of services shall be the sole and exclusive property of CATA. Contractor shall make available to CATA copies of all Contractor correspondence, notes, and other papers relating to the work, upon request of CATA. All works of original authorship created in the scope of the contract are "works made for hire," as that term is used in connection with the US Copyright Act.

    (b) To the extent that by operation of law Contractor retains any intellectual property rights to any work product, Contractor hereby irrevocably assigns and licenses to CATA all right, title, and interest in such work product, including copyrights and patents, and agrees to execute such assignments and licenses as may be required in the opinion of CATA's legal counsel to confirm this provision.

(c) To the extent that the work product produced by Contractor contains standard design or construction details or other standardized material previously developed by Contractor in its professional practice, then Contractor shall have the right to reuse any such material on other projects for other clients or persons without the prior knowledge or permission of CATA and without the payment of any compensation to CATA, provided that the reuse or continued use of such material contains no CATA identifying information or confidential information.

(d) In order that the Contractor may effectively fulfill its obligations under the contract, it may be necessary or desirable for CATA to disclose confidential and/or proprietary information to the Contractor. Since it is difficult to separate confidential and proprietary information from that which is not, the Contractor shall regard, and shall instruct its employees to regard, all information gained from CATA as confidential and such information shall not be disclosed to any organization or individual without court order or the prior written consent of CATA. With respect to a subpoena, court order or other legal process, Contractor shall notify CATA of the demand for information before responding, and shall comply with this provision to the extent practicable. The above obligation shall not apply to information already in the public domain or information required to be disclosed by a court order. Contractor agrees to take appropriate action with respect to its employees to ensure that the foregoing obligations of non-use and non-disclosure of confidential information shall be fully satisfied.

(e) PATENT RIGHTS. Contractor agrees that:

(1) (i) Depending on the nature of the Underlying Agreement, the Federal Government may acquire patent rights when the Contractor produces a patented or patentable invention, improvement, or discovery; (ii) The Federal Government's rights arise when the patent or patentable information is conceived or reduced to practice with federal assistance provided through the Underlying Agreement; or (iii) When a patent is issued or patented information becomes available as described in the preceding section 17(a)(2) of this Master Agreement, the Contractor will notify FTA immediately and provide a detailed report satisfactory to FTA.

(2) Federal Rights. Contractor agrees that: (i) Its rights and responsibilities in that federally assisted invention, improvement, or discovery will be determined as provided in applicable federal laws, regulations, requirements, and guidance, including any waiver thereof; and (ii) Unless the Federal Government determines otherwise in writing, irrespective of its status or the status of Contractor as a large business, small business, state government, state instrumentality, local government, Indian tribe, nonprofit organization, institution of higher education, or individual, the Contractor will transmit the Federal Government's patent rights to FTA, as specified in 35 USC § 200, et seq., and US Department of Commerce regulations, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," 37 CFR Part 401.

(3) License Fees and Royalties. Consistent with the applicable US DOT Common Rules, the Contractor agrees that license fees and royalties for patents, patent applications, and inventions produced with federal assistance provided through the Underlying Agreement are program income, and must be used in compliance with applicable federal requirements.

28. COMPUTATION OF TIME. In computing a period of time prescribed by these conditions, the following rules apply:

(a) "Day" means days of the week (e.g., Monday through Friday), not business days.

(b) The day of the act or event after which the designated period of time begins is not included.

(c) The last day of the period is included, unless it is a Saturday, Sunday, or legal holiday. In that event, the period runs until the end of the next day that is not a Saturday, Sunday or legal holiday.

29. JURISDICTION. This Contract will be governed by the internal laws of the State of Michigan without reference to its choice of law rules. Exclusive jurisdiction and venue of any suit, action or claim relating to this contract will be in the Ingham County Circuit Court or the Federal District Court for the Western District of Michigan.

30. COST COMPUTATION. The Federal Acquisition Regulation, 48 CFR, Chapter 1, Part 31.2, as now existing or hereinafter amended, shall be used, in all instances, to determine the amount of costs incurred by Contractor that CATA shall be required to pay, or reimburse, to Contractor, including, without limitation, where the contract requires CATA to pay Contractor's costs as part of the contract price, where the contract price is adjusted resulting from changes to the requirements of the contract, and when calculating the amount due Contractor pursuant to Termination for Convenience clause.

31. TRAVEL EXPENSES. CATA shall not reimburse Contractor for travel costs, including accommodations, meals, transportation and fuel costs, unless the travel activity and the travel costs have been approved in advance by an authorized representative of CATA. All travel costs to be paid by CATA shall not exceed amounts determined in conformance with the Federal Acquisition Regulation, 48 CFR Section 31.205-46, Travel Costs.

32. EXTENSION. CATA has the right, in its sole discretion, to extend the term of the contract beyond the term and subsequent options outlined in the contract. Any such extension after the options outlined above must be in writing and upon terms mutually agreed between CATA and Contractor.

33. TIME IS OF THE ESSENCE. Contractor agrees time is of the essence in the performance of the contract. Failure to perform as required may, in CATA's sole discretion, be declared a material breach of contract.

34. CONTRACTOR EMPLOYEES. Contractor warrants and represents that its employees who will perform work under the contract are properly educated, trained and/or licensed to perform the services under the contract. Contractor shall perform all its obligations under the contract without the use of a subcontractor, unless CATA grants express written approval for the use of a subcontractor before such services are performed. Approval of a subcontractor is in CATA's sole discretion and is not required under any circumstance. In the event any such subcontractor is approved, Contractor's invoices and subcontractor receipts/invoices should clearly show that no mark-up costs, commissions or sales taxes were incurred. CATA will not pay mark-up or tax on any outside services which are obtained by Contractor.

35. INDEPENDENT CONTRACTOR. Contractor's relationship to CATA is independent-contractor-to-client. None of Contractor's personnel are employees of CATA, and CATA is not a partner of Contractor. Contractor expressly acknowledges and agrees that it and its employees are not and will not for any purposes be considered employees, agents, or representatives of CATA. Contractor shall be responsible for any and all taxes, worker's compensation insurance, and any other work-related expenses, including but not limited to work performed under contract for CATA. Contractor shall be solely responsible for the actions of its employees and/or contractors and agrees to fully defend, indemnify, and hold CATA harmless, without reservation for any claims or causes of action which arise as a result of their actions.

36. MEDIA CONTACT AND RELEASES. Contractor will not issue any public announcement or media release of any kind regarding the contract, the services performed or additional services or projects which relate to the contract, or any incident that occurs while performing services under the contract without the prior written approval of CATA, and then only to the extent of and in accordance with instructions given with such approval. CATA will be responsible for providing all public information materials on the services performed under the contract.

37. INVOICING. CATA shall not incur any expense until and only to the extent that services are provided by Contractor and such services are properly invoiced. If Contractor satisfactorily performs the required work under the contract. CATA will pay Contractor for the work performed as outlined in the Proposal, if the same is properly invoiced. Contractor is responsible to submit a complete, proper, and timely invoice to CATA for any orders under the contract. Failure to do so will relieve CATA of the obligation to pay. Each invoice must include invoice number, time period covered by the invoice, description of work completed, contact person and phone number, and payment remit address. CATA will pay each undisputed invoice within 30 days after receipt if that invoice meets the itemization and other requirements described in the contract. CATA may withhold from one or more invoices all amounts disputed in reasonable detail by CATA within 90 days of the date of invoice. Payment does not waive claims that CATA may have against Contractor. Contractor must continue to provide services regardless of any fee, price, or charge dispute.

38. INTERPRETATION.

(a) References to laws, documents and other written materials include amendments that may be made from time to time.

(b) References to days mean calendar days. Any deadline or end of any time period that does not fall on a business day extends through the next business day. Business day means any calendar day other than a Saturday, Sunday or other day on which financial institutions close.

(c) If any provision of these General Terms and Conditions conflicts with a provision required by law or contract, including, but not limited to those mandated by MDOT, FTA, US DOT, or other mandatory provision, the mandatory provision shall prevail.

39. RISK OF LOSS. Until final acceptance, title and risk of loss or damage to any materials remains with Contractor. Contractor is responsible for filing, processing, and collecting all damage claims. CATA will record and report to Contractor any evidence of visible damage. If the CATA rejects any equipment or materials, Contractor must remove them from the premises within 10 calendar days after notification of rejection. The risk of loss of rejected or non-conforming equipment or materials remains with Contractor. Rejected equipment or materials not removed by Contractor within 10 calendar days will be deemed abandoned by Contractor, and CATA will have the right to dispose of it as its own property. Contractor must reimburse CATA for costs and expenses incurred in storing or effecting removal or disposition of rejected equipment or materials.

40. SURVIVAL. The provisions of the contract that impose continuing obligations, including warranties and representations, termination, transition, insurance coverage, indemnification, and confidentiality, will survive the expiration or termination of the contract.

41. DISCLOSURE. Contractor specifically and expressly understands that CATA is subject to public disclosures including the Freedom of Information Act and as such the contents of any contract with CATA, any information Contractor provides to CATA, payments made to Contractor, etc. may be disclosed by CATA without any prior notice to Contractor.

42. COMPLIANCE WITH GRANT TERMS. Contractor understands and agrees that CATA's funding to pay Contractor compensation for the contract may come from grant dollars or funding sources that have terms which need to be met. Contractor agrees that upon notification by CATA of these terms, Contractor will conduct itself in accordance with and abide by any such terms, without condition, to ensure CATA does not lose the funding source.

(a) Contractor agrees that the Federal Government may suspend, suspend then terminate, or terminate all or any part of the federal assistance for the Award if: (1) CATA or Contractor has failed to make reasonable progress implementing the Award; (2) The Federal Government determines that continuing to provide federal assistance to support the Award does not adequately serve the purposes of the law authorizing the Award; or (3) CATA or Contractor has violated the terms of the Underlying Agreement, especially if that violation would endanger substantial performance of the Underlying Agreement.

(b) Financial Implications. In general, termination of federal assistance for the Award will not invalidate obligations properly incurred before the termination date to the extent that those obligations cannot be canceled. The Federal Government may recover the federal assistance it has provided for the Award, including the federal assistance for obligations properly incurred before the termination date, if it determines that CATA or Contractor has misused its federal assistance by failing to make adequate progress, failing to make appropriate use of the Project property, or failing to comply with the Underlying Agreement, and require CATA or Contractor to refund the entire amount or a lesser amount, as the Federal Government may determine including obligations properly incurred before the termination date.

(c) Expiration of the Period of Performance. Except for a Full Funding Grant Agreement, expiration of any period of performance established for the Award does not, by itself, constitute an expiration or termination of the Award; FTA may extend the period of performance to assure that each Formula Project or related activities and each Project or related activities funded with "no year" funds can receive FTA assistance to the extent FTA deems

appropriate.

(d) Uniform Administrative Requirements. These termination rights are in addition to and in no way limit the Federal Government's rights to terminate described in 2 CFR § 200.340.

43. MDOT AND FTA TERMS. All contractual provisions that the Michigan Department of Transportation ("MDOT"), the Federal Transit Administration ("FTA"), and/or the US Department of Transportation ("US DOT") by law or regulation, require to be included in contracts supported by state or federal financial assistance, including the requirements set forth in FTA Circular 4220.1 and the Clause Matrix (last updated May 2025), as updated and amended, and the Master Agreement between CATA and FTA and the Master Agreement between CATA and MDOT as it may be amended, all of which are hereby incorporated by reference. FTA required terms and MDOT required terms shall be deemed to control in the event of a conflict with other provisions contained in this contract. Contractor shall not refuse to comply with any CATA request to conform this contract to include MDOT or FTA required contractual provisions. The Contractor shall not perform any act, fail to perform any act, or refuse to comply with any CATA requests which would cause CATA to be in violation of the mandated contractual provisions.

44. FEDERALLY ASSISTED CONSTRUCTION CONTRACTS. Pursuant to the FTA Master Agreement, Section 16, Paragraph (4):

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(c) The Contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the Contractor's legal duty to furnish information.

(d) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(e) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(f) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit

access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(g) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(h) The Contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States. The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: Provided, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract. The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance. The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

45. ETHICS. Contractor agrees it has or it will establish and maintain written Standards of Conduct covering conflicts of interest that:

(a) Apply to the following individuals who have a present or potential financial interest, or other significant interest, such as a present or potential employment interest in the selection, award, or administration of a third party contract or subcontract: (i) The Recipient or its Subrecipients' officers, employees, board members, or agents engaged in the selection, award, or administration of any third party agreement; (ii) The immediate family members or partners of those listed above in section 4(a)(1)(i) of this Master Agreement; and (iii) An entity or organization that employs or is about to employ any person that has a relationship with the Recipient or its Subrecipient listed above in sections 4(a)(1)(i) and (ii) of this Master Agreement;

(b) Prohibit those individuals listed above from: (i) Engaging in any activities involving the Recipient's or any of its Subrecipients' present or potential Third Party Participants at any tier, including selection, award, or administration of a third party agreement in which the individual has a present or potential financial or other

significant interest; and (ii) Accepting a gratuity, favor, or anything of monetary value from a present or potential Third Party Participant in the Recipient's Underlying Agreement, unless the gift is unsolicited and has an insubstantial financial or nominal intrinsic value; and

(c) Establish penalties, sanctions, or other disciplinary actions for violations, as permitted by state or local law or regulations, that apply to those individuals listed above for violations.

46. DRUG AND ALCOHOL MISUSE AND TESTING. The Contractor certifies that it, its subrecipients, and its contractors are compliant with FTA's regulation for the Prevention of Alcohol Misuse and Prohibited Drug Use in Transit Operations, 49 CFR Part 655.

47. CHANGE IN CONTROL. Contractor will notify CATA within 30 days of any public announcement or otherwise once legally permitted to do so, of a material change in Contractor's organizational structure or ownership. For purposes of the contract, a material change in control means any of the following: (a) a sale of more than 50% of Contractor's stock; (b) a sale of substantially all of Contractor's assets; (c) a change in a majority of Contractor's board members; (d) consummation of a merger or consolidation of Contractor with any other entity; (e) a change in ownership through a transaction or series of transactions; (f) or the board (or the stockholders) approves a plan of complete liquidation. A change of control does not include any consolidation or merger effected exclusively to change the domicile of Contractor, or any transaction or series of transactions principally for bona fide equity financing purposes. In the event of a change of control, Contractor must require the successor to assume this Contract and all of its obligations under this Contract. If CATA is not satisfied for any reason with the new control, CATA has the option to terminate the contract.

48. CHANGE IN CIRCUMSTANCES. Contractor agrees that changed circumstances may occur that may impact CATA's ability to comply with the FTA terms and conditions such as: (i) A change in federal requirements or guidance; (ii) A change in state, territorial, local, or tribal requirements; (iii) A change in CATA or Contractor's circumstances, including: (A) Its legal, financial, technical, or managerial capacity; (B) Its continuing control of Project property; or (C) Another similar situation; and (iv) Any current or prospective legal matter with potentially serious consequences, including a major dispute, default, breach, or litigation, or knowledge that the Contractor's principal, official, employee, agent, or another third party, or other person has submitted a false claim under the False Claims Act, 31 USC § 3729, et seq., or has committed a criminal or civil violation of law pertaining to fraud, conflict of interest, bribery, gratuity, or similar misconduct involving federal assistance; suspension, debarment, or other similar administrative or enforcement action against CATA or the Contractor; or any matter or situation, including any other change or legal action that may adversely affect the Federal Government's interest in a Project or related activities. In the circumstances described above, Contractor agrees to provide immediate written notice to CATA so it can provide appropriate notice to the interested parties.

49. CHANGES TO FEDERAL REQUIREMENTS. Federal requirements that apply to the Recipient or the Award, the accompanying Underlying Agreement, and any Amendments thereto may change due to changes in federal law, regulation, other requirements, or guidance, or changes in the Recipient's Underlying Agreement including any information incorporated by reference and made part of that Underlying Agreement; and Applicable changes to those federal requirements will apply to each Third Party Agreement and parties thereto at any tier.

50. NOTICE OF DISPUTES, BREACHES, DEFAULTS, AND LITIGATION. If a current or prospective legal matter that may affect CATA or the federal government emerges, the Contractor must notify CATA. The Contractor must include a similar notification requirement in each of its subcontracts for twenty-five thousand dollars ($25,000) or more.

(a) Legal disputes that require notification under this provision include, but are not limited to, a major dispute, breach, default, litigation, or naming CATA or naming the federal government as a party to litigation or a legal disagreement in any forum for any reason.

(b) Matters that may affect the federal government (and thereby CATA) include, but are not limited to, the or the federal government's interests in the award, the accompanying underlying agreement, and any amendments thereto, or the federal government's administration or enforcement of federal laws, regulations, and requirements.

(c) Additional notice to US DOT Inspector General. The Contractor must promptly notify the US DOT Inspector General in addition to the FTA chief counsel or regional counsel for FTA's appropriate region, if the Contractor has knowledge of potential fraud, waste, or abuse occurring on a project receiving assistance from FTA. The notification provision applies if a person has or may have submitted a false claim under the false claims act, 31 USC § 3729, et seq., or has or may have committed a criminal or civil violation of law pertaining to such matters as fraud, conflict of interest, bid rigging, misappropriation or embezzlement, bribery, gratuity, or similar misconduct involving federal assistance. This responsibility occurs whether the project is the subject of this contract, another contract funded by the FTA, or an agreement involving a principal, officer, employee, or agent of the Contractor. It also applies to subcontractors at any tier. Knowledge, as used in this paragraph, includes, but is not limited to, knowledge of a criminal or civil investigation by a federal, state, or local law enforcement or other investigative agency, a criminal indictment or civil complaint, or probable cause that could support a criminal indictment, or any other credible information in the possession of the Contractor. In this paragraph, "promptly" means to refer information without delay and without change.

51. EQUAL EMPLOYMENT OPPORTUNITY. Contractor agrees to, and assures that each of its employees, agents, or subcontractors will, prohibit discrimination based on race, color, religion, sex, sexual orientation, gender identity, or national origin, and: (i) Comply with Title VII of the Civil Rights Act of 1964, as amended, 42 USC § 2000e, et seq.; (ii) Comply with Title I of the Americans with Disabilities Act of 1990, as amended, 42 USC §§ 12101, et seq.; (iii) Facilitate compliance with Executive Order No. 11246, "Equal Employment Opportunity" September 24, 1965 (42 USC § 2000e note), as amended by any later Executive Order that amends or supersedes it in part and is applicable to federal assistance programs; (iv) Comply with federal transit law, specifically 49 USC § 5332; (v) Comply with FTA Circular 4704.1 "Equal Employment Opportunity (EEO) Requirements and Guidelines for Federal Transit Administration Recipients;" and (vi) Follow other federal guidance pertaining to EEO laws, regulations, and requirements. And, if required to do so by US DOT regulations (49 CFR Part 21) or US Department of Labor regulations (41 CFR chapter 60), Contractor agrees to take affirmative action that includes, but is not limited to: (A) Recruitment advertising, recruitment, and employment; (B) Rates of pay and other forms of compensation; (C) Selection for training, including apprenticeship, and upgrading; and (D) Transfers, demotions, layoffs, and terminations. Contractor also recognizes that Title VII of the Civil Rights Act of 1964, as amended, exempts Indian Tribes under the definition of "Employer."

52. NONDISCRIMINATION.

(a) Compliance with Regulations. Contractor shall comply with all applicable laws, rules, and regulations relative to nondiscrimination including, but not limited to the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, and Title 23, Code of Federal Regulations, Part 710.405(b), as they may be amended from time to time (hereinafter referred to as the Regulations), and with Executive Order 11246 titled Equal Employment opportunity, as amended by Executive Order 11375, and as supplemented by Department of Labor Regulation (41 CFR 60) which are herein incorporated by reference and made a part of this contract. Contractor agrees that it will comply with the requirements of US Equal Employment Opportunity Commission, "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," 29 CFR Part 1630, pertaining to employment of persons with disabilities. In addition, Contractor agrees to comply with any implementing requirements MDOT, FTA, or other governing authority may issue.

(b) Nondiscrimination. With regard to the work performed by it during this contract, Contractor shall not discriminate on any grounds prohibited by applicable law against any employee or applicant for employment, or in the selection and retention of Subcontractors, including procurement of materials and leases of equipment. Contractor shall not participate either directly or indirectly in discrimination prohibited by Section 21.5 and Part 710.405(b) of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

(c) In connection with the performance of services under this contract, Contractor agrees to comply with the State of Michigan provisions for "Prohibition of Discrimination in State Contracts" as set forth in the Elliott-Larsen Civil Rights Act (Public Act 453 of 1976) and the Persons with Disabilities Civil Rights Act (Public Act 220 of 1976) incorporated herein by reference, and as stated in Appendix B. Contractor further covenants that it will comply with the Civil Rights Act of 1964, being P.L. 88-352, 78 Sat. 241, as amended,

being Title 42 USC §§ 1971, 1975a-1975d, and 2000a-2000h-6 and will require similar covenants on the part of any subcontractor employed in the performance of this contract.

(d) ADA Access. All work performed and all services provided pursuant to this contract shall be in compliance with all policies to ensure that elderly individuals and individuals with disabilities have an equal right to use of public transportation services and facilities. To the extent this Contract requires planning and design of services and facilities, special efforts shall be made to implement the transportation and accessibility rights of elderly individuals and individuals with disabilities. The work performed and services provided in this Contract shall be in compliance with all State and Federal statutes and laws ensuring equal access of transportation services and facilities for the elderly and individuals with disabilities, including, but not limited to, 49 USC § 5301(d), § 504 of the Rehabilitation Act of 1973, as amended, 29 USC § 794, The Americans with Disabilities Act of 1990, as amended, 42 USC § 12101 *et seq*., and the Architectural Barriers Act of 1968, as amended, 42 USC § 4151 *et seq*., and any applicable implementing regulations or directives as they may from time to time be promulgated or amended.

(e) Contractor assures that neither it nor any of its employees or subcontractors will discriminate on the basis of race, color, national origin, creed, disability, or sex in the performance of this contract. Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of US DOT-assisted contracts. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate.

(f) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

53. DBE REQUIREMENTS.

(a) Contractor will carry out the applicable requirements of the Michigan Department of Transportation's and/or the FTA's Disadvantaged Business Enterprise ("DBE") program, Section 11101(3) of the Infrastructure Investment and Jobs Act, all US DOT regulations, 49 CFR 26 including, but not limited to those requirements set forth in Appendix D, attached hereto and made a part hereof, and federal transit law specifically including, but not limited to 49 USC § 5332. Failure by the Contractor to carry out these requirements is a material breach of this Contract, which mabony result in the termination of this Contract or such other remedy as CATA deems appropriate, which may include, but is not limited to, withholding monthly progress payments, assessing sanctions, liquidated damages and/or disqualifying the Contractor from future bidding as non-responsible.

(b) Contractor agrees that it and each of its employees, agents, and subcontractors must not discriminate based on race, color, national origin, or sex in the award and performance of any FTA or US DOT-assisted subagreement, third party contract, and third party subcontract, as applicable, and the administration of its DBE program or the requirements of 49 CFR Part 26.

(c) Contractor agrees to take all necessary and reasonable steps under 49 CFR Part 26 to ensure nondiscrimination in the award and administration of US DOT-assisted subagreements, third party contracts, and third party subcontracts as applicable.

(d) Failure by Contractor to carry out the requirements of this subparagraph is a material breach of the contract, and CATA, MDOT, and or the FTA may impose any of the following remedies, or such other remedy as CATA deems appropriate, including, but are not limited to, withholding monthly progress payments, assessing sanctions, liquidated damages, and/or disqualifying the Contractor from future bidding as non-responsible.

(e) Consistent with the requirements of 49 CFR 26.29, Contractor shall pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than thirty (30) days after the Contractor's receipt of payment for that work from CATA. In addition, Contractor shall return any retainage payments to those subcontractors within thirty (30) days after the subcontractor's work related to this contract is satisfactorily completed. Contractor must promptly notify CATA whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete the work, and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The Contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of CATA.

54. CONTINGENT FEES. The Contractor warrants that it has not employed or retained any company or person, other than a bonafide employee working solely for the Contractor, to solicit or secure this contract and that it has not paid or agreed to pay any company or person, other than a bonafide employee working solely for the Contractor, any fee, commission, percentage, brokerage fee, gifts or any other consideration, contingent upon or resulting from the award or making of this contract. For breach or violation of this warranty, CATA shall have the right to annul this contract without liability.

55. ACCESS TO RECORDS/AUDITS.

(a) The Contractor shall maintain and retain, and shall require all its subcontractors to maintain and retain, complete and accurate books, documents, papers, accounting records, contracts, and other evidence with respect to allowable costs incurred and manpower expended under this contract. All such records shall be maintained on the basis of generally accepted accounting principles and shall be clearly identified and readily accessible. Contractor's books, documents, and all other records of work performed under the contract and/or at any CATA facility shall be made available during normal business hours to CATA upon request. The Contractor shall also provide during regular business hours to the US Secretary of Transportation, the FTA Administrator, the Comptroller General of the United States, or their duly authorized representatives, and any representatives from MDOT, access to such data and records, and the right to inspect and audit all data and records of the Contractor relating to its performance under the contract, and to make transcripts therefrom as necessary. Unless a longer period is required by law or other provision of these Standard Terms and Conditions, Contractor shall retain all work data, documents, proceedings, and activities related to this contract for a period of three (3) years from the date of final payment under this contract or from expiration or other termination of this contract. In the event of a dispute as to allowable costs or any other issue under this contract, Contractor will thereafter continue to maintain such records until the dispute has been resolved.

(b) Contractor further agrees to provide: (1) The US Secretary of Transportation and the Comptroller General of the United States, the state, or their duly authorized representatives, access to all contract records as required under 49 USC § 5325(g) & 2 CFR § 200.337; (2) permit those individuals listed above to inspect all work and materials related its award and to audit any information related to its award under the control of Contractor or Third Party Participant within books, records, accounts, or other locations; and (3) Sufficient access to all contract records as needed for compliance with applicable federal laws, regulations, and requirements or to assure proper management of the contract as determined by FTA.

(c) The Contractor certifies that it will comply with the record retention requirements detailed in 2 CFR § 200.333, as well as the record retention requirements in the applicable US DOT Common Rule. The Contractor further certifies that it will retain all records as required by 2 CFR § 200.333 for a period of 3 years after termination of the contract.

(d) To the extent required under federal law, Contractor agrees to provide the following information about federal assistance: (1) The Identification of FTA as the federal agency providing the federal assistance for a State Program or Project; (2) The Catalog of Federal Domestic Assistance Number of the program from which the federal assistance for a State Program or Project is authorized; and (3) The amount of federal assistance FTA has provided for a State Program or Project.. The State agrees to provide the information required under this provision in the following documents: (1) applications for federal assistance, (2) requests for proposals or solicitations, (3) forms, (4) notifications, (5) press releases, and (6) other publications.

56. ACCESS TO THE SITES OF PERFORMANCE. The Contractor agrees to permit FTA and the State of Michigan and its contractors access to the sites of performance under this contract as reasonably may be required.

57. CONFLICT OF INTEREST. The Contractor certifies that, to the best of its knowledge, no CATA employee or office of any public agency interested in this contract has any pecuniary interest in the business of the Contractor and that no person associated with the Contractor has any interest that would conflict in any manner or degree with the performance of this contract. Contractor further covenants that it presently has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of services under the contract. Contractor further covenants in the performance of the contract that no person having any such interest shall be employed by Contractor.

58. FEDERAL TAX LIABILITY AND RECENT FELONY CONVICTIONS. Contractor agrees that, prior to entering into any Third Party Agreement with any private corporation, partnership, trust, joint-stock company, sole proprietorship, or other business association, Contractor will obtain from the prospective Third Party Participant a certification that the Third Party Participant— (1) Does not have any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and (2) Was not convicted of the felony criminal violation under any Federal law within the preceding 24 months. (ii) If the prospective Third Party Participant cannot so certify, Contractor agrees to refer the matter to FTA and not to enter into any Third Party Agreement with the Third Party Participant without FTA's written approval. Contractor agrees to require all Third Party Participants to flow this requirement down to participants at all lower tiers, without regard to the value of any subagreement.

59. INTEREST OF MEMBER OF CONGRESS OR DELEGATES TO CONGRESS. No member of Congress or delegates to the Congress of the United States shall be admitted to any share or part of the contract, or to any benefit arising therefrom. This shall not be construed to prevent any such person from owning stock in a publicly owned corporation.

60. INTEREST OF MEMBERS OF THE STATE LEGISLATURE. No member of the State Legislature shall be admitted to any share or any part of a contract or any benefit arising there from.

61. COMPLIANCE WITH LAWS. The Contractor shall at all times observe and comply with all laws, ordinances, and regulations of the state, federal, local, and city government which may, in any manner, affect the performance of the contract.

62. DEBARMENT AND SUSPENSION. The Contractor shall comply and facilitate compliance with US DOT regulations, "Nonprocurement Suspension and Debarment," 2 CFR Part 1200, which adopts and supplements the US Office of Management and Budget (US OMB) "Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," 2 CFR Part 180. These provisions apply to each contract at any tier of $25,000 or more, and to each contract at any tier for a federally required audit (irrespective of the contract amount), and to each contract at any tier that must be approved by an FTA official irrespective of the contract amount. As such, the Contractor shall verify that its principals, affiliates, and subcontractors are eligible to participate in this federally funded contract and are not presently declared by any Federal department or agency to be:

    (a) Debarred from participation in any federally assisted Award;
    (b) Suspended from participation in any federally assisted Award;
    (c) Proposed for debarment from participation in any federally assisted Award;
    (d) Declared ineligible to participate in any federally assisted Award;
    (e) Voluntarily excluded from participation in any federally assisted Award; or
    (f) Disqualified from participation in ay federally assisted Award.

    Contractor certifies as follows: The certification in this clause is a material representation of fact relied upon by CATA. If it is later determined by CATA that Contractor knowingly rendered an erroneous certification, in addition to remedies available to the CATA, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 2 CFR Part 180, subpart C, as supplemented by 2 CFR Part 1200. Contractor further agrees to include a provision requiring such compliance in its lower tier covered transactions.

63. FEDERAL CHANGES. Contractor shall at all times comply with all applicable FTA regulations, policies, procedures, and directives, including without limitation those listed directly or by reference in the Master Agreement between CATA and FTA, as they may be amended or promulgated from time to time during the term of this contract. Contractor shall not, by action or by inaction, cause CATA to be in violation of FTA regulations, policies, terms, procedures, or directives. Contractor's failure to comply with this paragraph shall constitute a material breach of this contract.

64. STATE CHANGES. Contractor shall at all times comply with all applicable MDOT regulations, policies, procedures and directives, including without limitation those listed directly or by reference in the Master Agreement between CATA and MDOT, as they may be amended or promulgated from time to time during the term of this contract. Contractor shall not, by action or by inaction, cause CATA to be in violation of MDOT regulations, policies, terms, procedures, or directives. Contractor's failure to comply with this paragraph shall constitute a material breach of this contract.

65. GOVERNMENT APPROVAL. If any item required by the contract requires approval for the sale and/or use thereof by statute or regulations, Contractor certifies it has or will obtain an approval for their sale and/or use from the appropriate agency. Contractor will submit to CATA a copy of each such approval for sale and/or use.

66. NO GOVERNMENT OBLIGATION. Notwithstanding any concurrence by the Federal Government or MDOT in, or approval of, the solicitation or award of the contract, absent the express written consent by the Federal Government or by MDOT, neither the Federal Government nor the State of Michigan is a party to the contract, and neither shall be subject to any obligations or liabilities to CATA, the Contractor or any other party (whether or not a party to the contract) pertaining to any matter resulting from the contract. The Contractor agrees to include this clause in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will be subject to its provisions.

67. ENERGY CONSERVATION. The Contractor agrees to comply with mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act.

68. FLY AMERICA REQUIREMENTS. Contractor agrees to comply with 49 USC § 40118 (“Fly America Act”) in accordance with the General Services Administration’s regulations at 41 CFR Part 301-10, which provide that recipients and subrecipients of federal funds and their contractors are required to use United States Flag air carriers for US Government financed international air travel and transportation of their personal effects or property, to the extent such service is available, unless travel by foreign air carrier is a matter of necessity, as defined by the Fly America Act. The Contractor shall submit, if a foreign air carrier was used, an appropriate certification or memorandum adequately explaining why service by a United States Flag air carrier was not available or why it was necessary to use a foreign air carrier and shall, in any event, provide a certificate of compliance with the Fly America requirements. The Contractor agrees to include the requirements of this section in all subcontracts that may involve international air transportation.

69. FRAUD AND FALSE OR FRAUDULENT STATEMENTS OR RELATED ACTS.

    (a) Civil Fraud. The Contractor acknowledges and agrees that: (i) Federal laws, regulations, and requirements apply to itself and to CATA’s Agreement with the FTA, including the Program Fraud Civil Remedies Act of 1986, as amended, 31 USC § 3801, et seq., and US DOT regulations, “Program Fraud Civil Remedies,” 49 CFR Part 31. (ii) Contractor certifies and affirms to CATA and the Federal Government the truthfulness and accuracy of any claim, statement, submission, certification, assurance, affirmation, or representation that the Contractor provides to CATA and/or the Federal Government. (iii) The Federal Government may impose the penalties of the Program Fraud Civil Remedies Act of 1986, as amended, and other applicable penalties if the Contractor presents, submits, or makes available any false, fictitious, or fraudulent information.

    (b) Criminal Fraud. The Contractor acknowledges that 49 USC § 5323(l)(1) authorizes the Federal Government to impose the penalties under 18 USC § 1001 if the Contractor provides a false, fictitious, or fraudulent claim, statement, submission, certification, assurance, or representation in connection with a federal public transportation program under 49 USC chapter 53 or any other applicable federal law.

(c) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

70. SAFE OPERATION OF MOTOR VEHICLES.

(a) Seat Belt Use - Contractor is encouraged to adopt and promote on-the-job seat belt use policies and programs for its employees and other personnel that operate company-owned vehicles, company-rented vehicles, or personally operated vehicles. The terms “company-owned’ and “company-leased” refer to vehicles owned or leased either by the Contractor or CATA.

(b) Distracted Driving - Contractor agrees to adopt and enforce workplace safety policies to decrease crashes caused by distracted drivers, including policies to ban text messaging while using an electronic device supplied by an employer and driving a vehicle the driver owns or rents, a vehicle either Contractor or CATA owns, leases, or rents, or a privately-owned vehicle when on official business in connection with the work performed under the contract.

71. SEISMIC SAFETY. The Contractor agrees that any new building or addition to an existing building will be designed and constructed in accordance with the standards for Seismic Safety required in Department of Transportation Seismic Safety Regulations 49 CFR Part 41 and will certify to compliance to the extent required by the regulation. The Contractor also agrees to ensure that all work performed under this Contract including work performed by a subcontractor is in compliance with the standards required by the Seismic Safety Regulations and the certification of compliance issued on the project.

72. VETERANS EMPLOYMENT. As provided in 49 USC § 5325(k), Contractor is encouraged, to the extent practicable, give a hiring preference to veterans (as defined in 5 USC § 2108) who have the requisite skills and abilities to perform the construction work required under the contract. This subsection shall not be understood, construed, or enforced in any manner that would require an employer to give a preference to any veteran over any equally qualified applicant who is a member of any racial or ethnic minority, female, an individual with a disability, or a former employee.

73. FEDERAL WAGE REQUIREMENTS FOR CONSTRUCTION CONTRACTS.

(a) This procurement is subject to the Davis-Bacon Act, 40 USC § 3141, *et seq*, and to the Copeland Anti-Kickback Act, 18 USC § 874, and to the regulations promulgated thereunder (“the Acts”). As required by federal regulations promulgated under the Acts, the following provisions set forth in Paragraph 13(b) and (c) are incorporated into the Agreement, with the understanding that the term "contracting officer" refers to the appointed representative of CATA.

(b) <u>Davis-Bacon and Copeland Anti-Kickback Acts</u>

(1) Minimum wages

(i.) All laborers and mechanics employed or working under the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fridge benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also,

regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii.) (A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) Except with respect to helpers as defined as 29 CFR 5.2(n)(4), the work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) With respect to helpers as defined in 29 CFR 5.2(n)(4), such a classification prevails in the area in which the work is performed.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, US Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii.) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv.) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(v.) (A) The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination with 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(v) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(2) Withholding - Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any

laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, Owner may, after written notice to the Contractor, sponsor, applicant, or agency, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractor's employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) (A) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to Owner for transmission to the Federal Transit Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR Part 5. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), US Government Printing Office, Washington, DC 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

(B) Each payroll submitted shall be accompanied by a “Statement of Compliance,” signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be maintained under section 5.5(a)(3)(i) of Regulations, 29 CFR Part 5 and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR Part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the

classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Federal Transit Administration or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the Contractor, sponsor, applicant, or agency, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees

(i) Apprentices - Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the US Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division of the US Department of Labor determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees - Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the

US Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity - The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

(5) Compliance with Copeland Act requirements - The Contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

(6) Subcontracts - The Contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment - A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a Contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements - All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards - Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the contracting agency, the US Department of Labor, or the employees or their representatives.

(10) Certification of eligibility

(i.) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii.) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii.) The penalty for making false statements is prescribed in the US Criminal Code, 18 USC § 1001.

(c) Contract Work Hours and Safety Standards Act. The Contractor shall comply with all federal laws, regulations, and requirements providing wage and hour protections for non-construction employees, in accordance with 40 USC § 3702, Contract Work Hours and Safety Standards Act, and other relevant parts of that Act, 40 USC § 3701 et seq., and US DOL regulations, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction (also Labor Standards Provisions Applicable to Non-construction Contracts Subject to the Contract Work Hours and Safety Standards Act)," 29 CFR Part 5.

(1) Overtime requirements - No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages - In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

(3) Withholding for unpaid wages and liquidated damages - Capital Area Transportation Authority shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

(4) Subcontracts - The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

74. RECOVERED/RECYCLED PRODUCTS AND MATERIALS. The Contractor agrees to comply with all requirements of Section 6002 of the Resource Conservation and Recovery Act ("RCRA"), as amended (42 USC § 6962), including but not limited to the regulatory provisions of 40 CFR Part 247, and Executive Order 12873, as they apply to the procurement of the items designated in subpart B of 40 CFR Part 247.

75. INSPECTION. All material shall be received is subject to CATA's right of inspection and rejection, within CATA's sole discretion. Defective material or materials not in accordance with CATA's specifications will be held for Contractor's instructions and at Contractor's expense. Payment for material on an order prior to inspection shall not constitute an acceptance thereof, nor will acceptance remove Contractor's responsibility for latent defects.

76. BID BOND. A bid bond must be included with all bid documents as set forth in CATA's bid requests. For projects exceeding $250,000, the bid guarantee bond shall be no less than 5%.

77. PERFORMANCE & PAYMENT BONDS. The successful bidder on a construction contract shall furnish at its own expense performance and payments bonds. These bonds shall be furnished to CATA within ten (10) calendar days after contract award. Bond requirements are as follows:

(a) A performance bond for construction contracts shall be payable to CATA in the amount of 100 percent (100%) of the full contract amount as a guarantee of good faith on behalf of the Contractor that the Contractor will perform all of its obligations under the contract.

(b) A payment bond shall be payable to CATA in the amount of 100 percent (100%) of the full amount of any construction contract to assure payment as required by law of all persons supplying labor and material in the execution of work provided for in the contract.

78. PROTESTS. Any protests shall be filed timely in accordance with the CATA Procurement Protest Procedures. These Procedures are available from the CATA Purchasing & Contracts Manager and the CATA CEO/Executive Director, at the following address: Capital Area Transportation Authority, 4615 Tranter Street, Lansing, MI 48910.

79. CARGO PREFERENCE. The Contractor agrees (a) to use privately owned United States Flag commercial vessels to ship at least 50% of the gross tonnage (computed separately for dry bulk carriers, dry cargo liners, and tankers) involved, whenever shipping any equipment, material, or commodities pursuant to the underlying contract to the extend such vessels are available at fair and reasonable rates for United States Flag commercial vessels; (b) to furnish within twenty (20) working days following the date of loading of shipments originating within the United States or within thirty (30) working days following the date of loading for shipments originating outside the United States, a legible copy of the rated, “on-board” commercial ocean bill of lading, in English, for each shipment of cargo described in the preceding paragraph to the Division of National Cargo, Office of Market Development, Maritime Administration, Washington, D.C., 20590. CATA (through the Contractor in the case of a subcontractor’s bill of lading); and (c) to include these requirements in all subcontracts issued pursuant to this contract where the subcontract may involve the transport of equipment, material, or commodities by ocean vessel.

80. ACTIONS INVOLVING COMMERCE. Contractor agrees to comply with the Fair Labor Standards Act (FLSA), 29 USC § 201, et seq. to the extent that the FLSA applies to employees performing work with federal assistance involving commerce, and as the Federal Government otherwise determines applicable.

81. PATENT RIGHTS.

(a) Contractor agrees that: (1) the Federal Government may acquire patent rights when Contractor produces a patented or patentable invention, improvement, or discovery; (2) The Federal Government’s rights arise when the patent or patentable information is conceived or reduced to practice with federal assistance provided; or (3) When a patent is issued or patented information becomes available as described in the preceding section 17(a)(2) of the FTA Master Agreement, Contractor will notify CATA so it can make the appropriate disclosures and notifications.

(b) Contractor agrees that: (1) Its rights and responsibilities in that federally assisted invention, improvement, or discovery will be determined as provided in applicable federal laws, regulations, requirements, and guidance, including any waiver thereof; and (2) Unless the Federal Government determines otherwise in writing, irrespective of its status or the status of any participant as a large business, small business, state government, state instrumentality, local government, Indian tribe, nonprofit organization, institution of higher education, or individual, CATA will transmit the Federal Government’s patent rights to FTA, as specified in 35 USC § 200, et seq., and US Department of Commerce regulations, “Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements,” 37 CFR Part 401.

(c) License Fees and Royalties. Consistent with the applicable US DOT Common Rules, Contractor agrees that license fees and royalties for patents, patent applications, and inventions produced with federal assistance are program income, and must be used in compliance with applicable federal requirements.

82. RIGHTS IN DATA AND COPYRIGHTS.

(a) Definition of “Subject Data.” As used in this section, “subject data” means recorded information, whether or not copyrighted, that is delivered or specified to be delivered as required by the contract. Examples of subject data include, but are not limited to computer software, standards, specifications, engineering drawings and associated lists, process sheets, manuals, technical reports, catalog item identifications, and

related information, but do not include financial reports, cost analyses, or other similar information used for performance or administration of the contract.

(b) The following restrictions apply to all subject data first produced in the performance of the contract:

(1) Prohibitions. Contractor may not publish or reproduce any subject data, in whole, in part, or in any manner or form, or permit others to do so.

(2) Exceptions. The prohibitions do not apply to publications or reproductions for the Contractor's own internal use, an institution of higher learning, the portion of subject data that the Federal Government has previously released or approved for release to the public, or the portion of data that has the Federal Government's prior written consent for release.

(c) Contractor agrees that:

(1) General. It must provide a license to its subject data to the Federal Government that is royalty-free, non-exclusive, and irrevocable. The Federal Government's license must permit the Federal Government to reproduce, publish, or otherwise use the subject data or permit other entities or individuals to use the subject data provided those actions are taken for Federal Government purposes; and

(2) US DOT Public Access Plan – Copyright License. Contractor grants to US DOT a worldwide, non-exclusive, non-transferable, paid-up, royalty free copyright license, including all rights under copyright, to any and all Publications and Digital Data Sets as such terms are defined in the US DOT Public Access plan, resulting from scientific research funded either fully or partially by this funding agreement. Contractor herein acknowledges that the above copyright license grant is first in time to any and all other grants of a copyright license to such Publications and/or Digital Data Sets, and that US DOT shall have priority over any other claim of exclusive copyright to the same.

83. NO OBLIGATION BY THE FEDERAL GOVERNMENT. Contractor acknowledges and agrees that, notwithstanding any concurrence by the Federal Government in or approval of the solicitation of award of the underlying Contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this Contract and shall not be subject to any obligations or liabilities to CATA, Contractor, or any other party (whether or not a party to that Contract) pertaining to any matter resulting to the underlying Contract. The Contractor agrees to include the above clause in each subcontract financed in whole or in part with Federal assistance provided by the FTA. It is further agreed that the clause shall not be modified, except to identify the subcontractor who will subject to its provisions.

84. PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUPIMENT. Pursuant to the FTA requirements, Contractor understands CATA is prohibited from obligating or expending any loan or grant funds to: (1) Procure or obtain; (2) Extend or renew a contract to procure or obtain; or (3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that users covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law115-232, section 889, "covered telecommunications equipment or services" means any of the following: (1) telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities); (2) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities); (3) Telecommunications or video surveillance services provided by such entities or using such equipment; (4) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

In implementing the prohibition under Public Law 115232, section 889, subsection (f),paragraph(1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment

and services, and to ensure that communications service to users and customers is sustained. See Public Law 115232, section 889 for additional information.

When the recipient or subrecipient accepts a loan or grant, it is certifying that it will comply with the prohibition on covered telecommunications equipment and services in this section. The recipient or subrecipient is not required to certify that funds will not be expended on covered telecommunications equipment or services beyond the certification provided upon accepting the loan or grant and those provided upon submitting payment requests and financial reports.

85. CLEAN AIR. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 USC § 7401, et seq. If state or local air pollution regulations are in force, the more restrictive criteria shall govern. The Contractor and any subcontractors or suppliers must submit evidence to CATA that the governing air pollution criteria will be met. The Contractor agrees to report each violation to CATA and understands and agrees that CATA will, in turn, report each violation as required to FTA and the appropriate EPA Regional Office. The Contractor also agrees to include these requirements in each subcontract exceeding $150,000 financed in whole or in part with Federal assistance provided by FTA.

86. CLEAN WATER. The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 USC § 1251 et seq. The Contractor agrees to report each violation to CATA and understands and agrees that CATA will, in turn, report each violation as required to FTA and the appropriate EPA Regional Office. The Contractor also agrees to include these requirements in each subcontract exceeding $100,000 financed in whole or in part with Federal assistance provided by FTA.

87. BUY AMERICA PROVISIONS. For purposes of these Standard Terms and Conditions, the “Buy America Requirements” means all requirements imposed by 49 USC § 5323(j) and 49 CFR Part 661, as those provisions may be amended from time to time.

    (a) Each contract utilizing FTA assistance must comply with section 165 of the Surface Transportation Assistance Act of 1982, as amended by section 337 of the Surface Transportation and Uniform Relocation Assistance Act of 1987, and FTA regulations at 49 CFR Part 661 and any guidance issued by FTA.

    (b) For all contracts meeting the threshold at 49 USC § 5323(j)(13):

        (1) Contractor agrees to comply all Buy America Requirements and shall take all steps necessary and appropriate to ensure that no aspect of the work under the contract would put CATA out of compliance with any of the Buy America Requirements. These require that iron, steel, manufactured products, and construction materials used in FTA funded projects be produced in the United States, with specific provisions that apply to rolling stock procurements, unless a waiver has been granted by FTA or the product is subject to a general waiver (see 49 CFR §661.7). Separate requirements for rolling stock are set out at 49 USC § 5323(j)(2)(C) and 49 CFR §661.11. Contractor shall provide CATA with all certifications that may be requested from time to time by CATA or the federal government in any way related to Contractor’s compliance with the Buy America Requirements. The continued accuracy of the certificate, attached as Appendix I, entitled “Buy America Certification,” submitted with Contractor's proposal/bid is a term and condition of this Agreement.

        (2) Contractor shall also ensure that each subcontractor (of every tier) and each supplier providing any material, equipment, or other product for this contract (1) fully complies with the Buy America Requirements, (2) provides CATA and/or the federal government all certifications that may be requested or required from time to time, and (3) fully complies with all other requirements that the Buy America Requirements contemplate for, or impose on, subcontractors or suppliers. Contractor shall ensure that each subcontract (at every tier) and each supplier contract includes provisions requiring that the subcontractor or the supplier fully comply with all Buy America Requirements and this provision.

(c) Any violation of the Buy America Requirements or of these Terms and Conditions by the Contractor, by any subcontractor, or by any supplier will be deemed a material breach of this contract by the Contractor. If such a breach happens, CATA may terminate this contract for default and/or may pursue any and all other remedies that CATA has under this contract or under the law. To avoid any doubt, Contractor's obligations under this contract includes an obligation to defend, indemnify, and hold harmless CATA against any liability arising out of or related to any violation of the Buy America Requirements or of this section by the Contractor, by any subcontractor, or any supplier.

(d) Build America, Buy America Act. Construction materials used in the Project are subject to the domestic preference requirement of the Build America, Buy America Act, Pub. L. 117-58, div. G, tit. IX, §§ 70911 – 70927 (2021), as implemented from time to time by the US Office of Management and Budget, the US Department of Transportation, and FTA. The VENDOR acknowledges that this agreement is neither a waiver of § 70914(a) nor a finding under § 70914(b).

88. RESTRICTIONS ON LOBBYING. Contractor shall fully comply with 31 USC § 1352, as amended; with any regulations implementing that statute; and with any non-superseded guidance about that statute issued by the federal government (this statute, those regulations, and that guidance together are the "Byrd Anti-Lobbying Amendment"). No Federal appropriated funds shall be paid or will be paid, by or on behalf of the Contractor, subcontractor, sub-grantee or sub-recipient, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer of employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, contractor, subcontractor sub-grantee or sub-recipient shall complete and submit to CATA an appropriate disclosure.

    This procurement is subject to the Federal Transportation Administration Lobbying requirements. The attached certificate, entitled Certificate Regarding Lobbying (Appendix H), must be signed and returned as a term and condition of the procurement.

89. NATIONAL INTELLIGENT TRANSPORTATION SYSTEMS ARCHITECTURE AND STANDARDS. Contactor agrees to conform to the National Intelligent Transportation Systems (ITS) Architecture requirements of 23 USC § 517(d), unless it obtains an exemption from those requirements, and to follow FTA Notice, "FTA National ITS Architecture Policy on Transit Projects," 66 Fed. Reg. 1455, January 8, 2001, and all other applicable federal guidance.

90. TRAFFICKING VICTIMS PROTECTION ACT. Contractor agrees to comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 USC § 7104) which prohibits grant award recipients of a subrecipient from:

    (a) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect;
    (b) Procuring a commercial sex act during the period of time that the award is in effect; or
    (c) Using forced labor in the performance of the award or subawards under the award.

APPENDIX B

PROHIBITION OF DISCRIMINATION IN STATE CONTRACTS

In connection with the performance of work under this contract, Contractor agrees as follows:

1. In accordance with Act 453, Public Acts of 1976, Contractor hereby agrees not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or as a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, or marital status. Further, in accordance with Act No. 220, Public Acts of 1976, as amended by Act No. 478, Public Acts of 1980, Contractor hereby agrees not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of a disability that is unrelated to the individual's ability to perform the duties of a particular job or position. A breach of the above covenants shall be regarded as a material breach of this contract.

2. Contractor hereby agrees that any and all subcontracts to this contract, whereby a portion of the work set forth in this contract is to be performed, shall contain a covenant the same as hereinabove set forth in Section 1 of this Appendix.

3. Contractor will take affirmative action to insure that applicants for employment and employees are treated without regard to their race, color, religion, national origin, age, sex, height, weight, marital status or a disability that is unrelated to the individual's ability to perform the duties of a particular job or position. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer, recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

4. Contractor will, in all solicitations or advertisements for employees placed by or on behalf of Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, national origin, age, sex, height, weight, marital status or disability that is unrelated to the individual's ability to perform the duties of a particular job or position.

5. Contractor or its collective bargaining representative will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or workers' representative of the Contractor's commitments under this appendix.

6. Contractor will comply with all relevant published rules, regulations, directives, and orders of the Michigan Civil Rights Commission which may be in effect prior to the taking of bids for any individual state project.

7. Contractor will furnish and file compliance reports within such time and upon such forms as provided by the Michigan Civil Rights Commission, said forms may also elicit information as to the practices, policies, program, and employment statistics of each subcontractor as well as Contractor itself, and said Contractor will permit access to its books, records, and accounts by the Michigan Civil Rights Commission and/or its agent, for purposes of investigation to ascertain compliance with this contract and relevant with rules, regulations, and orders of the Michigan Civil Rights Commission.

8. In the event that the Civil Rights Commission finds, after a hearing held pursuant to its rules, that Contractor has not complied with the contractual obligations under this Agreement, the Civil Rights Commission may, as part of its order based upon such findings, certify said findings to the Administrative Board of the State of Michigan, which Administrative Board may order the cancellation of the contract found to have been violated and/or declare Contractor ineligible for future contracts with the state and its political and civil subdivisions, departments, and officers, and including the governing boards of institutions of higher education, until Contractor complies with said order of the Civil Rights Commission. Notice of said declaration of future ineligibility may be given to any or all of the persons with whom Contractor is declared ineligible to contract as a contracting party in future contracts. In any case before the Civil Rights Commission in which cancellation of an existing contract is a possibility, the contracting agency shall be notified of such possible remedy and shall be given the option by the Civil Rights Commission to participate in such proceedings.

9. Contractor will include, or incorporate by reference, the provisions of the foregoing paragraphs (1) through (8) in every subcontract or purchase order unless exempted by the rules, regulations or orders of the Michigan Civil Rights Commission, and will provide in every subcontract or purchase order that said provisions will be binding upon each subcontractor or seller.

The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, *provided,* however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

The Contractor further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *provided,* that if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The Contractor agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The Contractor further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the Contractor agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the Contractor under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such Contractor; and refer the case to the Department of Justice for appropriate legal proceedings, including sanctions for noncompliance.

APPENDIX C

ASSURANCES THAT CONTRACTORS AND SUBCONTRACTORS MUST MAKE PURSUANT TO US DOT REGULATION 49 CFR § 26, *et seq*

1. Contractor, subrecipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex, in the performance of this contract. Contractor shall carry out applicable requirements of 49 CFR § 26 in the award and administration of DOT-assisted contracts. Failure of the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

    (a) Withholding monthly progress payments;
    (b) Assessing sanctions;
    (c) Liquidated damages; and/or
    (d) Disqualifying the Contractor from further bidding as non-responsible.

2. Each contract Contractor signs with a subcontractor must include the preceding assurance.

APPENDIX D

ASSURANCES THAT SUBCONTRACTOR, THIRD PARTY CONTRACTOR, AND THIRD PARTY SUBCONTRACTOR MUST MAKE PURSUANT TO US DOT REGULATION 49 CFR § 26, *et seq*

(A) The Subrecipient, each Third Party Contractor, and each Third Party Subcontractor must not discriminate based on race, color, national origin, or sex in the award and performance of any FTA or US DOT-assisted subagreement, third party contract, and third party subcontract, as applicable, and the administration of its DBE program or the requirements of 49 CFR Part 26;

(B) The Subrecipient, each Third Party Contractor, and each Third Party Subcontractor must take all necessary and reasonable steps under 49 CFR Part 26 to ensure nondiscrimination in the award and administration of US DOT-assisted subagreements, third party contracts, and third party subcontracts, as applicable;

(C) Failure by the Subrecipient and any of its Third Party Contractors or Third Party Subcontractors to carry out the requirements of this subparagraph 12.e(4)(ii) is a material breach of this subagreement, third party contract, or third party subcontract, as applicable; and

(D) The following remedies, or such other remedy as the Recipient deems appropriate, include, but are not limited to, withholding monthly progress payments, assessing sanctions, liquidated damages, and/or disqualifying the Subrecipient, Third Party Contractor, or Third Party Subcontractor from future bidding as non-responsible.

The Subrecipient agrees and assures that it will include the preceding assurance in each subagreement and third party contract it signs with a Subrecipient or Third Party Contractor and agrees to obtain the agreement of each of its Subrecipients, Third Party Contractors, and Third Party Subcontractors to include the preceding assurance in every subagreement and third party contract it signs.

APPENDIX E

CATA Board Policy No. 204

DISADVANTAGED BUSINESS ENTERPRISE POLICY

The Capital Area Transportation Authority (CATA) has established a Disadvantaged Business Enterprise (DBE) program in accordance with regulations of the US Department of Transportation (DOT), 49 CFR Part 26. CATA has received Federal financial assistance from the Department of Transportation, and as a condition of receiving this assistance, CATA has signed an assurance that it will comply with 49 CFR Part 26.

It is the policy of CATA to ensure that DBEs are defined in part 26, have an equal opportunity to receive and participate in DOT-assisted contracts. It is also our policy:

1. To ensure nondiscrimination in the award and administration of DOT - assisted contracts;
2. To create a level playing field on which DBEs can compete fairly for DOT - assisted contracts;
3. To ensure that the DBE Program is narrowly tailored in accordance with applicable law;
4. To ensure that only firms that fully meet 49 CFR Part 26 eligibility standards are permitted to participate as DBEs;
5. To help remove barriers to the participation of DBEs in DOT-assisted contracts;
6. To assist the development of firms that can compete successfully in the market place outside the DBE Program.

The Purchasing and Contracts Manager has been delegated as the DBE Liaison Officer. In that capacity, the Purchasing and Contracts Manager is responsible for implementing all aspects of the DBE program. Implementation of the DBE program is accorded the same priority as compliance with all other legal obligations incurred by CATA in its financial assistance agreements with the Department of Transportation.

CATA has disseminated this policy statement to the Board of Directors and all of the components of our organization. We have distributed this statement to DBE and non-DBE business communities that perform work for us on DOT-assisted contracts. CATA will give public notice of DBE goals, how the goals were determined, and contact information for public comment.

Adopted: 04/20/2022

APPENDIX H

CERTIFICATE REGARDING LOBBYING

The undersigned Contractor certifies to the best of his or her knowledge and belief that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form- LLL, “Disclosure Form to Report Lobbying,” in accordance with its instructions.

3. The undersigned shall require that the language of this Certification be included in the award documents for all sub-awards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This Certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this Certification is a prerequisite for making or entering into this transaction imposed by § 1352, title 31 US Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The Contractor, _____ certifies or affirms to the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 USC § 3801, et seq., apply to this certification and disclosure, if any.

_____
Contractor

_____
Signature of Contractor’s Authorized Official

_____
Name & Title of Contractor’s Authorized Official

_____
Date

APPENDIX I

BUY AMERICA CERTIFICATION

This procurement is subject to federal "Buy America" Requirements set forth in 49 USC § 5323(j) and in Federal Transit Administration ("FTA") regulations at 49 CFR Part 661, and in the Build America, Buy America Act, Public Law 117-58, div G, tit. IX, section 70911-70927 (2021), as implemented by the US Office of Management and Budget, including, as applicable, 2 CFR Part 184, which require that steel, iron, manufactured products, and construction materials used in FTA-funded procurements be produced in the United States. Special requirements apply to rolling stock, as defined in the regulations. See 49 USC § 5323(j)(2)(C), 49 CFR 661.11. In some cases, the requirement may be waived (49 CFR 661.7).

For further information on the Buy America preference, please visit www.doi.gov/grants/BuyAmerica. Additional information can also be found at the White House Made in America Office website: www.whitehouse.gov/omb/management/made-in-america/.

The "Buy America" Certificate below must be completed and submitted with your bid/proposal. A bid/proposal which does not include the Certificate or where both certificates are signed will be considered non-responsive.

****PLEASE SIGN ONLY ONE OF THE TWO CERTIFICATES BELOW ****

CERTIFICATE ONE:

BUY AMERICA CERTIFICATE

The bidder hereby certifies that it __WILL__ comply with the requirements of 49 USC § 5323(j)(l) and applicable regulations in 49 CFR 661.

Contractor: _____

Signature of Contractor's Authorized Official: _____

Name & Title of Contractor's Authorized Official: _____

Date: _____

CERTIFICATE TWO:

BUY AMERICA CERTIFICATE

The bidder hereby certifies that it __CANNOT__ comply with the requirements of 49 USC § 5323(j), but it may qualify for an exception to the requirement pursuant to 49 USC § 5323(j)(2)(C), as amended, and the applicable regulations in 49 CFR 661.7.

Contractor: _____

Signature of Contractor's Authorized Official: _____

Name & Title of Contractor's Authorized Official: _____

Date: _____

APPENDIX J

CERTIFICATE REGARDING FEDERAL TAX LIABILITY AND RECENT FELONY CONVICTIONS

The undersigned Contractor certifies to the best of his or her knowledge and belief that it:

1. Does not have any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability; and

2. Was not convicted of the felony criminal violation under any Federal law within the preceding 24 months.

_____
Contractor

_____
Signature of Contractor's Authorized Official

_____
Name & Title of Contractor's Authorized Official

_____
Date

"General Decision Number: MI20260084 07/20/2026

State: Michigan

Construction Types: Building

Counties: Michigan Counties of
Ingham

Modification Number	Publication Date
0	01/02/2026
1	05/18/2026
2	07/20/2026

ASBE0047-002 07/01/2025

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR	$ 40.00	23.65

BOIL0169-001 07/01/2025

	Rates	Fringes
BOILERMAKER	$ 43.50	36.74

BRMI0009-009 08/01/2024

	Rates	Fringes
BRICKLAYER: BRICKLAYER FOOTNOTE: PAID HOLIDAY: FOURTH OF JULY, IF THE WORKER WAS EMPLOYED BY THE CONTRACTOR IN ANY PERIOD OF SEVEN WORKING DAYS BEFORE SAID HOLIDAY WITHIN THE CURRENT CALENDAR YEAR	$ 36.10	26.22
BRICKLAYER: TERRAZZO AND TILE FINISHER FOOTNOTE: PAID HOLIDAY: FOURTH OF JULY, IF THE WORKER WAS EMPLOYED BY THE CONTRACTOR IN ANY PERIOD OF SEVEN WORKING DAYS BEFORE SAID HOLIDAY WITHIN THE CURRENT CALENDAR YEAR	$ 32.20	20.74
BRICKLAYER: TERRAZZO AND TILE SETTER FOOTNOTE: PAID HOLIDAY: FOURTH OF JULY, IF THE WORKER WAS EMPLOYED BY THE CONTRACTOR IN ANY PERIOD OF SEVEN WORKING DAYS BEFORE SAID HOLIDAY WITHIN THE CURRENT CALENDAR YEAR	$ 32.20	23.46

CARP1004-004 06/01/2025

	Rates	Fringes
CARPENTER (SOFT FLOOR LAYER, INCLUDING CARPET & RESILIENT FLOORING)	$ 36.21	21.06

CARP1004-018 06/01/2025

	Rates	Fringes
CARPENTER, INCLUDES ACOUSTICAL CEILING INSTALLATION, DRYWALL HANGING, FORM WORK, AND METAL STUD INSTALLATION	$ 36.21	21.06

CARP1102-002 06/01/2025

	Rates	Fringes
MILLWRIGHT	$ 42.92	39.13

ELEC0252-001 06/01/2025

	Rates	Fringes
ELECTRICIAN: ALARM INSTALLATION & LOW VOLTAGE WIRING (TOWNSHIPS OF BUNKER HILL, LESLIE, ONODAGA & STOCKBRIDGE)	$ 38.79	19.87
ELECTRICIAN: EXCLUDES ALARM INSTALLATION AND LOW VOLTAGE WIRING (TOWNSHIPS OF BUNKER HILL, LESLIE, ONODAGA & STOCKBRIDGE)	$ 56.05	30.52

ELEC0665-004 05/31/2026

	Rates	Fringes
ELECTRICIAN: ALARM INSTALLATION & LOW VOLTAGE WIRING (TOWNSHIPS OF ALAIEDON, AURELIUS, DELHI, INGHAM, LANSING, LEROY, LOCKE, MERIDIAN, VEVAY, WHEATFIELD, WHITE OAK AND WILLIAMSON)	$ 37.05	22.97
ELECTRICIAN: EXCLUDES ALARM INSTALLATION & LOW VOLTAGE WIRING (TOWNSHIPS OF ALAIEDON, AURELIUS, DELHI, INGHAM, LANSING, LEROY, LOCKE, MERIDIAN, VEVAY, WHEATFIELD, WHITE OAK AND WILLIAMSON)	$ 47.00	33.18

ENGI0324-012 06/01/2024

	Rates	Fringes
OPERATOR: POWER EQUIPMENT: GROUP 1 CRANE OPERATOR WITH MAIN BOOM AND JIB 400', 300', OR 220' OR LONGER. FOOTNOTES: CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: $1.50 PER HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR LONGER: $3.00 PER HOUR ABOVE THE GROUP 1 RATE. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY	$ 47.28	25.25
OPERATOR: POWER EQUIPMENT: GROUP 2 CRANE OPERATOR WITH MAIN BOOM AND JIB 140' OR LONGER, TOWER CRANE, GANTRY CRANE, WHIRLEY DERRICK FOOTNOTES: CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: $1.50 PER HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR LONGER: $3.00 PER HOUR ABOVE THE GROUP 1 RATE. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY	$ 43.93	25.25
OPERATOR: POWER EQUIPMENT: GROUP 3 CONCRETE PUMP; CRANE; HIGHLIFT; HOIST; LOADER; ROLLER; SCRAPER; STIFF LEG DERRICK; TRENCHER FOOTNOTES: CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: $1.50 PER HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR LONGER: $3.00 PER HOUR ABOVE THE GROUP 1 RATE. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY	$ 41.28	25.25
OPERATOR: POWER EQUIPMENT: GROUP 4 BOBCAT/SKID LOADER; BROOM/SWEEPER; FORK TRUCK (OVER 20' LIFT) FOOTNOTES: CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR LONGER: $1.50 PER HOUR ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR		

LONGER: $3.00 PER HOUR ABOVE THE GROUP 1 RATE.
PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH
OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS
DAY.....$ 39.57 25.25
OPERATOR: POWER EQUIPMENT: GROUP 5 BOOM TRUCK
(NON-SWINGING) FOOTNOTES: CRANE OPERATOR WITH
MAIN BOOM AND JIB 300' OR LONGER: $1.50 PER HOUR
ABOVE THE GROUP 1 RATE. CRANE OPERATOR WITH MAIN
BOOM AND JIB 400' OR LONGER: $3.00 PER HOUR ABOVE
THE GROUP 1 RATE. PAID HOLIDAYS: NEW YEAR'S
DAY, MEMORIAL DAY, FOURTH OF JULY, LABOR DAY,
THANKSGIVING DAY AND CHRISTMAS DAY.....$ 39.57 25.25
OPERATOR: POWER EQUIPMENT: GROUP 6 FORK TRUCK (20'
LIFT AND UNDER FOR MASONRY WORK) FOOTNOTES:
CRANE OPERATOR WITH MAIN BOOM AND JIB 300' OR
LONGER: $1.50 PER HOUR ABOVE THE GROUP 1 RATE.
CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR
LONGER: $3.00 PER HOUR ABOVE THE GROUP 1 RATE.
PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH
OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS
DAY.....$ 33.71 25.25
OPERATOR: POWER EQUIPMENT: GROUP 7 OILER
FOOTNOTES: CRANE OPERATOR WITH MAIN BOOM AND JIB
300' OR LONGER: $1.50 PER HOUR ABOVE THE GROUP 1
RATE. CRANE OPERATOR WITH MAIN BOOM AND JIB 400' OR
LONGER: $3.00 PER HOUR ABOVE THE GROUP 1 RATE.
PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, FOURTH
OF JULY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS
DAY.....$ 31.23 25.25

IRON0025-001 06/01/2025

	Rates	Fringes
IRONWORKER: REINFORCING	$ 36.55	33.37
IRONWORKER: STRUCTURAL (EXCLUDING METAL BUILDING ERECTION)	$ 36.55	35.60

LABO0499-012 06/01/2025

	Rates	Fringes
LABORER: COMMON OR GENERAL; GRADE CHECKER; MASON TENDER - BRICK; MASON TENDER - CEMENT/CONCRETE; PIPELAYER; SANDBLASTER	$ 32.53	13.45

PAIN0845-001 06/01/2025

	Rates	Fringes
PAINTER: BRUSH, ROLLER, SPRAY AND PAPERHANGING	$ 28.75	18.68
PAINTER: DRYWALL FINISHING/TAPING	$ 28.32	16.88

PLAS0016-011 04/01/2014

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 24.64	12.88

PLUM0333-006 06/01/2025

	Rates	Fringes
PIPEFITTER, INCLUDES HVAC PIPE AND UNIT INSTALLATION FOOTNOTE: PAID HOLIDAYS: MEMORIAL DAY, INDEPENDENCE DAY AND LABOR DAY, IF THE EMPLOYEE WORKS THE WORK DAY PRECEDING AND FOLLOWING THE HOLIDAY UNLESS PROVEN ILLNESS OR INJURY PREVENTS THE EMPLOYEE FROM WORKING	$ 46.29	25.43
PLUMBER, EXCLUDES HVAC PIPE AND UNIT INSTALLATION		

FOOTNOTE: PAID HOLIDAYS: MEMORIAL DAY, INDEPENDENCE DAY AND LABOR DAY, IF THE EMPLOYEE WORKS THE WORK DAY PRECEDING AND FOLLOWING THE HOLIDAY UNLESS PROVEN ILLNESS OR INJURY PREVENTS THE EMPLOYEE FROM WORKING.....$ 46.29 25.43

ROOF0070-003 06/01/2023

	Rates	Fringes
ROOFER	$ 33.18	17.22

SFMI0669-001 01/01/2025

	Rates	Fringes
SPRINKLER FITTER (FIRE SPRINKLERS)	$ 41.34	27.39

SHEE0007-004 05/01/2024

	Rates	Fringes
POWER EQUIPMENT OPERATORS - HAZARDOUS WASTE REMOVAL:, AREA 2: GROUP 1 (AREA 2: LEVEL D WHEN CAPPING LANDFILL)	$ 42.74	21.53

SUMI2011-009 02/01/2011

	Rates	Fringes
IRONWORKER, ORNAMENTAL	$ 18.48	7.93
LABORER: LANDSCAPE & IRRIGATION	$ 8.00	0.00
METAL BUILDING ERECTOR	$ 16.92	6.32
OPERATOR: BACKHOE/EXCAVATOR/TRACKHOE	$ 21.34	7.57
OPERATOR: BULLDOZER	$ 20.63	8.21
OPERATOR: GRADER/BLADE	$ 22.00	6.29
OPERATOR: TRACTOR	$ 19.10	8.48
TRUCK DRIVER: DUMP TRUCK	$ 16.00	7.26
TRUCK DRIVER: LOWBOY TRUCK	$ 14.50	0.44
TRUCK DRIVER: TRACTOR HAUL TRUCK	$ 13.57	1.18

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts

regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.65 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract from May 11, 2026, through December 31, 2026. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", "SA", or "SC" denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The "SU" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by

computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

"SU" wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The "SA" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the "SA" identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via

email to dba.reconsideration@dol.gov or by mail to:
Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210
The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:
Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

==========

END OF GENERAL DECISION
"

PART 1 GENERAL

1.01 EXISTING CONDITIONS

A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of Contract Documents, as follows:

B. Geotechnical Report: Entitled Geotechnical Evaluation Report, dated July 23, 2026 by SME.

1. This report identifies properties of below grade conditions and offers recommendations for the design of foundations and pavement, prepared primarily for the use of Architect.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

GEOTECHNICAL EVALUATION REPORT

CATA BUILDING ADDITION AND RENOVATIONS
LANSING, MICHIGAN

SME Project Number: 098012.03
July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

2663 Eaton Rapids Road
Lansing, MI 48911-6310

T (517) 887-9181

www.sme-usa.com

July 23, 2026

Mr. Norm VanAlstine
Facilities Manager
Capital Area Transportation Authority
4615 Tranter Street
Lansing, Michigan 48910

Via E-Mail: NVanAlstine@cata.org

RE: Geotechnical Evaluation Report
CATA Building Addition and Renovations
511 South Washington Avenue
Lansing, Michigan 48933
SME Project 098012.03

Dear Mr. VanAlstine:

We have completed our geotechnical evaluation for the referenced project. This report presents the results of our observations and analyses, our geotechnical recommendations, and a discussion of potential construction considerations based on the information disclosed by the borings for the proposed elevator addition.

We appreciate this opportunity to be of service. If you have questions or require additional information, please contact me.

Sincerely,

SME

Alexandra R.C. Korinek, PE
Project Manager

Enclosure: SME Geotechnical Evaluation Report; Dated July 23, 2026

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

TABLE OF CONTENTS

1. INTRODUCTION 1
1.1 SITE CONDITIONS AND PROJECT DESCRIPTION 2
1.2 SUBSURFACE CONDITIONS 3
2. ANALYSIS AND RECOMMENDATIONS 4
2.1 SITE PREPARATION AND EARTHWORK 4
2.1.1 EXISTING FILL CONSIDERATIONS 4
2.1.2 GENERAL SITE SUBGRADE PREPARATION 5
2.1.3 ENGINEERED FILL REQUIREMENTS 5
2.2 FOUNDATIONS 6
2.2.1 SUBGRADE VERIFICATION 6
2.2.2 MAT FOUNDATIONS 6
2.2.3 BELOW-GRADE WALLS 7
2.3 SEISMIC SITE CLASS 7
2.4 PRELIMINARY PAVEMENT DESIGN RECOMMENDATIONS 7
2.4.1 SUBGRADE PREPARATION 8
2.4.2 PAVEMENT SECTIONS 9
3. EXCAVATION AND GROUNDWATER MANAGEMENT 10
4. EVALUATION PROCEDURES 10
4.1 FIELD EXPLORATION 10
4.2 LABORATORY TESTING 11
5. SIGNATURES 11

APPENDIX A
BORING LOCATION DIAGRAM (FIGURE NO. 1)
BORING LOG TERMINOLOGY
BORING LOGS (B1 THROUGH B3, B15 THROUGH B21, AND P1 THROUGH P5)
CORE PHOTOLOG (P1 THROUGH P5)
USACE DCP DATA SHEETS (P1 THROUGH P5)

APPENDIX B
FIELD TESTING PROCEDURES
LABORATORY TESTING PROCEDURES
LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

APPENDIX C
IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT
GENERAL COMMENTS

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

1. INTRODUCTION

This report presents the results of the geotechnical evaluation performed by SME for the proposed elevator addition and preliminary pavement recommendations for the CATA Building Addition and Renovations project. This evaluation was conducted in general accordance with the scope of services outlined in SME Proposal P02124.26, dated May 22, 2026 and Change Order No. 1 dated June 26, 2026. Our services for this evaluation were authorized by Capital Area Transportation Authority (CATA).

SME is also preparing a preliminary geotechnical evaluation report for the proposed future building addition for the subject project. This report will be submitted under separate cover.

SME received the following information which was used in the evaluation and preparation of this report:

- “08 Meeting Minutes-Master Planning 2025-06-04-Future Addition,” consisting of four pages documenting the proposed building addition plans.
- “10-C101-EXISTING CONDITIONS PLAN-PLAN,” consisting of one page depicting existing utilities at the project site.
- “10-C201-SITE LAYOUT PLAN-PLAN,” consisting of one page depicting the proposed pavement design for the project site.
- “35-A101-BASEMENT AND FIRST FLOOR PLANS,” consisting of one page depicting the existing building floor plans.
- “35-A201-EXTERIOR ELEVATIONS,” consisting of one page depicting the building exterior elevations from three sides.

SME completed 15 borings (B1 through B3, B15 through B21, and P1 through P5) at the project site on June 11, July 15, and July 20, 2026. Additional project borings B4 through B14 will be included in the referenced additional reports that will be provided under separate cover. Refer to the boring logs included in Appendix A for the specific depth of each individual boring. The approximate boring locations are depicted on Image 1 and on the Boring Location Diagram located in Appendix A (Figure No. 1). Soil descriptions and the field and laboratory test results are presented on the boring logs. Exploration and laboratory testing procedures are presented in Section 4.

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

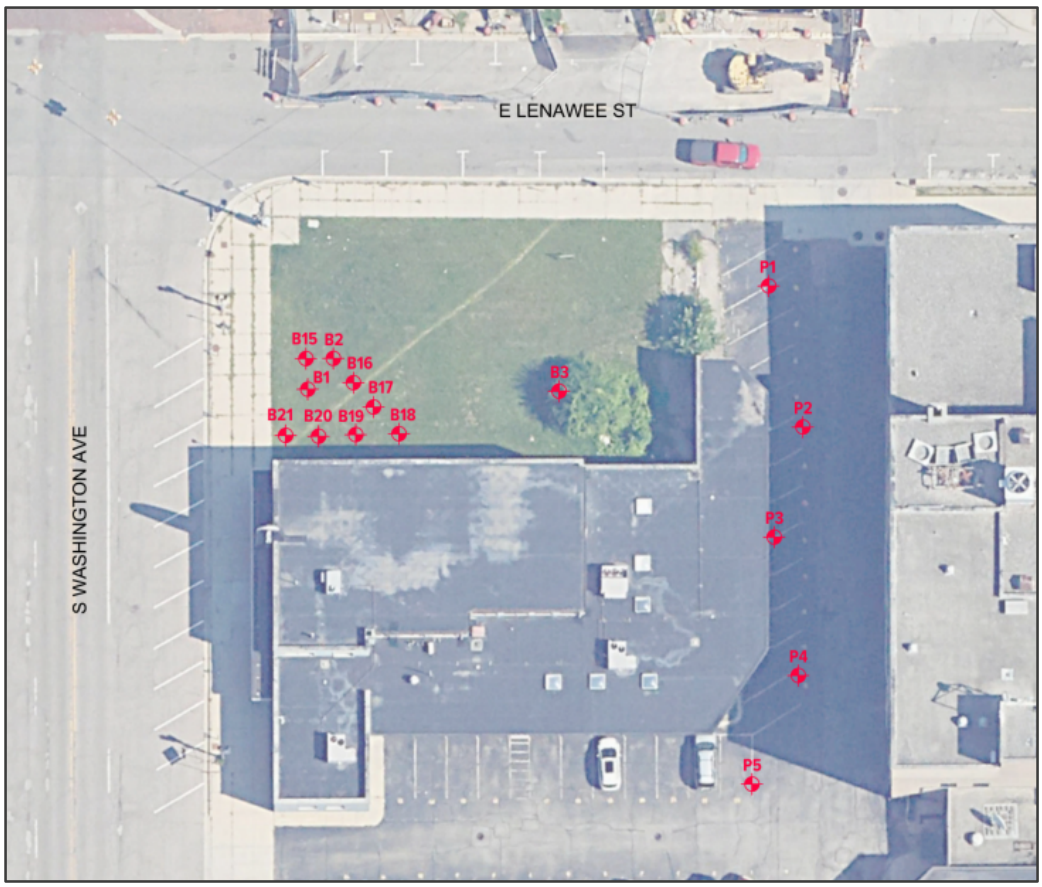


IMAGE 1: Excerpt from Figure No. 1 in Appendix A – Boring Location Diagram (north facing upward).

1.1 SITE CONDITIONS AND PROJECT DESCRIPTION

The project site is located at 511 South Washington Avenue in Lansing, Michigan. The site consists of an existing, two-story, slab-on-grade building, a grassy area north of the building, and a paved parking lot to the south and east of the site.

Based on the referenced documents, the site appears to be relatively flat with elevations ranging between 845 and 848 feet. Based on the provided information, the existing building footings in the area of the proposed elevator addition bear approximately 9.25 feet below the ground floor level of the existing building.

Based on historical aerial imagery, previous buildings were located on the north portion of the site. The buildings were demolished sometime in the 1980s and the site converted to green space since demolition. An aerial image of the historical building on the site from 1986 is shown in Image 2.

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

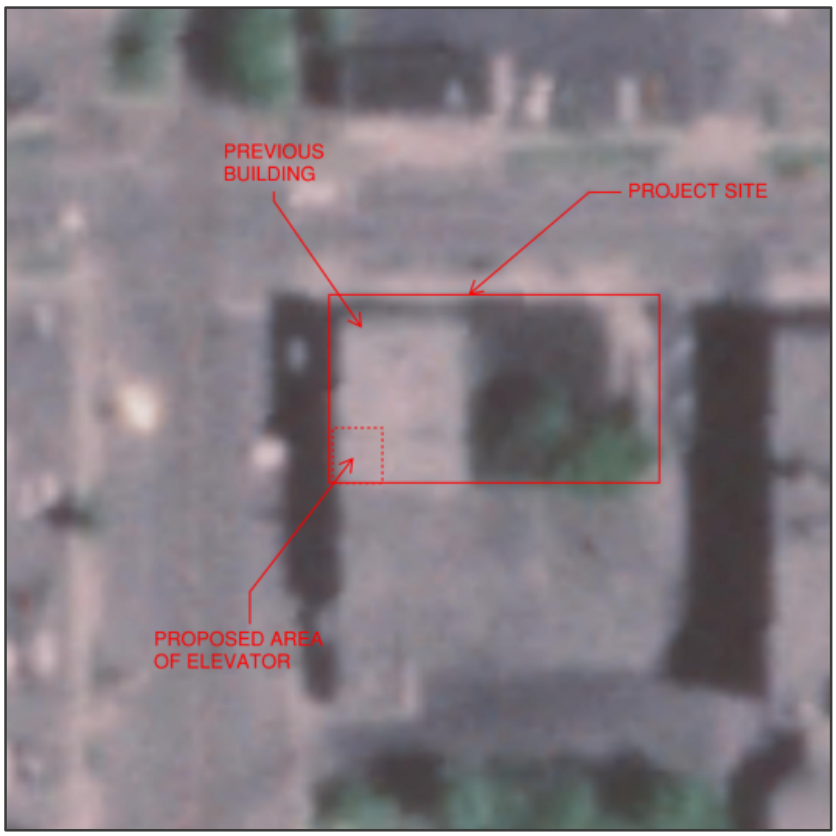


IMAGE 2: 1986 Aerial of the Project Site (north facing upward).

The project will consist of the design and construction of a proposed elevator addition that will extend off the northwest corner of the existing building. The proposed elevator shaft is planned to extend about 5 to 6 feet below the existing building's ground-floor elevation (GFE). The finish floor elevation of the proposed elevator addition will match that of the current building addition at approximately 847 to 848 feet.

Foundation loads were not provided. Based on our experience with similar projects, we anticipate the elevator addition will be supported on a mat foundation with foundation wall along the perimeter of the addition. We have assumed maximum wall loads for the elevator addition will be less than about 6 kips per foot. Please contact SME if our assumptions are incorrect.

The recommendations of this report are based on the information provided above and the results of the field and laboratory evaluation. Contact SME if the final design information is different than discussed herein.

1.2 SUBSURFACE CONDITIONS

Refer to the boring log for the soil conditions at the specific borings located within/near the proposed elevator addition. For the elevator addition, SME refers to borings B1 and B2 along with borings B15 through B21.

At the existing ground surface of the borings, the drillers encountered about 3 to 5 inches of topsoil. Please note that the thickness measurements of surficial topsoil are estimates only. If more detailed information regarding topsoil thickness(es) are required, we would recommend performing hand auger borings, or shallow test pits.

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

Below the surficial topsoil, we encountered existing fill to about 5.5 to 13.5 feet below existing grade, corresponding to approximate elevations 835.5 to 844.5 feet. The fill soils consisted of sand with varying amounts of silts as well as sandy lean clays. Debris pieces and/or fragments were encountered in portions of the existing fill. An obstruction was encountered within the fill at about 4 feet beneath the existing ground surface at boring B15, which was subsequently offset and redrilled. The existing sand fill was encountered in a loose to medium dense condition at borings B1 through B3 where penetration resistances were obtained. The existing clay fill exhibited soft to very stiff consistencies.

Below the existing fill, we encountered natural sands, silts, and clays that extended to the explored depths of the borings.

During drilling, groundwater was encountered at 24 feet below existing ground surface at Boring B1, which corresponds to approximately 18 feet below the bottom of the elevator. Groundwater was not observed upon completion of drilling operations. The absence of groundwater upon completion of the boring suggests this was a localized perched condition rather than a stabilized water table. Expect that seasonal changes may affect the groundwater level(s) in the future.

Refer to the Field Testing Procedures in Appendix B for additional information about groundwater level measurements. If more information regarding groundwater levels at this site is required, then we recommend performing additional subsurface assessment(s).

2. ANALYSIS AND RECOMMENDATIONS

2.1 SITE PREPARATION AND EARTHWORK

2.1.1 EXISTING FILL CONSIDERATIONS

The existing fill was likely associated with the previous development at the site. Based on the condition of the existing fill, some compaction effort was likely used when the fill was placed. However, we consider the existing fill to be undocumented because we are not aware of records that document fill placement and compaction operations, and uncontrolled because condition of portions of the existing fill.

The elevator addition will bear on a mat foundation that should bear at the same elevation as the existing adjacent building footings. Based on the borings and the provided information, we anticipate existing fill will generally be encountered at the design bottom of mat footing elevation. Since the existing fill extended no more than about 4 feet below the bottom of the existing building footing elevation, we believe the existing fill can generally be considered for support of the elevator pit mat foundation provided:

- The subgrade is properly evaluated and prepared as described in this report;
- Unsuitable fill is removed within the proposed elevator addition footprint and replaced with engineered fill; and
- The Owner accepts the associated increased risk associated with supporting the proposed elevator addition over the existing fill, which could include greater than typical total and/or differential settlement, resulting in differential movements. These risks can be reduced, but not eliminated, if SME evaluates the existing fill at the building addition subgrade.

Existing fill to remain in-place beneath the proposed elevator addition should be of sufficient strength and free of deleterious materials, such as excessive debris and organics. Where unsuitable clay fill of a shallow thickness (less than about 2 feet) is encountered at the design bearing level, these soils should be removed provided there is sufficient distance between the existing building footings and the proposed undercuts. Alternatively, the subgrade should be stabilized using coarse crushed aggregate described in Section 2.1.3. Unsuitable existing fill that cannot be improved in-place or suitably stabilized should be removed (i.e., undercut) and replaced with engineered fill that is placed and compacted per the

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

requirements outlined in this report. Excavations to remove existing fill must not extend beneath adjacent footings without first underpinning the existing building.

The recommendations provided in the following report sections are based on the assumption that existing fill will be tested, removed as needed, or suitably stabilized, and will generally remain in place beneath the proposed elevator addition. If the Owner does not accept the stated risks, the existing fill should be undercut from beneath the entire proposed elevator addition footprint. However, we anticipate underpinning the existing building footings will be required to completely remove the existing fill from below the proposed addition.

2.1.2 GENERAL SITE SUBGRADE PREPARATION

Reroute existing utilities that may be within the elevator footprint to outside of the building area. Remove abandoned utilities and backfill the resulting excavations with granular engineered fill. If it is necessary for existing utilities to be abandoned in-place, the utilities must not conflict with the proposed construction, they must be fully grouted, and the suitability of the existing backfill must be verified for structural support. Do not abandon utilities in-place within the zone of influence of proposed foundations.

The contractor needs to remove ponded surface water and prevent run-off from reaching foundation excavations and areas of prepared subgrade. The contractor needs to also establish positive surface drainage at the onset of construction to mitigate the potential for subgrade disturbance. To reduce the potential of subgrade disturbance across the site, restrict construction traffic to dedicated areas of the site that can be controlled and stabilized as needed.

2.1.3 ENGINEERED FILL REQUIREMENTS

Engineered fill needs to be free of frozen soil, significant organics and construction debris, potentially expansive and/or chemically active materials, particle sizes hindering compaction, cobbles, and boulders. If the proposed engineered fill soils contain more than four percent organics, or debris larger than 6 inches in nominal diameter, do not use soils for engineered fill. Also, if debris material is significantly variable in nature, suspect in origin, or greater than about five percent of the soil (by weight), do not use soils for engineered fill.

Spread fill in level layers with a loose thickness appropriate for the type of equipment used to obtain compaction, but not exceeding 9 inches thick. Thinner lifts will be required in confined spaces and where compaction is achieved with walk-behind rollers/compactors or plate compactors mounted on a backhoe or excavator (e.g., Ho-Pac®). Compact the fill to a minimum of 95 percent of the maximum dry density as determined in accordance with the Modified Proctor test. Compact sand fill with a smooth drum vibratory roller or vibratory plate compactors. Based on the small footprint of the proposed elevator and drainage requirements behind the elevator below-grade walls, the use of clay for engineered fill for backfill is not recommended.

Sands containing more appreciable amounts of silt or clay will be difficult to compact with smaller compaction equipment in confined areas such as utility trenches or as foundation excavation backfill as is not suitable where drainage is required. In confined areas, in areas where drainage is required, and in areas where compaction is accomplished primarily by hand-operated equipment, use an approved granular material, such as MDOT Class II granular material as backfill. Based on the boring, we anticipate the on-site natural soils with USCS designation “SP-SM” should mostly meet MDOT Class II gradational requirements and be suitable for reuse in areas requiring drainage backfill. However, due to the variability of the site soils, the contractor must use care in segregation excavated soils. SME should verify the suitability of existing site sands proposed for reuse as drainage fill, by performing gradation analyses during construction.

For subgrade improvements, use an open-graded crushed material with a maximum particle size of 1½ inches in diameter and no more than seven percent passing the No. 200 sieve. MDOT 6AA meets this

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

requirement. Spread the crushed material in layers not exceeding 12 inches and compact with a vibratory compactor until no further densification is observed. In cases where granular engineered fill will be placed over the crushed aggregate, choke the surface of the coarse crushed material with a layer of at least six inches of MDOT 21AA dense-graded aggregate and cover the surface with a suitable non-woven geotextile fabric to prevent migration of the granular engineered fill into the coarser crushed material.

2.2 FOUNDATIONS

2.2.1 SUBGRADE VERIFICATION

Geotechnical foundation design recommendations are provided based on the boring covering only a small area of the site. On-site observations and testing of the foundation subgrades are necessary to verify the subgrade exposed at the foundation bearing surface is consistent with the boring and is suitable for the design soil bearing pressure. By preparing this geotechnical evaluation report, SME is best suited to observe and test foundation subgrades during construction and to verify the geotechnical recommendations of this report and the geotechnical related design requirements of this project are incorporated into the construction. The recommendations of this report are based on the assumption SME will further evaluate the bearing soils during construction.

2.2.2 MAT FOUNDATIONS

Use a maximum net allowable soil bearing pressure of 2,000 psf for a mat foundation supporting the proposed elevator addition bearing on natural soils, tested, stabilized, and approved existing fill, or properly prepared engineered fill placed over these soils.

We recommend the mat foundation be constructed at the same elevation as the existing building footings to the south. The recommended bearing pressure assumes the subgrade is properly prepared, the foundations bear on suitable natural soils or properly prepared engineered fill, and a factor of safety of 3 or more.

We expect existing fill soils will generally be encountered at the design mat bearing elevation. Unsuitable fill soils that are encountered should be undercut and replaced with engineered fill provided there is suitable distance between the existing building footings and the proposed undercuts so as to not undermine the existing footings. Where existing fill soils are encountered that are unsuitable for the design bearing pressure and cannot be undercut without undermining the existing building footings, stabilize the unsuitable soils by placing and “charging” coarse crushed aggregate. If the bearing soils cannot be suitably stabilized, underpinning of the existing building footings will be required. Backfill undercuts with engineered fill consisting of approved import material, approved on-site soils, or crushed aggregate (for wet conditions, if applicable) to the design bearing elevation. Where undercutting is required, extend the undercut laterally on a two vertical to one horizontal slope from the edge of the foundation.

Situate foundations a minimum of 42 inches below final site grade in any unheated areas for protection against frost action during normal winters. However, the mat will match the existing building footing bearing elevations at about 9 feet beneath the existing ground surface. Form foundations in a vertical manner and do not allow them to "mushroom out" near the top. Remove any caved or loose soils from the foundation subgrade before placing concrete.

Once the foundation area is exposed, observe and test foundation subgrade conditions to verify suitable soils are encountered or improvements are done as needed prior to backfilling and foundation construction. The test method must be capable of testing the soils several feet below the bearing level. SME must be at the construction site to perform tests at foundation locations to verify the bearing pressure prior to constructing the foundations.

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

Exercise care when excavating adjacent to existing foundations to avoid undermining. New foundations need to bear at the same level where abutting next to existing foundations.

We estimate 1 inch or less of total settlement for the shallow mat foundation bearing on suitable natural soils or on engineered fill placed over suitable natural soils. The design engineer shall account for differential movements between the new mat and the adjacent existing building, which could equal the total settlement of new mat foundation. The settlement estimates provided are based on the available boring information, the recommended maximum net allowable soil bearing pressure, the referenced design structural loads, our experience with similar structures and soil conditions, and field verification of suitable bearing soils by SME.

2.2.3 BELOW-GRADE WALLS

We recommend the new elevator pit walls be backfilled with MDOT Class II granular material extending a minimum of 3 feet horizontally from the backside of the walls where there is no conflict/limitation with the existing structure(s). Retaining wall backfill that will support floor slabs and other improvements should be compacted to a minimum of 95 percent of the maximum dry density as determined by the Modified Proctor test. Care should be exercised during compaction of the wall backfill to avoid overstressing the walls. The retaining wall recommendations below are based on properly placed and compacted backfill that meets the gradational requirements of MDOT Class II granular material.

We recommend waterproofing the elevator pit foundations and below-grade walls.

For rigid walls backfilled with a free-draining granular material above the design groundwater level and with permanent drainage to a suitable stormwater outlet, and a level finish surface behind the wall, we recommend an at-rest fluid pressure of 60 psf (per foot of wall height) for design.

The earth pressures presented above are for a drained backfill. If permanent drainage is not installed, the elevator pit would also need to be designed to resist hydrostatic forces (e.g., uplift and lateral pressures from groundwater) as groundwater could collect in the sand backfill that will be surrounded by relatively low permeability sands and clays. Without drainage, we recommend sizing the elevator pit walls and foundations to resist an at-rest fluid pressure of 100 psf (per foot of wall height), and an uplift pressure of the unit weight of water (62.4 pounds per cubic-foot, pcf, plus a reasonable factor of safety) from the bottom of footing elevation to the top of the existing ground surface around the elevator pit.

Additional lateral wall loads resulting from surcharge loading and stockpiled materials should also be added to the above earth pressures. We recommend using a horizontal coefficient of 0.5 for at-rest conditions to calculate loads on walls due to surcharges. Use of these values requires a well-draining granular wall backfill as previously recommended (MDOT Class II granular material). Surcharge loads should be modeled as a uniform pressure distribution applied to the entire wall height.

2.3 SEISMIC SITE CLASS

Based on the subsurface information obtained from the boring to a maximum depth of 30 feet, seismic site Class D applies to this site in accordance with the most current version of the Michigan Building Code (MBC) referencing Table 20.3-1 in ASCE Standard ASCE/SEI 7.

2.4 PRELIMINARY PAVEMENT DESIGN RECOMMENDATIONS

Limited information regarding proposed pavements is available at this time. Based on conversations with Gary Runions, AIA of Progressive Companies, new pavements are requested to replace current pavement at the CATA office building.

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

We understand there is no formal trash disposal area planned at this time, however, if trash disposal is added to the project later, we recommend a heavy-duty section be included for that area. SME can provide those recommendations if needed.

No preliminary traffic type or counts for the site were provided. Once additional information is available, SME will provide an updated pavement design recommendation. The cross sections provided below are preliminary and only for planning/budgeting purposes.

Based on site usage, we assume most (if not all) of the pavements will be designed for standard-duty applications. We assume the pavements will consist predominantly of standard-duty asphalt for the entire parking lot and drive lanes.

Summary tables below assuming a pavement design life of 20 years.

TABLE 1: DESIGN PARAMETERS – STANDARD DUTY ASPHALT

PARAMETER	VALUE
Design Period	20 years
Traffic	50,000 ESALs
Design Reliability	85%
Standard Deviation	0.45 (flexible pavements)
Subgrade Resilient Modulus	3,000 pounds per square inch (psi)
Drainage Coefficient (aggregate base)	0.9
Initial Serviceability Index	4.2
Terminal Serviceability Index	2.0

2.4.1 SUBGRADE PREPARATION

Subgrade preparation for the new pavement profiles consists of the complete removal of the existing pavements, concrete below the exposed asphalt, and other surficial materials with subgrade preparation (i.e., a field evaluation of the condition of the exposed subgrade with occasional undercutting to remove and replace low-strength subgrade), and placement of new pavement layers. Protect utilities, curbs, buildings, and other existing structures to remain. Field locate existing utilities prior to excavation and/or trafficking and take the necessary precautions to work safely around active utilities.

We recommend subgrade preparation and the new aggregate base layer extend out to at least 12 inches beyond the edge of pavement or back of curbs to provide support for the outer edges of the pavement. Where existing curbs are to remain (if any), prepare the subgrade to the edge of the curb and protect the curb from damage/distress.

Prior to the placement of the aggregate base course, we recommend fine-grading the subgrade to slope downward toward the stormwater drainage structures. Fine-grading of the underlying subgrade will be critical to minimize low spots below the aggregate base where water can pond, likely resulting in moisture changes and undesirable early pavement distress. Fine-grading the subgrade is important for drainage of perched groundwater, and to achieve a uniform thickness of base course to be placed throughout each of the pavement sections. Also, we recommend installing underdrains at/through low spots in the prepared subgrade to facilitate drainage of perched groundwater.

We recommend testing the exposed subgrade for stability. Such testing involves a proofroll with a large piece of construction equipment. We recommend using a fully loaded tandem axle truck (50,000 lbs. minimum) for the proofroll test. Any loose or soft areas identified from the proofrolling will need to be

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

recompacted, undercut, and replaced with engineered fill, or stabilized by other means as dictated by the site conditions at the time of construction. We recommend the criteria for the proofroll be a maximum of 1/2 inch of deflection or rutting below the aggregate base layer (on the subgrade), and a maximum 1/4 inch of deflection or rutting on the aggregate base layer. A qualified geotechnical engineering firm must be on-site to observe the proofroll and make judgments regarding the suitability of the subgrade for pavement support.

Once the subgrade passes the final proofroll test, we recommend fine-grading the subgrade again and then placing the pavement layers soon thereafter to avoid further subgrade disturbance. If subgrade disturbance occurs, we recommend the subgrade be proofrolled again to evaluate the severity of disturbance and undercuts (where required) be performed to re-establish a suitably stable subgrade. It may be necessary to use crushed stone backfill, possibly in combination with a geogrid, to stabilize the subgrade, particularly during poor weather conditions. A qualified geotechnical engineering firm will need to determine the type and quantity of stabilization required based on site conditions during construction.

If engineered fill is required beneath the proposed pavements (to raise site grades), consider using a relatively clean and dense graded aggregate base material (e.g., additional MDOT 21AA crushed limestone), or possibly MDOT Class II sand, to facilitate drainage, and reduce time and effort during construction associated with subgrade preparation of the onsite soils (e.g., discing, drying, and compaction of clay soils).

2.4.2 PAVEMENT SECTIONS

Utilizing the previously described design parameters and the American Association of State Highway Transportation Officials (AASHTO) “Guide for Design of Pavement Structures” 1993 edition, the following tables present the layer material and thickness recommendations for the proposed standard-duty flexible pavement section:

TABLE 2: STANDARD-DUTY HMA PAVEMENT

LAYER	MATERIAL	THICKNESS (inches)
Bituminous Wearing	MDOT 5EML or 13A	2.0
Bituminous Leveling	MDOT 4EML or 13A	2.5
Aggregate Base	MDOT 21AA Crushed Limestone	9.0

NOTE: Structural coefficients assumed for HMA and aggregate base material are 0.42 and 0.14, respectively.

We recommend the asphalt mixture be modified to provide a minimum 60 percent crushed content. We recommend the final grade of asphalt cement be PG58-28 in the production of the 13A asphalt mixtures or PG64-22 for the EML mixes. We recommend Reclaimed Asphalt Pavement (RAP) be limited to MDOT Tier 1 (0 to 17 percent RAP binder by weight) for wearing course mixtures and MDOT Tier 2 (18 to 27 percent RAP binder by weight) for leveling course mixtures. We recommend designing the asphalt concrete mixtures for a target air void of 3.0 percent (per MDOT Special Provision 03SP501(H)) and compaction of 94 to 97 percent of theoretical maximum density as determined per ASTM D2041 “Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures”. We also recommend applying a bond coat of SS-1h emulsion between asphalt concrete layers at a rate of 0.1 gallons/s.y. Please contact SME if considering alternate asphalt mixes (e.g., for cosmetic purposes) for reevaluation of our recommendations as needed.

Partial construction of the pavements and use of the leveling course as a construction platform will likely result in premature damage resulting in repairs required prior to placing the final lift. We recommend developing specific haul and delivery routes and preparing separate staging areas.

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

3. EXCAVATION AND GROUNDWATER MANAGEMENT

Significant groundwater seepage is not anticipated to be a significant factor in the proposed elevator excavation. Seepage due to runoff or perched sources can likely be handled using standard sump pit and pumping procedures on a localized basis. A working surface of either crushed aggregate or crushed concrete may be required to protect the exposed subgrade where seepage is encountered.

We anticipate the elevator pit excavation can be excavated as an open excavation on the north and east sides of the excavation, i.e., the sides or banks of the excavations will be appropriately sloped back on a temporary basis in accordance with OSHA regulations for the soil conditions encountered. However, we anticipate a temporary earth retention system (TERS) will be required to facilitate the excavation along the west site boundary due to the depth of the excavation and the proximity to existing improvements. Where excavations cannot be safely sloped back on a temporary basis without encroaching into the road right-of-ways (ROW) or if temporary excavations threaten to undermine existing improvements, a TERS is required. The design of TERS should include a review of the potential effect of installation on adjacent improvements, such as the effect of vibrations necessary to install the system, and the associated potential for damage to utilities or the existing sidewalks or roadways. SME can assist you in the design of, or preparation of performance specifications for, temporary earth retention systems, if desired.

Based on the site history and boring log, there is potential for areas of undocumented fill with variable depths within the proposed building area. We recommend the bid documents require prospective contractors to include unit prices for excavating disturbed soils and other unsuitable soils and replacing them with engineered fill. Also, establish a contingency in the construction budget for this work. Actual quantities can be verified during construction by measuring excavation volumes, counting truck loads, or a combination of the two methods. SME can assist with estimating quantities for establishing the contingency if desired.

Take care during demolition and earthwork operations to protect adjoining and adjacent utility structures. Do not undermine existing structures. Where necessary, install temporary shoring/bracing or underpinning to properly shore/brace existing building and protect them from distress.

The contractor must provide safely sloped excavations or adequately constructed and braced shoring systems in accordance with federal, state and local safety regulations for individuals working in an excavation that may expose them to the danger of moving ground. If material is stored or heavy equipment is operated near an excavation, use appropriate shoring to resist the extra pressure due to the superimposed loads.

Handle, transport and dispose excavated materials and groundwater in accordance with applicable environmental regulatory requirements. Refer to the project environmental consultant for additional information regarding handling and/or disposal of onsite soils and/or groundwater.

4. EVALUATION PROCEDURES

4.1 FIELD EXPLORATION

The proposed number, location, and depth of the boring was determined by SME. SME located the borings in field and obtained the existing ground surface elevation at the boring locations using our hand-held global positioning system (GPS).

Borings B1 through B3 were advanced using a rotary drill rig equipped with continuous flight augers. Those boring included soil sampling based on Split-Barrel Sampling procedures. Borings B15 through B21 and P1 through P5 were advanced using a Geoprobe® rig that obtains continuous samples using a hydraulically driven vibratory hammer. Samples from these borings were collected in acetate liners.

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

Groundwater level measurements were recorded during and immediately after completion of the borings. After completion of drilling and obtaining groundwater level measurements, the boreholes were backfilled with auger cuttings. Borings in existing pavement areas were topped with asphalt cold patch.

The Field Testing Procedures in Appendix B provides more detailed descriptions of field tests typically performed by SME and referenced in this report.

Soil samples recovered from the field exploration were taken to our laboratory for further observations and testing.

Upon completion of the laboratory testing, boring log was prepared and include the soil descriptions, penetration resistances, pertinent field observations, and the results of the laboratory testing. The log also includes the estimated existing ground surface elevation. Explanations of symbols and terms used on the boring log are provided on the Boring Log Terminology sheet included in Appendix A.

Soil samples are normally retained in our laboratory for 60 days and are then disposed, unless instructed otherwise.

4.2 LABORATORY TESTING

The laboratory testing program consisted of visually classifying the recovered samples in accordance with ASTM D-2488. Based on the laboratory testing, we prepared soil descriptions and assigned a group symbol for the various soil strata observed based on the Unified Soil Classification System (USCS). In addition, moisture content and hand penetrometer tests were performed on portions of cohesive samples obtained.

The Laboratory Testing Procedures in Appendix B provides descriptions of the laboratory tests. The results of the laboratory tests are presented on the boring log and included in Appendix A.

5. SIGNATURES

PREPARED BY:

Logan S. Ross, EIT
Senior Staff Engineer

REVIEWED BY:

Paul E. Anderson, PE
Senior Project Engineer

REVIEWED BY:

Christopher G. Naida, PE
Senior Consultant

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

APPENDIX A

BORING LOCATION DIAGRAM (FIGURE NO. 1)
BORING LOG TERMINOLOGY
BORING LOGS (B1 THROUGH B3, B15 THROUGH B21, AND P1 THROUGH P5)
CORE PHOTOLOG (P1 THROUGH P5)
USACE DCP DATA SHEETS (P1 THROUGH P5)

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

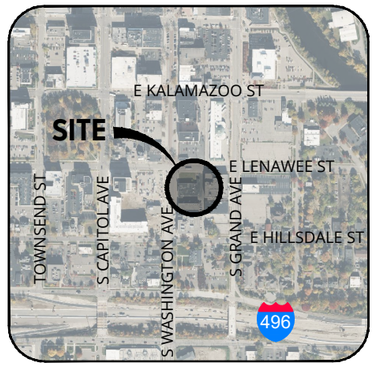
N
W E
S

0' 30' 60'

GRAPHIC SCALE: 1" = 30'

LEGEND

APPROXIMATE BORING LOCATION



LOCATION MAP

NOT TO SCALE

NOTE:

1. AERIAL IMAGE TAKEN FROM GOOGLE EARTH PRO WITH AN IMAGE DATE OF 8-2-2023.

SME®
www.sme-usa.com

SME AND THE SME LOGO ARE FEDERALLY REGISTERED MARKS.
© 2026 SOIL AND MATERIALS ENGINEERS, INC.

Project
CATA BUILDING ADDITION AND RENOVATIONS

Project Location
LANSING, MICHIGAN

Sheet Name
BORING LOCATION DIAGRAM

No.	Revision Date

Date
07-21-2026

CADD
J. BLAKE

Designer
A. KORINEK

Project
098012.03

Figure No.
1

DRAWING NOTE: SCALE DEPICTED IS MEANT FOR 11" X 17" AND WILL SCALE INCORRECTLY IF PRINTED ON ANY OTHER SIZE MEDIA

NO REPRODUCTION SHALL BE MADE WITHOUT THE PRIOR CONSENT OF SME

FILE LOCATION: \\sme-inc\px3\WIP\098012.03\CADD\Design Files\BLD\Rev0\098012.03-BLD.dwg

PLOT DATE: July 21, 2026 - 2:26 PM - julie.blake

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING LOG TERMINOLOGY

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size.)			
GRAVEL More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravel (Less than 5% fines)	GW	Well-graded gravel; gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravel; gravel-sand mixtures, little or no fines
	Gravel with fines (More than 12% fines)	GM	Silty gravel; gravel-sand-silt mixtures
		GC	Clayey gravel; gravel-sand-clay mixtures
SAND 50% or more of coarse fraction larger than No. 4 sieve size	Clean Sand (Less than 5% fines)	SW	Well-graded sand; sand-gravel mixtures, little or no fines
		SP	Poorly-graded sand; sand-gravel mixtures, little or no fines
	Sand with fines (More than 12% fines)	SM	Silty sand; sand-silt-gravel mixtures
		SC	Clayey sand; sand-clay-gravel mixtures
FINE-GRAINED SOIL (50% or more of material is smaller than No. 200 sieve size.)			
SILT AND CLAY Liquid limit less than 50%		ML	Inorganic silt; sandy silt or gravelly silt with slight plasticity
		CL	Inorganic clay of low plasticity; lean clay, sandy clay, gravelly clay
		OL	Organic silt and organic clay of low plasticity
SILT AND CLAY Liquid limit 50% or greater		MH	Inorganic silt of high plasticity, elastic silt
		CH	Inorganic clay of high plasticity; fat clay
		OH	Organic silt and organic clay of high plasticity
HIGHLY ORGANIC SOIL		PT	Peat and other highly organic soil

Topsoil · Void · Sandstone · Asphalt Concrete · Glacial Till · Siltstone · Aggregate Base · Coal · Limestone · Portland Cement Concrete · Shale · Fill

LABORATORY CLASSIFICATION CRITERIA

GW	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line or PI less than 7	
SW	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{D_{30}^2}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for SW	
SM	Atterberg limits below "A" line or PI less than 4	Above "A" line with PI between 4 and 7 are borderline cases requiring use of dual symbols
SC	Atterberg limits above "A" line or PI less than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent.....GW, GP, SW, SP
More than 12 percent.....GM, GC, SM, SC
5 to 12 percent.....Cases requiring dual symbols

- SP-SM or SW-SM (SAND with Silt or SAND with Silt and Gravel)
- SP-SC or SW-SC (SAND with Clay or SAND with Clay and Gravel)
- GP-GM or GW-GM (GRAVEL with Silt or GRAVEL with Silt and Sand)
- GP-GC or GW-GC (GRAVEL with Clay or GRAVEL with Clay and Sand)

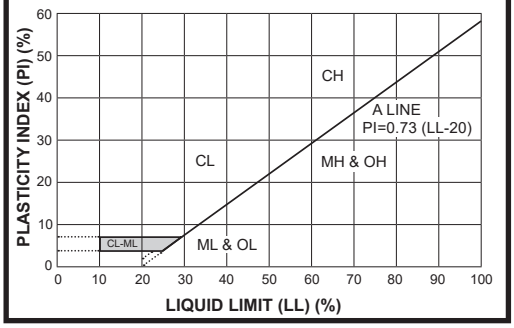
If the fines are CL-ML:

- SC-SM (SILTY CLAYEY SAND or SILTY CLAYEY SAND with Gravel
- SM-SC (CLAYEY SILTY SAND or CLAYEY SILTY SAND with Gravel
- GC-GM (SILTY CLAYEY GRAVEL or SILTY CLAYEY GRAVEL with Sand)

PARTICLE SIZES

Boulders		-	Greater than 12 inches
Cobbles		-	3 inches to 12 inches
Gravel-	Coarse	-	3/4 inches to 3 inches
	Fine	-	No. 4 to 3/4 inches
Sand-	Coarse	-	No. 10 to No. 4
	Medium	-	No. 40 to No. 10
	Fine	-	No. 200 to No. 40
Silt and Clay		-	Less than (0.074 mm)

PLASTICITY CHART



VISUAL MANUAL PROCEDURE

When laboratory tests are not performed to confirm the classification of soils exhibiting borderline classifications, the two possible classifications would be separated with a slash, as follows:

For soils where it is difficult to distinguish if it is a coarse or fine-grained soil:

- SC/CL (CLAYEY SAND to Sandy LEAN CLAY)
- SM/ML (SILTY SAND to SANDY SILT)
- GC/CL (CLAYEY GRAVEL to Gravelly LEAN CLAY)
- GM/ML (SILTY GRAVEL to Gravelly SILT)

For soils where it is difficult to distinguish if it is sand or gravel, poorly or well-graded sand or gravel; silt or clay; or plastic or non-plastic silt or clay:

- SP/GP or SW/GW (SAND with Gravel to GRAVEl with Sand)
- SC/GC (CLAYEY SAND with Gravel to CLAYEY GRAVEL with Sand)
- SM-GM (SILTY SAND with GRAVEL to SILTY GRAVEL with Sand)
- SW/SP (SAND or SAND with Gravel)
- GP/GW (GRAVEL or GRAVEL with Sand)
- SC/SM (CLAYEY to SILTY SAND)
- GM/GC (SILTY to CLAYEY GRAVEL)
- CL/ML (SILTY CLAY)
- ML/CL (CLAYEY SILT)
- CH/MH (FAT CLAY to ELASTIC SILT)
- CL/CH (LEAN to FAT CLAY)
- MH/ML (ELASTIC SILT to SILT)

DRILLING AND SAMPLING ABBREVIATIONS

2ST	-	Shelby Tube - 2" O.D.
3ST	-	Shelby Tube - 3" O.D.
AS	-	Auger Sample
GS	-	Grab Sample
LS	-	Liner Sample
NR	-	No Recovery
PM	-	Pressuremeter
RC	-	Rock Core diamond bit, NX size, except where noted
SB	-	Split Barrel Sample 1-3/8" I.D., 2" O.D., except where noted
VS	-	Vane Shear
WS	-	Wash Sample

OTHER ABBREVIATIONS

N.E.	-	Not Encountered
WOH	-	Weight of Hammer
WOR	-	Weight of Rods
SP	-	Soil Probe
PID	-	Photo Ionization Device
FID	-	Flame Ionization Device

DEPOSITIONAL FEATURES

Parting	-	as much as 1/16-inch thick
Seam	-	1/16-inch to 1/2-inch thick
Layer	-	1/2-inch to 12 inches thick
Stratum	-	greater than 12 inches thick
Pocket	-	deposit of limited lateral extent
Lens	-	lenticular deposit
Hardpan/Till	-	an unstratified, consolidated or cemented mixture of clay, silt, sand and/or gravel, the size/shape of the constituents vary widely
Lacustrine	-	soil deposited by lake water
Mottled	-	soil irregularly marked with spots of different colors that vary in number and size
Varved	-	alternating partings or seams of silt and/or clay
Occasional	-	one or less per foot of thickness
Frequent	-	more than one per foot of thickness
Interbedded	-	strata of soil or beds or rock lying between or alternating with other strata of a different nature

DESCRIPTION OF RELATIVE QUANTITIES

The visual-manual procedure uses the following terms to describe the relative quantities of notable foreign materials, gravel, sand or fines:

Trace	-	particles are present but estimated to be less than 5%
Few	-	5 to 10%
Little	-	15 to 25%
Some	-	30 to 45%
Mostly	-	50 to 100%

CLASSIFICATION TERMINOLOGY AND CORRELATIONS

Cohesionless Soils

Relative Density	N_{60} (N-Value) (Blows per foot)
Very Loose	0 to 4
Loose	5 to 10
Medium Dense	11 to 30
Dense	31 to 50
Very Dense	51 to 80
Extremely Dense	Over 81

Cohesive Soils

Consistency	N_{60} (N-Value) (Blows per foot)	Undrained Shear Strength (kips/ft^2)
Very Soft	< 2	0.25 or less
Soft	2 - 4	> 0.25 to 0.50
Medium	5 - 8	> 0.50 to 1.0
Stiff	9 - 15	> 1.0 to 2.0
Very Stiff	16 - 30	> 2.0 to 4.0
Hard	> 30	> 4.0 or greater

Standard Penetration 'N-Value' = Blows per foot of a 140-pound hammer falling 30 inches on a 2-inch O.D. split barrel sampler, except where noted. N60 values as reported on boring logs represent raw N-values corrected for hammer efficiency only.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B1

BORING DEPTH: 30 feet

PROJECT NAME: CATA Building Addition and Renovations **PROJECT NUMBER:** 098012.03

CLIENT: Capital Area Transportation Authority **PROJECT LOCATION:** Lansing, Michigan

DATE STARTED: 06/11/2026 **COMPLETED:** 06/11/2026 **BORING METHOD:** Note 3

DRILLER: WN/MB **RIG NO.:** 552 CME-55 **LOGGED BY:** EJP **CHECKED BY:** ARCK

Hammer Efficiency 78.4%
Hammer Cal. Date 05/13/2025
Latitude 42.72841
Longitude -84.55205
Elevation ~850.0'

ELEV (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL	RECOVERY LENGTH (IN)	BLOW COUNTS/6"	N60	DRY DENSITY (PCF) / MC / PL-LL	SHEAR STRENGTH (KSF)	REMARKS
	0	6 inches of TOPSOIL	SB1		12	3 9 9	24		HAND PENE.	
	0.5	849.5							TORVANE SHEAR	
		FILL - Fine to Medium SAND with Silt and Gravel - Brown and Dark Brown - Moist - Medium Dense to Loose (SP-SM)	SB2		16	4 2 3	7		UNC. COMP.	
845	5	5.5				2 8			VANE SHEAR (PK)	
		844.5	SB3		17	3 3 2	7		VANE SHEAR (REM)	
		Fine to Medium CLAYEY SAND - Brown - Moist - Loose (SC)				2			TRIAXIAL (UU)	
			SB4		22	2 3 4	9			
840	10					6				
		14.0				7				
		836.0	SB5		18	8 11	25	11	4	
		LEAN CLAY with Sand - Brown to Gray at 19 feet - Very Stiff to Hard (CL)								
835	15									
			SB6		18	12 11 16	35	10	4.5+	
830	20									
		24.0								
		826.0	SB7		18	9 13 11	31	17		- Sample SB7 was too disturbed to perform a shear strength test.
		Fine to Medium SILTY SAND - Brown - Wet - Dense (SM)								
825	25									
		28.5								
		821.5	SB8		18	6 14 14	37	8	4.5+	
		LEAN CLAY - Gray - Hard (CL)								
		30.0								
820	30	820.0								
		END OF BORING AT 30 FEET.								

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	24'	826.0'
AT END OF BORING	N.E.	

CAVE IN DEPTH: 15' 835.0'

BACKFILL METHOD: Auger Cuttings capped with EPCO hole plug.

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. Solid-stem augers were used to advance the borehole to 5 feet below the ground surface. Hollow-stem augers were then used from 5 feet to the explored depth of the boring.
4. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B2

BORING DEPTH: 30 feet

PROJECT NAME: CATA Building Addition and Renovations **PROJECT NUMBER:** 098012.03

CLIENT: Capital Area Transportation Authority **PROJECT LOCATION:** Lansing, Michigan

DATE STARTED: 06/11/2026 **COMPLETED:** 06/11/2026 **BORING METHOD:** Note 3

DRILLER: WN/MB **RIG NO.:** 552 CME-55 **LOGGED BY:** EJP **CHECKED BY:** ARCK

Hammer Efficiency 78.4%
Hammer Cal. Date 05/13/2025
Latitude 42.72843
Longitude -84.55203
Elevation ~849.0'

ELEV (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL	RECOVERY LENGTH (IN)	BLOW COUNTS/6"	N60	DRY DENSITY (PCF) / MC / PL-LL	SHEAR STRENGTH (KSF)	REMARKS
		2 inches of TOPSOIL								
848.8	0	0.2	SB1		12	3 9 9	24	8	4.5+	
		FILL - LEAN CLAY - Trace Gravel - Frequent Sand Seams - Dark Brown - Very Stiff (CL)	SB2			6 4 2	5			- Driller did not report the recovery length for sample SB2.
847.0	2.0					2 2				
845		FILL - Fine to Medium SAND with Silt and Gravel - Frequent Brick Fragments and Silt Seams - Brown and Dark Brown - Moist - Loose to Medium Dense (SP-SM)	SB3		16	3 5 3 4	10			
840	5		SB4		20	3 5 8 6	17			
835.5	13.5									
835	10	Sandy SILT - Brown - Wet - Medium Dense (ML)	SB5		18	3 6 7	17			
830.5	18.5									
830	15	LEAN CLAY with Sand - Occasional Silt Layers - Gray - Hard (CL)	SB6		18	7 9 13	29	9	4.25	
824.5	24.5		SB7		18	12 10 9	25	12	4.5+	
825	20	Fine to Coarse SAND with Silt and Gravel - Brown - Wet - Medium Dense (SP-SM)								
820.5	28.5									
820	25	Fine to Coarse SAND - Occasional Clay Seams - Gray - Wet - Medium Dense (SP)	SB8		18	5 6 9	20			
819.0	30.0									
	30	END OF BORING AT 30 FEET.								

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	13.5'	835.5'
AT END OF BORING	See Notes	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Auger Cuttings capped with EPCO hole plug.

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. Solid-stem augers were used to advance the borehole to 5 feet below the ground surface. Hollow-stem augers were then used from 5 feet to the explored depth of the boring. Mud was added to annulus of augers 15 feet below the ground surface. Therefore, obtaining an accurate water level after completion of drilling was not possible.

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B3

BORING DEPTH: 30 feet

PROJECT NAME: CATA Building Addition and Renovations **PROJECT NUMBER:** 098012.03

CLIENT: Capital Area Transportation Authority **PROJECT LOCATION:** Lansing, Michigan

DATE STARTED: 06/11/2026 **COMPLETED:** 06/11/2026 **BORING METHOD:** Note 3

DRILLER: WN/MB **RIG NO.:** 552 CME-55 **LOGGED BY:** EJP **CHECKED BY:** ARCK

Hammer Efficiency 78.4%
Hammer Cal. Date 05/13/2025
Latitude 42.72841
Longitude -84.55179
Elevation ~848.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL	RECOVERY LENGTH (IN)	BLOW COUNTS/6"	REMARKS
848	0	2 inches of TOPSOIL	SB1		18	13 7 5	
	0.2	847.8					
845		FILL - Fine to Coarse SAND with Gravel - Brown and Dark Brown - Moist - Medium Dense (SP)	SB2		24	3 3 4	
	1.8	846.2					
	5	FILL - Fine to Medium SILTY SAND - Brown - Loose (SM)	SB3		16	3 3 3	
840	8.0	840.0					
		Sandy LEAN CLAY - Trace Gravel - Brown - Medium (CL)	SB4		24	3 3 5	
	9.5	838.5					
	10	Fine to Medium CLAYEY SAND - Frequent Clay Layers - Moist to Wet - Loose to Medium Dense (SC)	SB5		18	4 5 14	- Odors noted at sample SB5.
835							
	15						
830	18.5	829.5	SB6		18	5 12 15	
		LEAN CLAY - Gray - Hard (CL)					
	20						
825	23.5	824.5	SB7		18	10 22 22	
		Fine to Coarse SILTY SAND with Gravel - Brown - Wet - Very Dense (SM)					
	25						
820	28.5	819.5	SB8		18	6 11 15	
		LEAN CLAY - Occasional Sand Seams - Gray - Hard (CL)					
	30	30.0 818.0					
		END OF BORING AT 30 FEET.					

BLOW COUNTS/6": ○ N60 (10 20 30 40)

DRY DENSITY (PCF) (90 100 110 120): ◆ MC; PL-LL (10 20 30 40)

SHEAR STRENGTH (KSF) (1 2 3 4): ▲ HAND PENE. ■ TORVANE SHEAR ● UNC. COMP. □ VANE SHEAR (PK) ✕ VANE SHEAR (REM) ◆ TRIAXIAL (UU)

N60 values: 16, 9, 8, 8, 25, 35, >> 57, 34

DRY DENSITY values: 16, 11, 9

SHEAR STRENGTH values: 1, 4.5+, 4.5+

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
▽ DURING BORING	14'	834.0'
▼ AT END OF BORING	See Notes	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Note 4

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. Solid-stem augers were used to advance the borehole to 5 feet below the ground surface. Hollow-stem augers were then used from 5 feet to the explored depth of the boring. Mud was added to annulus of augers 15 feet below the ground surface. Therefore, obtaining an accurate water level after completion of drilling was not possible.
4. Borehole backfilled with auger cuttings to 15 feet below the ground surface and bentonite chips above 15 feet to the ground surface.

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B15

BORING DEPTH: 12 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/15/2026 **COMPLETED:** 07/15/2026
BORING METHOD: Direct Push
OPERATOR: CT **RIG NO.:** Geoprobe
LOGGED BY: SD **CHECKED BY:** JL

Latitude 42.72843
Longitude 84.55204
Elevation ~848.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL	DRY DENSITY (PCF) / MC / PL-LL	SHEAR STRENGTH (KSF)	REMARKS
845	0	3 inches of TOPSOIL 0.3 — 847.7					
		FILL - Fine to Coarse SAND with Silt - Frequent Roots - Brown - Moist - (SP-SM) 3.0 — 845.0	LS1		MC 14	HAND PENE. 1.75	
	5	FILL - Fine to Medium SILTY SAND - Frequent Asphalt Pieces - Brown - Moist - (SM) 4.0 — 844.0					- Refusal at 4 feet, offset and blind probe to 4 feet
		FILL - Fine to Medium CLAYEY SAND - Occasional Cinders - Dark Brown - Moist - (SC) 6.0 — 842.0	LS2		MC 19	TORVANE SHEAR 0.5	
840		FILL - Sandy LEAN CLAY - Brown - Stiff to Soft (CL)					
	10	11.0 — 837.0	LS3				
		Fine to Medium CLAYEY SAND - Brown - Moist - (SC) 12.0 — 836.0					
835		END OF BORING AT 12 FEET.					
	15						
830							
	20						
825							
	25						
820							

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	N.E.	
AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B16

BORING DEPTH: 12 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/15/2026 **COMPLETED:** 07/15/2026 **BORING METHOD:** Direct Push
OPERATOR: CT **RIG NO.:** Geoprobe **LOGGED BY:** SD **CHECKED BY:** JL

Latitude 42.72841
Longitude 84.55201
Elevation ~848.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
	0	2 inches of TOPSOIL		
	0.2	847.8		
		FILL - Fine SAND with Silt - Occasional - Brown - Moist - (SP-SM)	LS1	
845	3.0	845.0		
		FILL - Fine to Coarse SILTY SAND and Gravel - Frequent Clay Layers, and Asphalt and Brick Fragments - Brown - Moist - (SM)	LS2	
	5			
	7.0	841.0		
840		FILL - Sandy LEAN CLAY - Frequent Sand with Silt Layers - Occasional Cinders - (CL)	LS3	
	10			
	10.5	837.5		
		Fine to Medium SAND with Silt - Brown - Moist - (SP-SM)		
	11.5	836.5		
835		Sandy SILT - Brown - Moist - (ML)		
	12.0	836.0		
		END OF BORING AT 12 FEET.		
	15			
830				
	20			
825				
	25			
820				

DRY DENSITY (PCF): 90 100 110 120; MC; PL-LL; 10 20 30 40
SHEAR STRENGTH (KSF): HAND PENE.; TORVANE SHEAR; UNC. COMP.; VANE SHEAR (PK); VANE SHEAR (REM); TRIAXIAL (UU); 1 2 3 4
REMARKS

18
10
1.5
3

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	N.E.	
AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B17

BORING DEPTH: 12 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/15/2026 **COMPLETED:** 07/15/2026
BORING METHOD: Direct Push
OPERATOR: CT **RIG NO.:** Geoprobe
LOGGED BY: SD **CHECKED BY:** JL

Latitude 42.72839
Longitude 84.55199
Elevation ~848.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
	0	3 inches of TOPSOIL		
	0.3	847.7		
	1.3	FILL - Fine SAND - Brown - Moist - (SP)	LS1	
	1.3	846.7		
845		FILL - Fine to Medium SILTY SAND - Occasional Brick Fragments - Brown - Moist - (SM)		
	5			
	5.5	842.5		
		FILL - Sandy LEAN CLAY - Occasional Sand Layers - Brown - Stiff (CL)	LS2	
840				
	10		LS3	
	11.3	836.7		
		Sandy SILT - Brown - Moist - (ML)		
	12.0	836.0		
835		END OF BORING AT 12 FEET.		
	15			
830				
	20			
825				
	25			
820				

DRY DENSITY (PCF): 90 100 110 120
MC / PL-LL: 10 20 30 40
SHEAR STRENGTH (KSF): 1 2 3 4
▲ HAND PENE.
■ TORVANE SHEAR
● UNC. COMP.
□ VANE SHEAR (PK)
✕ VANE SHEAR (REM)
◆ TRIAXIAL (UU)

LS2: ◆15 ▲2
LS3: ◆12 ▲1.5

REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
▽ DURING BORING	N.E.	
▼ AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B18

BORING DEPTH: 12 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/15/2026 **COMPLETED:** 07/15/2026 **BORING METHOD:** Direct Push
OPERATOR: CT **RIG NO.:** Geoprobe **LOGGED BY:** SD **CHECKED BY:** JL

Latitude 42.72838
Longitude 84.55196
Elevation ~847.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
846.7	0.0	3 inches of TOPSOIL		
846.7	0.3	FILL - Fine to Medium SAND - Brown - Moist - (SP)	LS1	
843.5	3.5	FILL - Fine SILTY SAND - Frequent Brick and Asphalt Fragments - Brown - Moist - (SM)	LS2	
841.0	6.0	FILL - Sandy LEAN CLAY - Occasional Sand Seams and Layers - Brown - Stiff (CL)	LS3	
835.7	11.3	Fine SAND with Silt - Brown - Moist - (SP-SM)		
835.0	12.0	END OF BORING AT 12 FEET.		

DRY DENSITY (PCF): 90 100 110 120; MC; PL-LL; 10 20 30 40
SHEAR STRENGTH (KSF): HAND PENE.; TORVANE SHEAR; UNC. COMP.; VANE SHEAR (PK); VANE SHEAR (REM); TRIAXIAL (UU); 1 2 3 4

LS2: MC 26; HAND PENE. 1.5
LS3: MC 16; HAND PENE. 1

REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	N.E.	
AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B19

BORING DEPTH: 12 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/15/2026 **COMPLETED:** 07/15/2026
BORING METHOD: Direct Push
OPERATOR: CT **RIG NO.:** Geoprobe
LOGGED BY: SD **CHECKED BY:** JL

Latitude 42.72838
Longitude 84.55201
Elevation ~847.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
		5 inches of TOPSOIL		
	0.4	846.6		
845		FILL - Fine to Medium - Brown - Moist	LS1	
	2.0	845.0		
		FILL - Fine to Medium SAND - Occasional Clay Seams, Cinders, and Roots - Brown - Moist - (SP)		
	4.0	843.0		
	5	FILL - Sandy LEAN CLAY - Frequent Brick Fragments - Brown - Stiff (CL)	LS2	
	6.5	840.5		
840		FILL - LEAN CLAY with Sand - Occasional Cinders - Brown - Stiff (CL)		
	10.0	837.0	LS3	
	10	FILL - Fine to Coarse CLAYEY SAND - Brown - Moist - (SC)		
	11.0	836.0		
835		Fine to Medium SAND - Brown - Moist - (SP)		
	12.0	835.0		
		END OF BORING AT 12 FEET.		
	15			
830				
	20			
825				
	25			
820				

DRY DENSITY (PCF): 90 100 110 120
MC / PL-LL: 10 20 30 40
SHEAR STRENGTH (KSF): 1 2 3 4
▲ HAND PENE.
■ TORVANE SHEAR
● UNC. COMP.
□ VANE SHEAR (PK)
✕ VANE SHEAR (REM)
◆ TRIAXIAL (UU)

SAMPLE	MC	HAND PENE.
LS2	15	1.5
	16	2
LS3	20	1.5

REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
▽ DURING BORING	N.E.	
▼ AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B20

BORING DEPTH: 12 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/15/2026 **COMPLETED:** 07/15/2026 **BORING METHOD:** Direct Push
OPERATOR: CT **RIG NO.:** Geoprobe **LOGGED BY:** SD **CHECKED BY:** JL

Latitude 42.72838
Longitude 84.55204
Elevation ~848.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
	0	5 inches of TOPSOIL		
	0.4	847.6		
		FILL - Fine SAND with Silt - Brown - Moist - (SP-SM)	LS1	
	1.1	846.9		
845		FILL - Fine to Medium SILTY SAND - Occasional Brick Fragments and Cinders - (SM)		
	5		LS2	
	7.0	841.0		
840		FILL - Sandy LEAN CLAY - Frequent Cinders - Dark Brown to Brown - Soft (CL)		
	10		LS3	
	11.5	836.5		
		Fine SAND - Brown - Moist - (SP)		
	12.0	836.0		
835		END OF BORING AT 12 FEET.		
	15			
830				
	20			
825				
	25			
820				

DRY DENSITY (PCF): 90 100 110 120
MC / PL-LL: 10 20 30 40
SHEAR STRENGTH (KSF): 1 2 3 4
▲ HAND PENE.
■ TORVANE SHEAR
● UNC. COMP.
□ VANE SHEAR (PK)
✕ VANE SHEAR (REM)
◆ TRIAXIAL (UU)

MC: 20 (LS2), 19 (LS3)
TORVANE SHEAR: 0.5 (LS2), 0.5 (LS3)

REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	N.E.	
AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING B21

BORING DEPTH: 12 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/15/2026 **COMPLETED:** 07/15/2026 **BORING METHOD:** Direct Push
OPERATOR: CT **RIG NO.:** Geoprobe **LOGGED BY:** SD **CHECKED BY:** JL

Latitude 42.72838
Longitude 84.55208
Elevation ~848.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
	0	3 inches of TOPSOIL		
	0.3	847.7		
		FILL - Fine SAND with Silt - Frequent Roots - Brown - Moist - (SP-SM)	LS1	
845	1.3	846.7		
		FILL - Fine to Medium SILTY SAND - Occasional Silt Layers - Brown - Moist - (SM)		
	5			
	6.5	841.5	LS2	
		FILL - Sandy LEAN CLAY - Occasional Brick Pieces - Medium (CL)		
840	10			
	10.3	837.7	LS3	
		Fine SILTY SAND - Brown - Moist - (SM)		
	12.0	836.0		
835		END OF BORING AT 12 FEET.		
	15			
830				
	20			
825				
	25			
820				

DRY DENSITY (PCF): 90 100 110 120
MC / PL-LL: 10 20 30 40
SHEAR STRENGTH (KSF): 1 2 3 4
▲ HAND PENE.
■ TORVANE SHEAR
● UNC. COMP.
□ VANE SHEAR (PK)
✕ VANE SHEAR (REM)
◆ TRIAXIAL (UU)

MC: 13, 17
TORVANE SHEAR: 0.5
HAND PENE.: 1

REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
▽ DURING BORING	N.E.	
▼ AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING P1

BORING DEPTH: 3.7 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/20/2026 **COMPLETED:** 07/20/2026 **BORING METHOD:** Direct Push
OPERATOR: SMM **RIG NO.:** Geoprobe **LOGGED BY:** SMM **CHECKED BY:** ARCK

Latitude 42.72848
Longitude 84.55158
Elevation ~844.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
	0.3	4 inches of ASPHALT		
	0.9	7 inches of AGGREGATE BASE - Fine to Coarse SILTY SAND with Gravel - Gray - Moist - (SM)		
	1.8	FILL - Fine to Medium CLAYEY SAND - Occasional Silt Seams - Few Gravel - Gray and Brown - Moist - (SC)		
	2.2	FILL - Fine to Medium SAND with Silt - Brown - Moist - (SP-SM)	LS1	
	2.8	FILL - Fine to Medium SILTY SAND - Few Gravel - Brown - Moist - (SM)		
	3.3	FILL - Fine to Medium SAND with Silt - Brown - Moist - (SP-SM)		
	3.7	FILL - Fine to Medium SILTY SAND - Few Gravel - Brown - Moist - (SM)		
840		END OF BORING AT 3.7 FEET.		
835				

WATER LEVELS | SYMBOLIC PROFILE | REMARKS

DRY DENSITY (PCF): 90 100 110 120
MC / PL-LL: 10 20 30 40

SHEAR STRENGTH (KSF): 1 2 3 4
- HAND PENE.
- TORVANE SHEAR
- UNC. COMP.
- VANE SHEAR (PK)
- VANE SHEAR (REM)
- TRIAXIAL (UU)

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	N.E.	
AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING P2

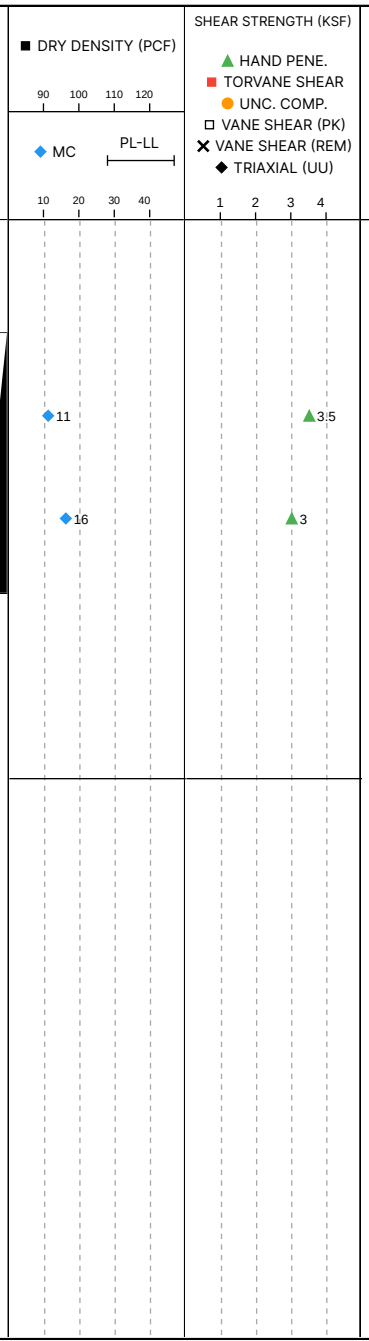
BORING DEPTH: 3.3 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/20/2026 **COMPLETED:** 07/20/2026
BORING METHOD: Direct Push
OPERATOR: SMM **RIG NO.:** Geoprobe
LOGGED BY: SMM **CHECKED BY:** ARCK

Latitude 42.72837
Longitude 84.55155
Elevation ~845.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
		4 inches of ASPHALT 0.3 / 844.7		
		7 inches of CONCRETE 0.9 / 844.1		
		FILL - Fine to Medium CLAYEY SAND - Few Gravel - Brown and Gray - Moist - (SC) 1.4 / 843.6		
		2 inches of CONCRETE FRAGMENTS 1.6 / 843.4		
		FILL - Sandy LEAN CLAY - Occasional Asphalt Millings and Brick Fragments - Brown - Very Stiff (CL) 1.9 / 843.1	LS1	
		FILL - Sandy LEAN CLAY - Brown - Very Stiff (CL) 2.9 / 842.1		
		FILL - Fine to Medium SILTY SAND - Few Gravel - Brown - Moist - (SM) 3.3 / 841.7		
840	5	END OF BORING AT 3.3 FEET.		



REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	N.E.	
AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING P3

BORING DEPTH: 3.8 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/20/2026 **COMPLETED:** 07/20/2026
BORING METHOD: Direct Push
OPERATOR: SMM **RIG NO.:** Geoprobe
LOGGED BY: SMM **CHECKED BY:** ARCK

Latitude 42.72829
Longitude 84.55157
Elevation ~846.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
		4.25 inches of ASPHALT		
	0.3	845.7		
		7.25 inches of CONCRETE		
	1.0	845.0		
845		FILL - Sandy LEAN CLAY - Gray - Stiff (CL)		
	1.2	844.8		
		FILL - Fine to Medium SAND with Silt - Brown - Moist - (SP-SM)		
	1.5	844.5		
		FILL - Sandy LEAN CLAY - Brown - Very Stiff (CL)		
	1.9	844.1		
		FILL - Fine to Medium SILTY SAND - Brown - Moist - (SM)	LS1	
	2.6	843.4		
		FILL - Fine to Medium SAND with Silt - Brown - Moist - (SP-SM)		
	3.5	842.5		
		FILL - Fine to Medium CLAYEY SAND - Brown - Moist - (SC)		
	3.8	842.2		
		END OF BORING AT 3.8 FEET.		
	5			
840				

DRY DENSITY (PCF): 90 100 110 120
MC / PL-LL: 10 20 30 40
SHEAR STRENGTH (KSF): 1 2 3 4
HAND PENE. / TORVANE SHEAR / UNC. COMP. / VANE SHEAR (PK) / VANE SHEAR (REM) / TRIAXIAL (UU)

MC: 4 at 845; 12 at 844.5
HAND PENE.: 1.5 at 844.8; 3 at 844.5

REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	N.E.	
AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING P4

BORING DEPTH: 2.7 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/20/2026 **COMPLETED:** 07/20/2026
BORING METHOD: Direct Push
OPERATOR: SMM **RIG NO.:** Geoprobe
LOGGED BY: SMM **CHECKED BY:** ARCK

Latitude 42.72819
Longitude 84.55155
Elevation ~846.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
		2 inches of ASPHALT 0.2 — 845.8		
845		7 inches of AGGREGATE BASE - Fine to Medium SILTY SAND - Brown and Gray - Moist - (SM) 0.8 — 845.3		
		FILL - Sandy LEAN CLAY - Occasional Black Silt Seams - Brown - Very Stiff (CL) 1.1 — 844.9	LS1	
		4 inches of AGGREGATE BASE - Fine to Coarse SILTY SAND with Gravel - Gray - Moist - (SM) 1.4 — 844.6		
		FILL - Sandy LEAN CLAY - Brown - Hard (CL) 2.3 — 843.8		
		FILL - Fine to Medium SAND with Silt - Brown - Moist - (SP-SM) 2.5 — 843.5		
		FILL - Fine to Medium CLAYEY SAND - Brown - Moist - (SC) 2.7 — 843.3		
		END OF BORING AT 2.7 FEET.		
840	5			

DRY DENSITY (PCF): 90 100 110 120
MC / PL-LL: 10 20 30 40
SHEAR STRENGTH (KSF): 1 2 3 4
HAND PENE. 3.25
TORVANE SHEAR
UNC. COMP.
VANE SHEAR (PK)
VANE SHEAR (REM)
TRIAXIAL (UU)
MC 12
MC 15
VANE SHEAR (REM) 4

REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
DURING BORING	N.E.	
AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes:
1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

BORING P5

BORING DEPTH: 3.3 feet

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NUMBER: 098012.03
CLIENT: Capital Area Transportation Authority
PROJECT LOCATION: Lansing, Michigan

DATE STARTED: 07/20/2026 **COMPLETED:** 07/20/2026
BORING METHOD: Direct Push
OPERATOR: SMM **RIG NO.:** Geoprobe
LOGGED BY: SMM **CHECKED BY:** ARCK

Latitude 42.72811
Longitude 84.55160
Elevation ~847.0'

ELEVATION (FT)	DEPTH (FT)	MATERIAL DESCRIPTION	SAMPLE TYPE / NO.	SAMPLE INTERVAL
		3 inches of ASPHALT		
		0.3 — 846.7		
		7 inches of CONCRETE		
		0.8 — 846.2		
845		FILL - Sandy LEAN CLAY - Frequent Asphalt Millings and Coal Seams - Gray - Stiff (CL)	LS1	
		2.8 — 844.2		
	5	FILL - Fine to Medium CLAYEY SAND - Brown - Moist - (SC)		
		3.3 — 843.7		
840		END OF BORING AT 3.3 FEET.		

DRY DENSITY (PCF): 90 100 110 120
MC ◆ 16
PL-LL
10 20 30 40

SHEAR STRENGTH (KSF)
▲ HAND PENE. ▲ 1.5
■ TORVANE SHEAR
● UNC. COMP.
□ VANE SHEAR (PK)
✕ VANE SHEAR (REM)
◆ TRIAXIAL (UU)
1 2 3 4

REMARKS

GROUNDWATER & BACKFILL INFORMATION

	DEPTH (ft)	ELEV (ft)
▽ DURING BORING	N.E.	
▼ AT END OF BORING	N.E.	
CAVE IN DEPTH:	N/A	N/A

BACKFILL METHOD: Sand and Gravel

Notes: 1. The indicated stratification lines are approximate. The in-situ transitions between materials may be gradual.
2. The colors depicted on the symbolic profile are solely for visualization purposes and do not necessarily represent the in-situ colors encountered.
3. N.E. means "Not Encountered".

Date Printed: July 23, 2026

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

PHOTO NO. 1: Boring P1 - 4 inches of Asphalt

PHOTO NO. 2: Boring P2 - 4 inches of Asphalt and 7 inches of Concrete

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

PHOTO NO. 3: Boring P3 - 4.25 inches of Asphalt and 7.25 inches of Concrete

PHOTO NO. 4: Boring P4 - 2 inches of Asphalt

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

PHOTO NO. 5: Boring P5 - 3 inches of Asphalt and 7 inches of Concrete

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

SME

PAVEMENT CORE LOG AND USACE DCP DATA

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NO.: 098012.03
LOCATION: Lansing, Michigan
CLIENT: Capital Area Transportation Authority
DATE: 7/20/26
BY: SMM

PROBE/CORE: P1
STREET:
LANE:
STATION:
OFFSET:
GROUND EL:

PAVEMENT AND SUBSURFACE CONDITIONS

Layer, in. From	Layer, in. To	Layer Thickness, in.	Description	Comment
0	4	4	ASPHALT PAVEMENT	Intact
4	11	7	AGGREGATE BASE	
			SEE NOTE 1	

Depth to Groundwater From Ground Surface Upon Completion: See Note 1

NOTES:
1) See Boring Logs for soil and groundwater description.
2) USACE DCP refusal at approximate depth of 6 inches.

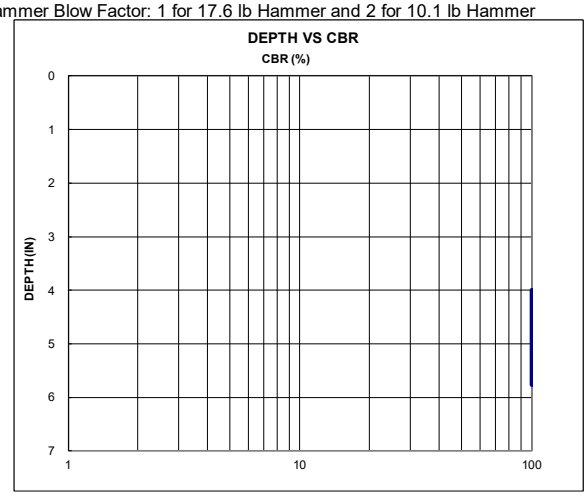
DCP TEST RESULTS

Depth to start of test from ex. ground surface: 4 inches

No. of Blows	Pen. (mm)	Blow Set (mm)	Pen./Blow (mm)	Blow Factor	Depth from Surface (inches)	CBR (%)	Comment	Soil Type	Average CBR (%)
0	255	0		1					
60	295	40	1	1	5.6	100.0	Good	Agg Base	
50	300	5	0	1	5.8	100.0	Good	Agg Base	100

Hammer Blow Factor: 1 for 17.6 lb Hammer and 2 for 10.1 lb Hammer

*CBR breaklines are based on blow counts performed prior to sampling. Depths are approximate.



Support Conditions	CBR Range for Aggregate Base Materials (%)	CBR Range for Subgrade Soils (%)
Good	>80	>10
Marginal	60 to 80	5 to 10
Poor	30 to 60	3 to 5
Very Poor	<30	<3

**Core picture shows approximate thickness

© 2026 SME

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

SME

PAVEMENT CORE LOG AND USACE DCP DATA

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NO.: 098012.03
LOCATION: Lansing, Michigan
CLIENT: Capital Area Transportation Authority
DATE: 7/20/26
BY: SMM

PROBE/CORE: P2
STREET:
LANE:
STATION:
OFFSET:
GROUND EL:

PAVEMENT AND SUBSURFACE CONDITIONS

Layer, in. From	Layer, in. To	Layer Thickness, in.	Description	Comment
0	4	4	ASPHALT PAVEMENT	Delaminated at 2.5"
4	11	7	PORTLAND CEMENT CONCRETE	Intact - No Resteel Observed
			SEE NOTE 1	

Depth to Groundwater From Ground Surface Upon Completion: See Note 1

NOTES:
1) See Boring Logs for soil and groundwater description.

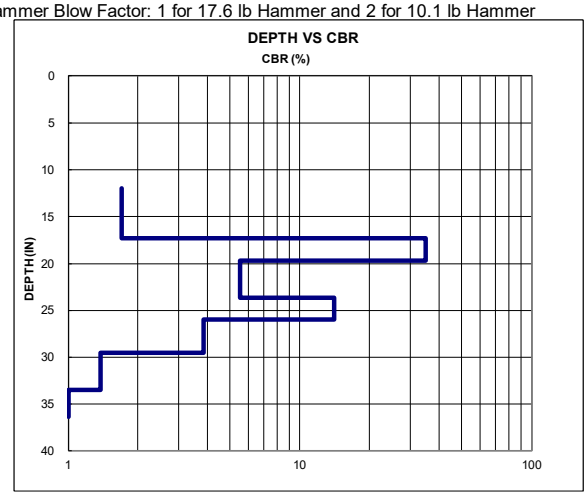
DCP TEST RESULTS

Depth to start of test from ex. ground surface: 12 inches

No. of Blows	Pen. (mm)	Blow Set (mm)	Pen./Blow (mm)	Blow Factor	Depth from Surface (inches)	CBR (%)	Comment	Soil Type	Average CBR (%)
0	475	0							
3	610	135	45	1	17.3	1.7	Very Poor	Subgrade	1.7
9	670	60	7	1	19.7	34.9	Good	Subgrade	
4	770	100	25	1	23.6	5.5	Marginal	Subgrade	
4	830	60	15	1	26.0	14.1	Good	Subgrade	15.9
3	920	90	30	1	29.5	3.8	Poor	Subgrade	
2	1020	100	50	1	33.5	1.4	Very Poor	Subgrade	
1	1095	75	75	1	36.4	0.6	Very Poor	Subgrade	2

Hammer Blow Factor: 1 for 17.6 lb Hammer and 2 for 10.1 lb Hammer

*CBR breaklines are based on blow counts performed prior to sampling. Depths are approximate.



Support Conditions	CBR Range for Aggregate Base Materials (%)	CBR Range for Subgrade Soils (%)
Good	>80	>10
Marginal	60 to 80	5 to 10
Poor	30 to 60	3 to 5
Very Poor	<30	<3

**Core picture shows approximate thickness

© 2026 SME

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

SME

PAVEMENT CORE LOG AND USACE DCP DATA

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NO.: 098012.03
LOCATION: Lansing, Michigan
CLIENT: Capital Area Transportation Authority
DATE: 7/20/26
BY: SMM

PROBE/CORE: P3
STREET:
LANE:
STATION:
OFFSET:
GROUND EL:

PAVEMENT AND SUBSURFACE CONDITIONS

Layer, in.		Layer Thickness, in.	Description	Comment
From	To			
0	4.25	4.25	ASPHALT PAVEMENT	Deteriorated below 3"
4.25	11.5	7.25	PORTLAND CEMENT CONCRETE	Intact - No Resteel Observed
			SEE NOTE 1	

Depth to Groundwater From Ground Surface Upon Completion: See Note 1

NOTES:
1) See Boring Logs for soil and groundwater description.

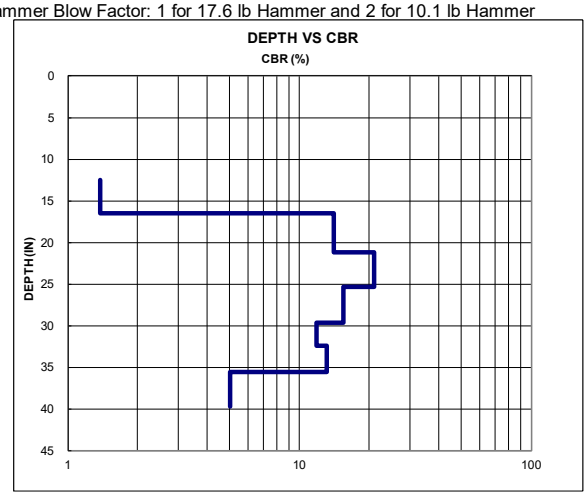
DCP TEST RESULTS

Depth to start of test from ex. ground surface: 12.5 inches

No. of Blows	Pen. (mm)	Blow Set (mm)	Pen./Blow (mm)	Blow Factor	Depth from Surface (inches)	CBR (%)	Comment	Soil Type	Average CBR (%)
0	460	0							
2	560	100	50	1	16.4	1.4	Very Poor	Subgrade	1.4
8	680	120	15	1	21.2	14.1	Good	Subgrade	
10	785	105	11	1	25.3	21.0	Good	Subgrade	
8	895	110	14	1	29.6	15.5	Good	Subgrade	
4	965	70	18	1	32.4	11.8	Good	Subgrade	
5	1045	80	16	1	35.5	13.1	Good	Subgrade	
4	1150	105	26	1	39.7	5.0	Marginal	Subgrade	13.6

Hammer Blow Factor: 1 for 17.6 lb Hammer and 2 for 10.1 lb Hammer

*CBR breaklines are based on blow counts performed prior to sampling. Depths are approximate.



Support Conditions	CBR Range for Aggregate Base Materials (%)	CBR Range for Subgrade Soils (%)
Good	>80	>10
Marginal	60 to 80	5 to 10
Poor	30 to 60	3 to 5
Very Poor	<30	<3

**Core picture shows approximate thickness

© 2026 SME

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

SME

PAVEMENT CORE LOG AND USACE DCP DATA

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NO.: 098012.03
LOCATION: Lansing, Michigan
CLIENT: Capital Area Transportation Authority
DATE: 7/20/26
BY: SMM

PROBE/CORE: P4
STREET:
LANE:
STATION:
OFFSET:
GROUND EL:

PAVEMENT AND SUBSURFACE CONDITIONS

Layer, in. From	Layer, in. To	Layer Thickness, in.	Description	Comment
0	2	2	ASPHALT PAVEMENT	Intact
2	9	7	AGGREGATE BASE	
			SEE NOTE 1	

Depth to Groundwater From Ground Surface Upon Completion: See Note 1

NOTES:
1) See Boring Logs for soil and groundwater description.
2) USACE DCP refusal at approximate depth of 5.5 inches. SME probed past obstruction and began USACE DCP testing at depth of approximately 13 inches.

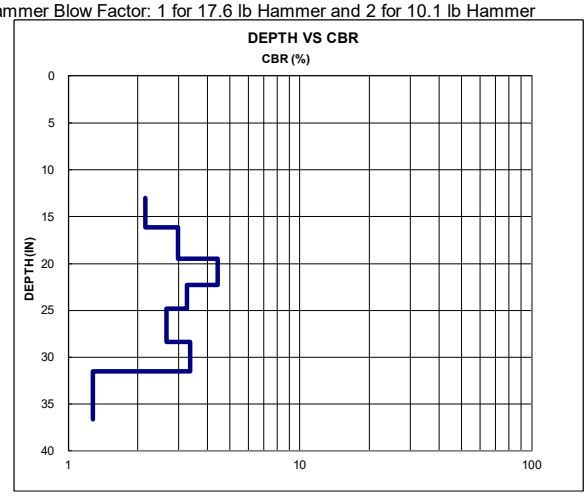
DCP TEST RESULTS

Depth to start of test from ex. ground surface: 13 inches

No. of Blows	Pen. (mm)	Blow Set (mm)	Pen./Blow (mm)	Blow Factor	Depth from Surface (inches)	CBR (%)	Comment	Soil Type	Average CBR (%)
0	510	0							
2	590	80	40	1	16.1	2.2	Very Poor	Subgrade	
5	675	85	17	2	19.5	3.0	Very Poor	Subgrade	
5	745	70	14	2	22.3	4.4	Poor	Subgrade	
4	810	65	16	2	24.8	3.3	Poor	Subgrade	
5	900	90	18	2	28.4	2.7	Very Poor	Subgrade	
5	980	80	16	2	31.5	3.4	Poor	Subgrade	
5	1110	130	26	2	36.6	1.3	Very Poor	Subgrade	2.7

Hammer Blow Factor: 1 for 17.6 lb Hammer and 2 for 10.1 lb Hammer

*CBR breaklines are based on blow counts performed prior to sampling. Depths are approximate.



Support Conditions	CBR Range for Aggregate Base Materials (%)	CBR Range for Subgrade Soils (%)
Good	>80	>10
Marginal	60 to 80	5 to 10
Poor	30 to 60	3 to 5
Very Poor	<30	<3

**Core picture shows approximate thickness

© 2026 SME

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

SME

PAVEMENT CORE LOG AND USACE DCP DATA

PROJECT NAME: CATA Building Addition and Renovations
PROJECT NO.: 098012.03
LOCATION: Lansing, Michigan
CLIENT: Capital Area Transportation Authority
DATE: 7/20/26
BY: SMM

PROBE/CORE: P5
STREET:
LANE:
STATION:
OFFSET:
GROUND EL:

PAVEMENT AND SUBSURFACE CONDITIONS

Layer, in. From	Layer, in. To	Layer Thickness, in.	Description	Comment
0	3	3	ASPHALT PAVEMENT	Deteriorated below 2"
3	10	7	PORTLAND CEMENT CONCRETE	Intact - No Restell Observed
			SEE NOTE 1	

Depth to Groundwater From Ground Surface Upon Completion: See Note 1

NOTES:
1) See Boring Logs for soil and groundwater description.

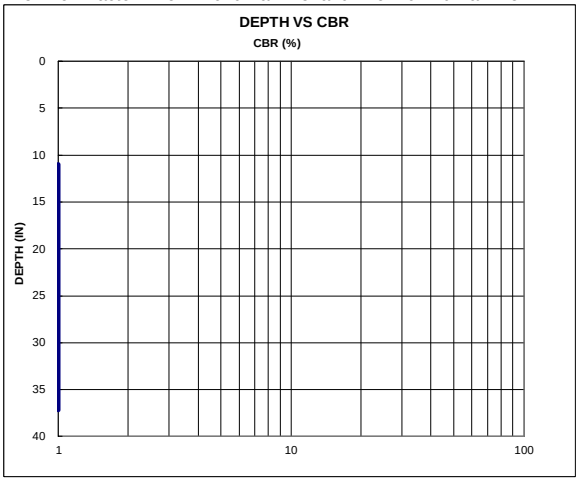
DCP TEST RESULTS

Depth to start of test from ex. ground surface: 11 inches

No. of Blows	Pen. (mm)	Blow Set (mm)	Pen./Blow (mm)	Blow Factor	Depth from Surface (inches)	CBR (%)	Comment	Soil Type	Average CBR (%)
0	485	0							
3	600	115	38	2	15.5	0.6	Very Poor	Subgrade	
3	710	110	37	2	19.9	0.6	Very Poor	Subgrade	
2	790	80	40	2	23.0	0.5	Very Poor	Subgrade	
3	900	110	37	2	27.3	0.6	Very Poor	Subgrade	
1	1070	170	170	2	34.0	0.0	Very Poor	Subgrade	
1	1150	80	80	2	37.2	0.1	Very Poor	Subgrade	0.4

Hammer Blow Factor: 1 for 17.6 lb Hammer and 2 for 10.1 lb Hammer

*CBR breaklines are based on blow counts performed prior to sampling. Depths are approximate.



Support Conditions	CBR Range for Aggregate Base Materials (%)	CBR Range for Subgrade Soils (%)
Good	>80	>10
Marginal	60 to 80	5 to 10
Poor	30 to 60	3 to 5
Very Poor	<30	<3

**Core picture shows approximate thickness

© 2026 SME

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

APPENDIX B

FIELD TESTING PROCEDURES
LABORATORY TESTING PROCEDURES
LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

FIELD TESTING PROCEDURES

STANDARD PENETRATION TESTS

The Standard Penetration Tests (SPT) generally follow the American Standard Test Method (ASTM) D-1586 “Standard Test Method for SPT and Split-Barrel Sampling of Soils”. It is typically performed using a 2-inch O.D. split-spoon sampler, which is driven to obtain samples at selected intervals. The number of blows of a 140-pound hammer dropping 30 inches is recorded for each of three or four, 6-inch penetration intervals for an 18 or 24-inch drive at each sample location. The sum of blow counts for the second and third 6-inch penetration intervals equals the raw (uncorrected) N-value for a given sample interval (i.e. 5-4-2, N = 6). We periodically calibrate SME’s drill rig auto-hammers. The hammer efficiency determined from this calibration is used to calculate the corrected N-values (N_{60}), as reported on the logs. When sampling in rock or hard soil, where a penetration of 6 inches or less was obtained for 50 hammer blows, the actual blow count and depth of penetration in inches for that interval is recorded (i.e. 50/2”). When sampling in very loose or very soft soil, where a penetration of more than 6 inches is obtained for a single hammer blow, the actual depth of penetration for that hammer blow is recorded (i.e. 1-0-0). Where the sampling equipment advanced under its own weight, “WOH” (weight of hammer) and the corresponding penetration depth are shown on the boring logs.

INFILTRATION TESTS

In-situ infiltration tests generally follow the double-ring infiltrometer field test procedures outlined in Appendix E in the Low Impact Development (LID) Manual for Michigan (dated 2008) prepared by the Southeast Michigan Council of Governments (SEMCOG). This procedure is also referenced in the States of Indiana, Ohio, and Kentucky applicable local manuals. The double-ring infiltrometer field test set-up consists of performing a boring or test pit to the test depth, installing an outer 6-inch-diameter standpipe and an inner 4-inch-diameter standpipe, and then driving the standpipes a suitable distance, per the referenced manual, below the bottom of the test depth. Soil is pre-soaked with approximately 12 inches of water for approximately one hour. The water drop rate per the last 30 minutes of the soaking period determines the subsequent interval for infiltration readings (i.e., 10- or 30-minute intervals). After completing the soaking period, standpipes are filled with water to a height of approximately 12 inches above the test depth, and water level changes in the standpipes are measured with a water level measuring tape with markings every 0.01 feet and recorded after the time intervals. This procedure is repeated until a minimum of four consecutive height changes within 1/4-inch of one another are measured. The height drop that occurred during the final time interval or the average stabilized rate is used to calculate the infiltration rate. After completion of the double-ring infiltrometer field test, the standpipes are removed, and the test hole is backfilled.

DYNAMIC CONE PENETROMETER (DCP)

USACE TESTS

Dynamic Cone Penetrometer (DCP) testing designed by the U.S. Army Corps of Engineers (USACE) is conducted to estimate the California Bearing Ratio (CBR) of the subgrade materials and existing pavement sub-layers. The USACE DCP consists of a 5/8-inch-diameter steel rod with a steel cone attached to one end driven by a sliding dual mass hammer. The rate of penetration per blow is measured at selected penetration, or hammer drop, intervals. CBR is an index commonly used in pavement design that provides an indication of subgrade support characteristics. The Corps of Engineers developed relationships to estimate the CBR value from the results of the USACE DCP test.

SME DCP TESTS

SME Dynamic Cone Penetrometer (DCP) test consists of dropping a 10-pound slide hammer that falls 24 inches and drives a rod with a 1-1/8-inch conical tip into the subgrade. The number of hammer drops required to drive the cone penetrometer are recorded for each six-inch increment and are used to estimate the relative density of the granular soils. The DCP blow counts were used to estimate Standard Penetration Test resistances (N-values) commonly used in geotechnical evaluations, based on empirical correlations developed by SME.

© 2025 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

PRESSUREMETER TESTING

Pressuremeter testing in the field models the static loading characteristics of the soil and the resulting analyses based on pressuremeter test results are considered to be a more accurate indicator of the ultimate foundation bearing pressure, and associated settlement, than analyses using empirical correlations based on dynamic test methods, such as the Standard Penetration Test (SPT) and/or dynamic cone penetrometer (DCP) tests. Results of the SPT and/or DCP were recorded, at the pressuremeter test locations and depths to provide additional information on the relative density of the in-place subgrade, and to correlate the pressuremeter test results with data obtained at other site locations. The pressuremeter test depths were selected to provide representative information corresponding to the bearing soils anticipated within the stress influence zone of the proposed footings at the design bearing levels.

In the pressuremeter test, a radial expandable cylindrical probe is inserted into a prepared borehole at the selected testing depth. After obtaining N-values from driving a standard 2-inch O.D. diameter split-spoon sampler, borehole preparation consisted of then driving a 3-inch O.D. split-spoon sampler (or using a roller bit with wash rotary methods) to develop the appropriately sized borehole diameter for the pressuremeter probe. The cylindrical probe was inserted into the borehole to the sampling depth and then expanded against the sides of the borehole by pressurizing fluid within the system using a hydraulic screw-jack console positioned at the ground surface.

Simultaneous measurements of pressure and volume change within the probe were observed at the pressuremeter console and recorded. The pressure was incrementally increased until the maximum probe volume was reached, or until significant creep deformation (soil failure) was observed.

MUCK PROBE

The muck probe consists of a smooth rod about 1/2-inch in diameter manually pushed into the subgrade until encountering significant resistance (determined “by feel”), presumably indicating the bottom of organic soil stratum.

VANE SHEAR TESTING

In-situ vane shear testing generally follows the American Standard Test Method (ASTM) D-2573 “Standard Test Method for Field Vane Shear Test in Cohesive Soil”. Per the ASTM, the field vane shear test consists of placing a four-bladed vane (sized based on the expected cohesive soil strength) in the undisturbed soil and rotating it from the surface at a constant rate to determine the torque required to shear a cylindrical surface with the vane. This torque, or moment, is then converted to the unit shearing resistance of the failure surface by limit equilibrium analysis. Friction of the vane rod and instrument is either minimized during readings by an open hole, casing, or accounted for and subtracted from the total torque to determine the torque applied to the vane. After initially shearing the soil to determine the peak “undisturbed” ultimate shear strength, the test can be repeated to determine the remolded “residual” ultimate shear strength. The ratio of the peak shear strength divided by the remolded shear strength equals the degree of sensitivity.

DEGREE OF SENSITIVITY

DEGREE OF SENSITIVITY	DESCRIPTION
2	Insensitive
4	Moderately Sensitive
8	Extra Sensitive

ELECTRICAL RESISTIVITY TESTING

Field or laboratory resistivity testing generally follows the American Standard Test Method (ASTM) G-57 “Standard Test Method for Measurement of Soil Resistivity Using the Four-Electrode Method”.

© 2025 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

FIELD TESTING

Per the ASTM, the field Wenner four-electrode method requires four metal electrode probes placed with equal separation at various distances in a straight line. The probes are inserted in the surface of the soil to a depth not exceeding 5 percent of the minimum separation of the electrodes (or 12 inches maximum, whichever is less). The electrode separation is selected with consideration of the soil strata location and depth of interest. A voltage is impressed between the outer electrodes and the voltage drop between the inner electrodes is measured. The resulting resistivity measurement represents the average resistivity of a hemisphere of soil of a radius equal to the electrode separation.

LABORATORY TESTING

Soil is tamped into a soil box to resemble the compaction where the soil sample was taken until the soil is level with the top of the box. Two brass pins are inserted at the premanufactured distances into the soil sample with two endpins connected to the box. The four test leads are connected to the soil box. A voltage is impressed between the two endpins to measure the resistance, and soil resistivity is calculated based on the product-specified conversion.

CONE PENETRATION TESTING

Cone Penetration Tests (CPT) measures the soil resistance to the penetration of a standard 10 square centimeter (cm) projected area. The cone is hydraulically pushed into the soil at approximately a 2 cm per second rate. Soil resistance is recorded in kilograms per square cm at 20 cm depth intervals. Soil friction values are measured by a friction sleeve at each test interval.

© 2025 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

LABORATORY TESTING PROCEDURES

VISUAL ENGINEERING CLASSIFICATION

Visual classification was performed on recovered samples. The appended General Notes and Unified Soil Classification System (USCS) sheets include a brief summary of the general method used visually classify the soil and assign an appropriate USCS group symbol. The estimated group symbol, according to the USCS, is shown in parentheses following the textural description of the various strata on the boring logs appended to this report. The soil descriptions developed from visual classifications are sometimes modified to reflect the results of laboratory testing.

MOISTURE CONTENT

Moisture content tests were performed by weighing samples from the field at their in-situ moisture condition. These samples were then dried at a constant temperature (approximately 110° C) overnight in an oven. After drying, the samples were weighed to determine the dry weight of the sample and the weight of the water that was expelled during drying. The moisture content of the specimen is expressed as a percent and is the weight of the water compared to the dry weight of the specimen.

HAND PENETROMETER TESTS

In the hand penetrometer test, the unconfined compressive strength of a cohesive soil sample is estimated by measuring the resistance of the sample to the penetration of a small calibrated, spring-loaded cylinder. The maximum capacity of the penetrometer is 4.5 tons per square-foot (tsf). Theoretically, the undrained shear strength of the cohesive sample is one-half the unconfined compressive strength. The undrained shear strength (based on the hand penetrometer test) presented on the boring logs is reported in units of kips per square-foot (ksf).

TORVANE SHEAR TESTS

In the Torvane test, the shear strength of a low strength, cohesive soil sample is estimated by measuring the resistance of the sample to a torque applied through vanes inserted into the sample. The undrained shear strength of the samples is measured from the maximum torque required to shear the sample and is reported in units of kips per square-foot (ksf).

LOSS-ON-IGNITION (ORGANIC CONTENT) TESTS

Loss-on-ignition (LOI) tests are conducted by first weighing the sample and then heating the sample to dry the moisture from the sample (in the same manner as determining the moisture content of the soil). The sample is then re-weighed to determine the dry weight and then heated for four hours in a muffle furnace at a high temperature (approximately 440° C). After cooling, the sample is re-weighed to calculate the amount of ash remaining, which in turn is used to determine the amount of organic matter burned from the original dry sample. The organic matter content of the specimen is expressed as a percent compared to the dry weight of the sample.

ATTERBERG LIMITS TESTS

Atterberg limits tests consist of two components. The plastic limit of a cohesive sample is determined by rolling the sample into a thread and the plastic limit is the moisture content where a 1/8-inch thread begins to crumble. The liquid limit is determined by placing a 1/2-inch-thick soil pat into the liquid limits cup and using a grooving tool to divide the soil pat in half. The cup is then tapped on the base of the liquid limits device using a crank handle. The number of drops of the cup to close the gap formed by the grooving tool 1/2 inch is recorded along with the corresponding moisture content of the sample. This procedure is repeated several times at different moisture contents and a graph of moisture content, and the corresponding number of blows is plotted. The liquid limit is defined as the moisture content at a nominal 25 drops of the cup. From this test, the plasticity index can be determined by subtracting the plastic limit from the liquid limit.

© 2024 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

LIMITATIONS PERTAINING TO SUBSURFACE CONDITIONS

EXISTING FILL

It is sometimes difficult to distinguish between existing fill present at a site and natural soils based on samples and cuttings from small-diameter boreholes, especially if portions of the fill do not contain man-made materials, debris, topsoil, or organic layers, and when the fill appears similar in composition to the local natural soils. Therefore, consider the delineation of fill described on the logs, if encountered, to be approximate.

The composition of existing site fill, if encountered, may change abruptly over short distances and will vary from what is reported on the logs. The descriptions of debris within fill may not accurately indicate the quantity, composition, or size of the debris, and may not fully include the types of debris existing within the site fills. Perform test pits if existing fill is encountered to further evaluate the condition of the fill, particularly if the fill will be utilized for support of overlying structures and/or other improvements.

GROUNDWATER

Hydrostatic groundwater levels, and perched groundwater conditions, will fluctuate throughout the year, based on variations in precipitation, evaporation, run-off, and other factors. The groundwater information reported on the logs represent conditions at the time the readings were taken and may vary from the groundwater conditions encountered at other times.

SUBSURFACE PROFILE

The profile described in this report and included on the logs is a generalized description of the conditions observed. The stratification depths described in this report and shown on the logs indicate a zone of transition from one soil type to another. They are not meant to delineate exact depths of change between soil types. Soil conditions may vary between or away from the exploration locations. Refer to the logs for the soil descriptions, rock descriptions (when applicable), and results of the field and laboratory tests at the specific exploration locations.

If only borings with hollow-stem or solid-stem augers are performed, consider thickness measurements of surficial materials reported on the logs (e.g., gravel, asphalt, concrete, aggregate base) to be approximate since mixing of the surface materials with the underlying subgrade can occur while advancing the augers, and it is difficult to measure the thickness of surface materials in small-diameter boreholes. Perform additional evaluations for more accurate measurements of surface materials, such as test pits for topsoil and gravel thicknesses, coring for pavement thicknesses, and hand sampling for aggregate thickness.

RADON

The need for radon control systems for this project was not evaluated as part of our current scope of services. Contact the local building authority to verify whether radon control systems are necessary to meet the applicable local building codes or other requirements. If radon control methods are required, incorporate the recommendations regarding the below-slab leveling course materials and vapor retarders presented in this report with the specific materials and measures necessary to meet the applicable radon control methods. Contact SME for further recommendations.

© 2025 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

APPENDIX C

IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING REPORT GENERAL COMMENTS

© 2026 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Geotechnical-Engineering Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

Copyright 2016 by Geoprofessional Business Association (GBA). Duplication, reproduction, or copying of this document, in whole or in part, by any means whatsoever, is strictly prohibited, except with GBA's specific written permission. Excerpting, quoting, or otherwise extracting wording from this document is permitted only with the express written permission of GBA, and only for purposes of scholarly research or book review. Only members of GBA may use this document or its wording as a complement to or as an element of a report of any kind. Any other firm, individual, or other entity that so uses this document without being a GBA member could be committing negligent or intentional (fraudulent) misrepresentation.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

GENERAL COMMENTS

BASIS OF GEOTECHNICAL REPORT

This report has been prepared in accordance with generally accepted geotechnical engineering practices to assist in the design and/or evaluation of this project. If the project plans, design criteria, and/or other project information referenced in this report and utilized by SME to prepare our recommendations are changed, the conclusions and recommendations contained in this report are not considered valid unless the changes are reviewed, and the conclusions and recommendations of this report are modified or approved in writing.

The discussions and recommendations contained in this report are based on the available project information, described in this report, and the geotechnical data obtained from the field exploration at the locations indicated in the report. Variations in soil and groundwater conditions commonly occur between or away from sampling locations. The nature and extent of the variations may not become evident until the time of construction. If significant variations are observed during construction, SME must be contacted to reevaluate the recommendations of this report.

In the process of obtaining and testing samples and preparing this report, procedures are followed that represent reasonable and accepted practice in the field of geotechnical engineering. Specifically, field logs are prepared during the field exploration that describe field occurrences, sampling locations, and other information. Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory and differences may exist between the field logs and the report logs.

The engineer preparing the report reviews the field logs, laboratory classifications, and test data and then prepares the report logs. Our recommendations are based on the contents of the report logs and the information contained therein.

REVIEW OF DESIGN DETAILS, PLANS, AND SPECIFICATIONS

Retain SME to review the design details, project plans, and specifications to verify those documents are consistent with the recommendations contained in this report.

REVIEW OF REPORT INFORMATION WITH PROJECT TEAM

Implementation of our recommendations may affect the design, construction, and performance of the proposed improvements, along with the potential inherent risks involved with the proposed construction. The client and key members of the design team, including SME, should discuss the issues covered in this report so the issues are understood and applied in a manner consistent with the owner's budget, tolerance of risk, and expectations for performance and maintenance.

FIELD VERIFICATION OF GEOTECHNICAL CONDITIONS

SME needs to be retained to continue our services through construction so we may observe and evaluate the actual subsurface conditions relative to the recommendations made in this report, and so we can verify the recommendations of this report are properly implemented during construction. This may avoid misinterpretation of our recommendations by other parties and will allow us to review and modify our recommendations if variations in the site subsurface conditions are encountered.

PROJECT INFORMATION FOR CONTRACTOR

This report and any future addenda or other reports regarding this site needs to be made available to prospective contractors prior to submitting their proposals for their information only and to supply them with facts relative to the subsurface evaluation and laboratory test results. If the selected contractor encounters subsurface conditions during construction, which differ from those presented in this report, the contractor needs to promptly describe the nature and extent of the differing conditions in writing and SME needs to be notified so we can verify those conditions. The construction contract needs to include provisions for dealing with differing conditions, and contingency funds for potential problems during earthwork and foundation construction. We would be pleased to assist with the development of contract provisions based on our experience.

© 2025 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

The contractor needs to be prepared to handle environmental conditions encountered at this site, which may affect the excavation, removal, or disposal of soil; dewatering of excavations; and health and safety of workers. Any Environmental Assessment reports prepared for this site need to be made available for review by bidders and the successful contractor.

THIRD PARTY RELIANCE/REUSE OF THIS REPORT

This report has been prepared solely for the use of our Client for the project specifically described in this report. This report cannot be relied upon by other parties not involved in the project, unless specifically allowed by SME in writing. SME also is not responsible for the interpretation by other parties of the geotechnical data and the recommendations provided herein.

© 2025 Soil and Materials Engineers, Inc.
SME and the SME logo are federally registered marks.

Docusign Envelope ID: E7D6CF15-BF78-8DEA-837E-1717418B3486

Passionate People Building
and Revitalizing our World

SME®

This page intentionally left blank

SECTION 00 4000 PROCUREMENT FORMS AND SUPPLEMENTS

PART 1 GENERAL

1.01 FORMS

A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in the procurement requirements.

B. Instructions to Bidders: Section 00 2113.

C. Bid Form: Section 00 4100 - Bid Form.

D. Procurement Form Supplements:
   1. Bid Security Form: AIA A310.
   2. Unit Prices Form: Section 00 4322 - Unit Prices Form.
   3. Alternates Form: Section 00 4323 - Alternates Form.
   4. Separate Prices Break-Out Form: Section 00 4327 - Separate Prices Break-Out Form.
   5. Proposed Products Form: Section 00 4333 - Proposed Products Form.
   6. Proposed Subcontractors Form: Section 00 4336 - Proposed Subcontractors Form.
   7. Proposed Schedule of Values Form: AIA G703.

1.02 REFERENCE STANDARDS

A. AIA A310 - Bid Bond; 2010.

B. AIA G703 - Continuation Sheet; 1992.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

THE PROJECT AND THE PARTIES

1.01 FOR: CAPITAL AREA TRANSPORTATION AUTHORITY RENOVATION AT 511 S WASHINGTON AVE, LANSING, MI

1.02 DATE: _____ (BIDDER TO ENTER DATE)

1.03 SUBMITTED BY: (BIDDER TO ENTER NAME AND ADDRESS)

A. Bidder's Full Name _____
   1. Address _____
   2. City, State, Zip_____

1.04 OFFER

A. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Progressive Companies for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:

B. CATA Renovation:

_____
_____ dollars ($_____), in lawful money of the United States of America.

C. We have included the required security deposit as required by the Instruction to Bidders.

D. The performance assurance bonds are not included in the Bid Amount. The cost of the performance assurance bonds are a sum of:

_____dollars ($_____)

E. All applicable federal taxes are included and State of Michigan taxes are included in the Bid Sum.

1.05 ACCEPTANCE

A. This offer shall be open to acceptance and is irrevocable for 90 days from the bid closing date.

B. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

1.06 CONTRACT TIME

A. Complete the Work in 182 calendar days from Notice to Proceed.

1.07 ALTERNATES

A. Provide quotiation for the Alternates listed below in numerical value in lawful money of the United States of America and in words.

B. Alternate #1: Stair and Elevator Addition.

C. $_____

D. Add / (Deduct) Number of Days _____

E. Alternate #2: Remove existing asphalt pavment. Provide new compacted aggregate sub-base and asphalt paving.

F. $_____

G. Add / (Deduct) Number of Days _____

1.08 UNIT PRICES

A. Provide quotiation for the Unit Prices in numerical value in lawful money of the United States of America and in words.

B. Unit Price #1: Repointing Brick Veneer Masonry Walls - SF

C. $_____

D. Unit Price #2: Replacement of Damaged Brick Veneer Masonry Units with Like Kind

E. $_____

F. Unit Price #3: Replacement of damaged cast stone wall caps with like kind and size (per unit)

G. $_____

H. Unit Price #4: Removal of unsuitable soils from site to off-site locations (per Cubic Yard)

I. $_____

J. Unit Price #5: Import and placement of suitable structural fill from off-site location (per Cubic Yard)

K. $_____

1.09 CHANGES TO THE WORK

A. When Architect establishes that the method of valuation for Changes in the Work will be net cost plus a percentage fee in accordance with General Conditions, our percentage fee will be:
   1. 10 (ten) percent overhead and profit on the net cost of our own Work;
   2. 5 (five) percent on the cost of work done by any Subcontractor.

B. On work deleted from the Contract, our credit to Owner shall be Architect-approved net cost plus 0 (zero) of the overhead and profit percentage noted above.

1.10 BID FORM SUPPLEMENTS

A. The following information is included with Bid submission:
   1. Unit Prices: _____, _____, _____.
   2. Alternates: _____, _____, _____.
   3. Allowances: _____, _____, _____.

B. The following Supplements are attached to this Bid Form and are considered an integral part of this Bid:
   1. Certification of Primary Contractor Regarding Debarment, Suspension and Other Responsibility Matters
   2. Certification of Lower-Tier Participants (Sub-Contractors) Regarding Debarment, Suspension and Other Responsibility Matters
   3. Iran Economic Sanctions Act Certificate
   4. Terms and Conditions
   5. Certificate Regarding Lobbying
   6. Build America Buy America Certification
   7. Davis-Bacon Wage Rate
   8. Certificate of Insurance

1.11 BID FORM SIGNATURE(S)

A. The Corporate Seal of

B. _____

C. (Bidder - print the full name of your firm)

D. was hereunto affixed in the presence of:

E. _____

F. (Authorized signing officer, Title)

G. (Seal)

H. _____

I. (Authorized signing officer, Title)

1.12 IF THE BID IS A JOINT VENTURE OR PARTNERSHIP, ADD ADDITIONAL FORMS OF EXECUTION FOR EACH MEMBER OF THE JOINT VENTURE IN THE APPROPRIATE FORM OR FORMS AS ABOVE.

END OF BID FORM

PARTICULARS

1.01 THE FOLLOWING IS THE LIST OF UNIT PRICES REFERENCED IN THE BID SUBMITTED BY:

1.02 (BIDDER) _____

1.03 DATED _____ AND WHICH IS AN INTEGRAL PART OF THE BID FORM.

UNIT PRICE LIST

2.01 ITEM DESCRIPTION UNIT QUANTITY UNIT VALUE

2.02 UNIT PRICE #1: REPOINTING BRICK VENEER MASONRY WALLS (PER SF)

A. $_____

2.03 UNIT PRICE #2: REPLACEMENT OF BRICK VENEER MASONRY UNITS WITH LIKE KIND (PER SF)

A. $_____

2.04 UNIT PRICE #3: REPLACEMENT OF DAMAGED CAST STONE WALL CAPS WITH LIKE KIND AND SIZE (PER UNIT)

A. $_____

2.05 UNIT PRICE #4: REMOVAL OF UNSUITABLE SOILS FROM SITE TO OFF-SITE LOCATION (PER CUBIC YARD)

A. $_____

2.06 UNIT PRICE #5: IMPORT AND PLACEMENT OF SUITABLE STRUCTURAL FILL FROM OFF-SITE LOCATION (PER CUBIC YARD)

A. $_____

END OF SECTION

This page intentionally left blank

PARTICULARS

1.01 THE FOLLOWING IS THE LIST OF ALTERNATES REFERENCED IN THE BID SUBMITTED BY:

1.02 (BIDDER) _____

ALTERNATES LIST

2.01 THE FOLLOWING AMOUNTS SHALL BE ADDED TO THE BID AMOUNT. REFER TO SECTION 01 2300 - ALTERNATES.

STAIR AND ELEVATOR ADDITION # 1: ADD / (DEDUCT) $ _____

A. ADD / (DEDUCT) number of days _____.

REMOVE EXISTING ASPHALT PAVEMENT. PROVIDE NEW COMPACTED AGGREGATE SUB-BASE AND ASPHALT PAVING. # 2: ADD / (DEDUCT) $ _____

END OF SECTION

This page intentionally left blank

SECTION 00 4325 SUBSTITUTION REQUEST FORM

TO: ARCHITECT

PROJECT: CATA RENOVATION 511 S. WASHINGTON
PROJECT NO. 75820023

Phase during which this Substitution Request is submitted:

INDICATE WITH "X" BELOW	PHASE
	Bidding.
	Construction.

WE PROPOSE AND SUBMIT FOR YOUR CONSIDERATION THE FOLLOWING ITEM IN LIEU OF THE SPECIFIED ITEM FOR THE ABOVE PROJECT:

SPECIFIED ITEM DOCUMENTS REFERENCED

Drawing:	
Specification Section No.:	
Specification Section Title:	
Specified Item:	

PROPOSED SUBSTITUTION

Description of proposed substitution:

By:

Manufacturer:	
Trade Name:	
Address:	
City, State Zip:	
Telephone:	
Email Address:	

Installer:	
Company Name:	
Address:	
City, State, Zip	
Telephone:	
Email Address:	

Attach additional sheets if additional space is needed to fully explain the answer to any question below.

REASON FOR REQUEST

INDICATE WITH "X"	REASON
	Substitution for Cause.
	Substitution for Convenience.

If for cause, explain. Attach additonal sheets if necesary:

HISTORY OF PROPOSED SUBSTITUTION

INDICATE WITH "X"	AGE OF ITEM
	New.
	1-4 years old.
	5-10 years old.
	Over 10 years old.

SPECIFIED PRODUCT TO PROPOSED SUBSTITUTION COMPARISON

Provide itemized comparison for review. Attach additional sheets.

REASON FOR NOT PROVIDING SPECIFIED ITEM

SIMILAR INSTALLATION

Provide an example of a similar installation of this item that is most representative of its attributes and is located 100 miles or less from the Project location..

Project:	
Owner:	
Designer:	
Address:	
City, State Zip:	

AFFECT ON OTHER WORK

Does proposed substitution affects other parts of the Work?

INDICATE WITH "X"	SELECT
	YES.
	NO.

If no, fully explain:

AFFECT ON CODE REQUIREMENTS

A. What effect does the substitution have on applicable code requirements?

AFFECT ON MANUFACTURER'S WARRANTY

Manufacturer’s warranty of the proposed and specified items are:

INDICATE WITH "X"	SELECT
	Same.
	Different.

If different explain:

AFFECT ON SCHEDULE

What effect does the substitution have on the construction schedule?

COST DATA COMPARISON

Provide accurate cost data comparing proposed substitution with specified item.

RESPONSIBILITY FOR COST OF DESIGN CHANGES

Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution?

INDICATE WITH "X"	SELECT
	YES.
	NO.

If no, fully explain:

FROM:

WE CERTIFY THAT THE FUNCTION, APPEARANCE AND QUALITY ARE EQUIVALENT OR SUPERIOR TO THE SPECIFIED ITEM.

Company:	
Address:	
City, State Zip	
Submitted By (print name):	
Title:	
Signature:	
Date:	
Telephone:	

Signer above must be an officer of the Firm who possesses the authority to legally bind the Firm to the terms stated herein. The Owner's Spec Term reserves the right to reject or retract approval for failure to provide a legally binding signature.

ARCHITECT'S REVIEW AND RECOMMENDATION

THE ARCHITECT HAS REVIEWED THE INFORMATION SUBMITTED AND MAKES THE FOLLOWING RECOMMENDATININION:

MARK	ACTION	COMMENTS
	No Exceptions Taken	Submit in accordance with Specification Section 01 3000.
	Make Corrections Noted	Submit in accordance with Specification Section 01 3000.
	Rejected	Provide specified item.
	Received Too Late	Provide specified item.

Reviewed By (print name):	
Title:	
Signature:	
Date:	

OWNER'S REVIEW AND ACTION

THE OWNER HAS REVIEWED THE INFORMATION SUBMITTED AND TAKES THE FOLLOWING ACTION:

MARK	ACTION	COMMENTS
	Substitution Approved	Submit in accordance with Specification Section 01 3300.
	Substitution Approved As Noted	Submit in accordance with Specification Section 01 3300.
	Substitution Rejected	Provide specified item.
	Received Too Late	Provide specified item.

Reviewed By (print name):	
Title:	
Signature:	
Date:	

END OF SECTION

PARTICULARS

1.01 HEREWITH IS THE LIST OF SUBCONTRACTORS REFERENCED IN THE BID SUBMITTED BY:

1.02 (BIDDER) _____

1.03 DATED _____ AND WHICH IS AN INTEGRAL PART OF THE BID FORM.

1.04 THE FOLLOWING WORK WILL BE PERFORMED (OR PROVIDED) BY SUBCONTRACTORS AND COORDINATED BY US:

LIST OF SUBCONTRACTORS

WORK SUBJECT SUBCONTRACTOR NAME

A. _____

B. _____

C. _____

D. _____

E. _____

F. _____

G. _____

H. _____

I. _____

J. _____

K. _____

L. _____

M. _____

N. _____

O. _____

P. _____

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 CONTRACTOR IS RESPONSIBLE FOR OBTAINING A VALID LICENSE TO USE ALL COPYRIGHTED DOCUMENTS SPECIFIED BUT NOT INCLUDED IN THE PROJECT MANUAL.

1.02 AGREEMENT AND CONDITIONS OF THE CONTRACT

A. The Agreemtne is based on CATA Standard Contract of Construction.

B. The General Conditions are based on the Standard Terms and Conditions of Procurementa as stipulated in 00 2113 Instructions

1.03 FORMS

A. Post-Award Certificates and Other Forms:

1. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

SECTION 00 5433 AVAILABILITY OF DIGITAL DATA

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 01 4216 - Definitions.

1.02 DEFINITIONS

A. The following terms for the purposes of this section are excerpted from the Digital Data Licensing Agreement, AIA C106 and are defined below.

B. Agreement: The Digital Data Licensing Agreement.

C. Receiving Party: The Party Receiving Digital Data.

D. Transmitting Party: Architect, who is the Party Transmitting the Digital Data.

1.03 AVAILABILITY

A. The Transmitting Party will make Digital Data available to the Receiving Party upon receipt of an executed Agreement.
   1. A sample Agreement document is provided for information and review in Section 00 5433.13 - Sample Digital Data Licensing Agreement.

B. The Transmitting Party requires the Receiving Party to thoroughly review the sample Digital Data Licensing Agreement prior to execution, and if in basic agreement, contact the Transmitting Party to request a formal, project-specific version of the Agreement to execute and return to the Transmitting Party for counter signature.
   1. If a fee or other compensation is required by and stated in the Agreement, that fee or compensation must be received by the Transmitting Party before Digital Data can be released to the Receiving Party.

C. Once the Agreement is fully executed and any required compensation paid to the Transmitting Party, the Transmitting Party will provide the requested Digital Data and a copy of the fully-executed Agreement to the Receiving Party.
   1. Provide contact information for the designated recipient for the Receiving Party, including full name, title, email address and telephone number.

D. Take steps to ensure all desired Digital Data files are indicated in the initial request. Once the Agreement is fully executed and returned, any subsequent request for additional Digital Data files or copies of the originally transmitted Digital Data files will not be accepted.

E. The Transmitting Party reserves the right to limit the type of Digital Data files, when they will be made available, and to whom in the Receiving Party they will be made available.

1.04 LIMITATIONS

A. The Digital Data Licensing Agreement neither forms a part of, nor modifies, the Bid Documents and the Contract Documents.

B. The Digital Data Licensing Agreement terms and conditions are not subject to, nor are superseded by, any provisions of the Contract Documents.

C. The Digital Data Licensing Agreement, and the Receiving Party's use of the Digital Data, is not subject to any Uniform Commercial Code, and the Digital Data Licensing Agreement shall not be construed to be a sale of any goods or products under any provision of any Uniform Commercial Code, or another statute, law or regulation and shall further not be construed as an agreement for performance by the Transmitting Party on behalf of the Receiving Party.

1.05 DIGITAL DATA REQUEST SCHEDULE

A. List all documentation being requested in the Schedule below.

B. Attach additional sheets if necessary to fully describe the request.

C. Clearly identify the purpose for therequest (e.g., CAD files for use in preparation of shop drawings).

D. Place a check mark in the tables below next to the files requested.

E. Indicate the file format being requested (i.e., .dwg, .rvt, .docx, etc.) and the version, if applicable.

F. Some of the files indicated in the Schedule below may not be applicable to this project and therefore cannot be provided.

G. Schedules:

√	DIGITAL DATA FILE TYPE	FORMAT	AVAILABLE TO	TIME AVAILABLE
	BIM Model(s)	REVIT	C	After Bidding
	Drawings	Scans	C	After Bidding
	Project Manual/Specifications	Scans	C	After Bidding

H.

√	DIGITAL DATA FILE TYPE	FORMAT	AVAILABLE TO	TIME AVAILABLE
	Civil Grading and Layout Plans	CAD	SS and C	During and After Bidding
	Architectural Floor Plans	CAD	C	After Bidding
	Reflected Ceiling Plans	CAD	C	After Bidding
	Structural Plans	CAD	C	After Bidding
	Fire Protection Plans	CAD	C	After Bidding
	Plumbing Plans	CAD	C	After Bidding
	Mechanical Plans	CAD	C	After Bidding
	Electrical Plans	CAD	C	After Bidding

I. KEY: C = Contractor SS = Site Subcontractor (Division 30+)

1.06 LICENSING FEE OR OTHER COMPENSATION

A. No Licensing Fee for Digital Data provided will be assesssed.

B. CompensatIon for Digital Data provided: One Hundred Dollars USD ($100.00) per sheet with a maximum cost of Five Hundred Dollars USD ($500.00).
   1. Submit a check payable to “Progressive Companies” for the agreed sum. Identify the Project Name and Number on the check, and reference “Digital Data” on the Memo line.

1.07 SUPPLEMENTARY CONDITIONS TO THE DIGITAL DATA LICENSING AGREEMENT

A. These Supplementary Conditions are set forth and hereby modify, change, delete from or add to requirements of the sample Digital Data Licensing Agreement. It expressly understood and agreed by the Transmitting Party and the Receiving Party that the Supplementary Conditions listed below will be incorporated into and become part of the final Agreement prior to execution.

B. Where requirements of the Supplementary Conditions conflict with or are at variance from those of the Agreement, they shall take precedence over the Agreement and modify such requirements to the extent of such conflict or variations

C. **ARTICLE 3 LICENSE CONDITIONS**
   1. The Receiving Party agrees to use the Digital Data expressly and solely for no other purpose than to support of the construction of this project.
   2. The Receiving Party agrees not to return Digital Data provided by the Transmitting Party as a submittal requested in individual technical specification sections.
   3. Revit model files will only contain elements and content that the Transmitting Party deems necessary and appropriate to share. No specific Level of Detail is implied nor should be expected. The Receiving Party agrees that it will not remove proprietary Revit families or Revit content shall be removed from the model and/or used for any other purposes but to support this specific project.
   4. The Receiving Party agrees that neither it nor its agents will remove proprietary Revit families or Revit content from the model and use those families and content any other purposes except in direct support of this project.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

AIA® Document C106™ – 2022

Digital Data Licensing Agreement

AGREEMENT made as of the Twenty-second day of January in the year Two Thousand Twenty-Six
(In words, indicate day, month, and year.)

BETWEEN the Party transmitting Digital Data ("Transmitting Party"):
(Name, address, and contact information, including electronic addresses)

Progressive AE, Inc. (Correct if another entity)
1811 4 Mile Road, NE
Grand Rapids, MI 49525

and the Party receiving the Digital Data ("Receiving Party"):
(Name, address, and contact information, including electronic addresses)

Receiving Party Name and Title
Receiving Party Address
Receiving Party Phone Number

Receiving Party Email

for the following Project:
(Name and location or address of the Project)

for the following Digital Data ("Digital Data"):
(Identify below, in detail, the information created or stored in digital form that the Parties intend to be subject to this Agreement.)

Items include: (List Digital Data)

The Transmitting Party and Receiving Party agree as follows.

TABLE OF ARTICLES

1 GENERAL PROVISIONS

2 TRANSMISSION OF DIGITAL DATA

3 LICENSE CONDITIONS

4 LICENSING FEE OR OTHER COMPENSATION

ADDITIONS AND DELETIONS: The author of this document may have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

AIA Document C106 – 2022. Copyright © 2007, 2013, and 2022. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This draft was produced at 08:57:02 EST on 01/22/2026 under Subscription No.20250094794 which expires on 02/25/2026, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.
User Notes: (69722ca87d255a8916e96233)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 The purpose of this Agreement is to grant a license from the Transmitting Party to the Receiving Party for the Receiving Party's use of Digital Data and to set forth the license terms.

§ 1.2 This Agreement is the entire and integrated agreement between the Parties. Except as specifically set forth herein, this Agreement does not create any other contractual relationship between the Parties.

§ 1.3 Confidential Digital Data is Digital Data containing confidential or business proprietary information that the Transmitting Party designates as "confidential."

ARTICLE 2 TRANSMISSION OF DIGITAL DATA

§ 2.1 The Transmitting Party grants to the Receiving Party a nonexclusive limited license to use the Digital Data solely and exclusively for the uses, and in accordance with the terms, set forth in Article 3.

§ 2.2 Only the Receiving Party is permitted to access and use the Digital Data. Unlicensed and unauthorized access or use by third parties is strictly prohibited except as set forth in Section 2.4.1.

§ 2.3 The transmission of Digital Data constitutes a warranty by the Transmitting Party to the Receiving Party that the Transmitting Party is the copyright owner of the Digital Data or otherwise has permission to transmit the Digital Data to the Receiving Party for its use on the Project in accordance with the terms and conditions of this Agreement.

§ 2.4 Where the Transmitting Party has designated information furnished pursuant to this Agreement as "confidential," the Receiving Party shall keep the information confidential and shall not disclose it to any other person or entity except as set forth in Section 2.4.1

§ 2.4.1 The Receiving Party may disclose Confidential Digital Data after seven (7) days' notice to the Transmitting Party where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Receiving Party may also disclose Confidential Digital Data to its employees, consultants, sureties, subcontractors and their employees, sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.5 By transmitting Digital Data, the Transmitting Party does not convey any ownership right in the Digital Data or in the software used to generate the Digital Data. Unless otherwise granted in a separate license, the Receiving Party's right to use, modify, or further transmit Digital Data is specifically limited to those uses, and in accordance with the terms, set forth in Article 3, and nothing contained in this Agreement conveys any other right to use the Digital Data.

§ 2.6 To the fullest extent permitted by law, the Receiving Party shall indemnify and defend the Transmitting Party from and against all claims arising from or related to the Receiving Party's modification to, or unlicensed use of, the Digital Data. The Receiving Party agrees that this indemnification clause shall apply to any third party that receives this Digital Data from the Receiving Party.

§ 2.7 Transmission of the Digital Data does not abridge or extinguish the Transmitting Party's rights, including, to the extent applicable, exclusive ownership interest, in such information under all applicable state, federal, and international laws including, without limitation, laws governing the protection of copyrights and intellectual property.

§ 2.8 The provisions of this Article 2 shall survive the termination of this Agreement.

AIA Document C106 – 2022. Copyright © 2007, 2013, and 2022. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This draft was produced at 08:57:02 EST on 01/22/2026 under Subscription No.20250094794 which expires on 02/25/2026, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.
User Notes: (69722ca87d255a8916e96233)

ARTICLE 3 LICENSE CONDITIONS

§ 3.1 The Receiving Party may use and rely upon the Digital Data to the extent set forth in this Article 3.
(Choose only one option below.)

[X] **§ 3.1.1** The Digital Data is transmitted solely for the Receiving Party's information. Receiving Party acknowledges that any use of the Digital Data shall be at Receiving Party's sole risk. The Receiving Party accepts the Digital Data "as is" without any warranty or representations from the Transmitting Party as to whether the Digital Data is accurate, complete, or fit for use as intended by the Receiving Party. The Receiving Party is solely responsible for verifying whether the Digital Data is accurate, complete, or fit for the Receiving Party's intended use.

[ ] **§ 3.1.2** Other:
(Identify terms, permitted uses, or other conditions related to the Digital Data.)

§ 3.2 If no specific terms or uses are selected or set forth in Section 3.1, then the Receiving Party may use the Digital Data at its sole risk pursuant to the terms and conditions set forth in Section 3.1.1.

ARTICLE 4 LICENSING FEE OR OTHER COMPENSATION

The Receiving Party agrees to pay the Transmitting Party the following fee or other compensation for the Receiving Party's use of the Digital Data:
(State the fee, in dollars, or other method by which the Receiving Party will compensate the Transmitting Party for the Receiving Party's use of the Digital Data.)

To be determined by Project Manager and Principal

This Agreement is entered into as of the day and year first written above and terminates one year from said date, except as set forth below.
(Indicate when this Agreement will terminate, if other than one year from the date it was entered into, and other conditions related to termination.)

Check with Project Manager to determine if different than above

TRANSMITTING PARTY *(Signature)*	**RECEIVING PARTY** *(Signature)*
(Printed name and title)	*(Printed name and title)*

AIA Document C106 – 2022. Copyright © 2007, 2013, and 2022. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This draft was produced at 08:57:02 EST on 01/22/2026 under Subscription No.20250094794 which expires on 02/25/2026, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.
User Notes: (69722ca87d255a8916e96233)

This page intentionally left blank

PROJECT: CATA RENOVATION 511 S. WASHINGTON
PROJECT NO: 75820023

To Progressive Companies: Attention; Pam Young email: pyoung@weareprogressive.com

Progressive Companies
1811 4 Mile Road, NE 616-361-2664 VOICE
Grand Rapids, MI 49525 616-361-1493 FAX

From: Contractor: _____ RFI No:_____
Phone No:_____
Fax No: _____
Date: _____
Submitted By: _____
Name/Trades Contractor: _____
Question Is: Civil____ Architectural____ Interiors____ Structural____ Mechanical____
Electrical____ Communications____ Other (specify)_____

Re: Project Manual/Drawing/Detail No:_____

Question:_____
_____
_____
_____
_____

Contractor Recommendation and advise of any cost/schedule impacts.: _____
_____
_____
_____
_____

Signed (Contractor Project Manager): _____

Progressive Companies Reply: _____
_____
_____
_____
_____
_____
_____
_____

Signed (AE): _____ Date_____

Distribution:
Owner: _____
Progressive Companies: _____
Contractor: _____

END OF SECTION

This page intentionally left blank

PROJECT: CATA RENOVATION 511 S. WASHINGTON
PROJECT NO. : 75820023

To: Progressive Companies; Attention: Pam Young*; pyoung@weareprogressive.com*

Re: _____

From: _____ Date: _____

DESCRIPTION:

Specification Title: _____

Section No.: _____ Page: _____

Article/Paragraph: _____

Proposed Substitution: _____

Manufacturer: _____

Trade Name: _____

Model No.: _____

Web Site: _____

Installer: _____

Address: _____

Telephone: _____

History: ( ) New Product ( ) 1-4 years old ( ) 5-10 years old ( ) More than 10 years old

Differences between proposed substitution and specified product:

_____

_____

_____

_____

( ) Point-by-point comparative data - REQUIRED BY A/E

Reason for not providing specified item:

_____

_____

Similar Installation

Project:_____ Architect: _____

Address: _____ Owner: _____

Date Installed: _____

Proposed Substitution affects other parts of the work: ( ) No ( ) Yes Explain: _____

_____

_____

_____

_____

Savings to Owner for accepting substitution: _____ ($_____)

Proposed substitution changes contract time: ( ) No ( ) Yes [add] [deduct] _____ days

SUPPORTING DATA ATTACHED:

- Attached data to include product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are to be clearly identified.

- Attached data to also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

( ) Drawings ( ) Product Data ( ) Samples ( ) Tests ( ) Reports ( ) _____

THE UNDERSIGNED CERTIFIES:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.

- Same warranty will be furnished for proposed substitution as for specified product.

- Same maintenance service and source of replacement parts, as applicable, is available.

- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.

- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.

- Proposed substitution does not affect dimensions and functional clearances.

- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by (Firm): _____

Signed by: (printed) _____

(signature) _____

Address: _____

Email: _____

Attachments: ( )

A/E'S REVIEW AND RECOMMENDATION:

( ) Substitution approved - Make submittals in accordance with Section 01 3000 - Submittal Procedures for final reviw.

( ) Substitution approved as noted - Make submittals in accordance with Section 01 3000 - Submittal Procedures for final review.

( ) Substitution rejected - Use specified materials.

Remarks: _____

Signed by: _____ Date: _____

OWNERS REVIEW AND ACTION:

( ) Substitution approved - Make submittals in accordance with Section 01 3000 - Submittal Procedures. Prepare Change Order.

( ) Substitution approved as noted - Make submittals in accordance with Section 01 3000 - Submittal Procedures. Prepare Change Order.

( ) Substitution rejected - Use specified materials.

Remarks: _____

Signed by: _____ Date: _____

ADDITIONAL COMMENTS:

( ) Contractor ( ) Subcontractor ( ) Supplier ( ) Manufacturer ( ) A/E

_____

_____

_____

_____

END OF SECTION

FORM OF GENERAL CONDITIONS

A SAMPLE COPY OF THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT IS PROVIDED IN SECTION 00 7200.13 - SAMPLE AIA A201-2017 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION.

RELATED REQUIREMENTS

SECTION 01 4216 - DEFINITIONS.

END OF SECTION

This page intentionally left blank

AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

(Reference cover page.)

THE OWNER:
(Name, legal status and address)

(Reference cover page.)

THE ARCHITECT:
(Name, legal status and address)

(Reference cover page.)

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

TABLE OF ARTICLES

1 GENERAL PROVISIONS
2 OWNER
3 CONTRACTOR
4 ARCHITECT
5 SUBCONTRACTORS
6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7 CHANGES IN THE WORK
8 TIME
9 PAYMENTS AND COMPLETION
10 PROTECTION OF PERSONS AND PROPERTY
11 INSURANCE AND BONDS
12 UNCOVERING AND CORRECTION OF WORK
13 MISCELLANEOUS PROVISIONS
14 TERMINATION OR SUSPENSION OF THE CONTRACT
15 CLAIMS AND DISPUTES

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

INDEX
(Topics and numbers in bold are Section headings.)

Acceptance of Nonconforming Work
9.6.6, 9.9.3, **12.3**
Acceptance of Work
9.6.6, 9.8.2, 9.9.3, 9.10.1, 9.10.3, 12.3
Access to Work
3.16, 6.2.1, 12.1
Accident Prevention
10
Acts and Omissions
3.2, 3.3.2, 3.12.8, 3.18, 4.2.3, 8.3.1, 9.5.1, 10.2.5, 10.2.8, 13.3.2, 14.1, 15.1.2, 15.2
Addenda
1.1.1
Additional Costs, Claims for
3.7.4, 3.7.5, 10.3.2, 15.1.5
Additional Inspections and Testing
9.4.2, 9.8.3, 12.2.1, **13.4**
Additional Time, Claims for
3.2.4, 3.7.4, 3.7.5, 3.10.2, 8.3.2, **15.1.6**
Administration of the Contract
3.1.3, **4.2**, 9.4, 9.5
Advertisement or Invitation to Bid
1.1.1
Aesthetic Effect
4.2.13
Allowances
3.8
Applications for Payment
4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5.1, 9.5.4, 9.6.3, 9.7, 9.10
Approvals
2.1.1, 2.3.1, 2.5, 3.1.3, 3.10.2, 3.12.8, 3.12.9, 3.12.10.1, 4.2.7, 9.3.2, 13.4.1
Arbitration
8.3.1, 15.3.2, **15.4**
ARCHITECT
4
Architect, Definition of
4.1.1
Architect, Extent of Authority
2.5, 3.12.7, 4.1.2, 4.2, 5.2, 6.3, 7.1.2, 7.3.4, 7.4, 9.2, 9.3.1, 9.4, 9.5, 9.6.3, 9.8, 9.10.1, 9.10.3, 12.1, 12.2.1, 13.4.1, 13.4.2, 14.2.2, 14.2.4, 15.1.4, 15.2.1
Architect, Limitations of Authority and Responsibility
2.1.1, 3.12.4, 3.12.8, 3.12.10, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.6, 4.2.7, 4.2.10, 4.2.12, 4.2.13, 5.2.1, 7.4, 9.4.2, 9.5.4, 9.6.4, 15.1.4, 15.2
Architect's Additional Services and Expenses
2.5, 12.2.1, 13.4.2, 13.4.3, 14.2.4
Architect's Administration of the Contract
3.1.3, 3.7.4, 15.2, 9.4.1, 9.5
Architect's Approvals
2.5, 3.1.3, 3.5, 3.10.2, 4.2.7
Architect's Authority to Reject Work
3.5, 4.2.6, 12.1.2, 12.2.1
Architect's Copyright
1.1.7, 1.5
Architect's Decisions
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 4.2.14, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4.1, 9.5, 9.8.4, 9.9.1, 13.4.2, 15.2
Architect's Inspections
3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 13.4
Architect's Instructions
3.2.4, 3.3.1, 4.2.6, 4.2.7, 13.4.2
Architect's Interpretations
4.2.11, 4.2.12
Architect's Project Representative
4.2.10
Architect's Relationship with Contractor
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5, 3.7.4, 3.7.5, 3.9.2, 3.9.3, 3.10, 3.11, 3.12, 3.16, 3.18, 4.1.2, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.3.2, 13.4, 15.2
Architect's Relationship with Subcontractors
1.1.2, 4.2.3, 4.2.4, 4.2.6, 9.6.3, 9.6.4, 11.3
Architect's Representations
9.4.2, 9.5.1, 9.10.1
Architect's Site Visits
3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4
Asbestos
10.3.1
Attorneys' Fees
3.18.1, 9.6.8, 9.10.2, 10.3.3
Award of Separate Contracts
6.1.1, 6.1.2
Award of Subcontracts and Other Contracts for Portions of the Work
5.2
Basic Definitions
1.1
Bidding Requirements
1.1.1
Binding Dispute Resolution
8.3.1, 9.7, 11.5, 13.1, 15.1.2, 15.1.3, 15.2.1, 15.2.5, 15.2.6.1, 15.3.1, 15.3.2, 15.3.3, 15.4.1
Bonds, Lien
7.3.4.4, 9.6.8, 9.10.2, 9.10.3
Bonds, Performance, and Payment
7.3.4.4, 9.6.7, 9.10.3, **11.1.2**, 11.1.3, **11.5**
Building Information Models Use and Reliance
1.8
Building Permit
3.7.1
Capitalization
1.3
Certificate of Substantial Completion
9.8.3, 9.8.4, 9.8.5

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

Certificates for Payment
4.2.1, 4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4, 15.1.4
Certificates of Inspection, Testing or Approval
13.4.4
Certificates of Insurance
9.10.2
Change Orders
1.1.1, 3.4.2, 3.7.4, 3.8.2.3, 3.11, 3.12.8, 4.2.8, 5.2.3, 7.1.2, 7.1.3, **7.2**, 7.3.2, 7.3.7, 7.3.9, 7.3.10, 8.3.1, 9.3.1.1, 9.10.3, 10.3.2, 11.2, 11.5, 12.1.2
Change Orders, Definition of
7.2.1
CHANGES IN THE WORK
2.2.2, 3.11, 4.2.8, **7**, 7.2.1, 7.3.1, 7.4, 8.3.1, 9.3.1.1, 11.5
Claims, Definition of
15.1.1
Claims, Notice of
1.6.2, 15.1.3
CLAIMS AND DISPUTES
3.2.4, 6.1.1, 6.3, 7.3.9, 9.3.3, 9.10.4, 10.3.3, **15**, 15.4
Claims and Timely Assertion of Claims
15.4.1
Claims for Additional Cost
3.2.4, 3.3.1, 3.7.4, 7.3.9, 9.5.2, 10.2.5, 10.3.2, **15.1.5**
Claims for Additional Time
3.2.4, 3.3.1, 3.7.4, 6.1.1, 8.3.2, 9.5.2, 10.3.2, **15.1.6**
Concealed or Unknown Conditions, Claims for
3.7.4
Claims for Damages
3.2.4, 3.18, 8.3.3, 9.5.1, 9.6.7, 10.2.5, 10.3.3, 11.3, 11.3.2, 14.2.4, 15.1.7
Claims Subject to Arbitration
15.4.1
Cleaning Up
3.15, 6.3
Commencement of the Work, Conditions Relating to
2.2.1, 3.2.2, 3.4.1, 3.7.1, 3.10.1, 3.12.6, 5.2.1, 5.2.3, 6.2.2, 8.1.2, 8.2.2, 8.3.1, 11.1, 11.2, **15.1.5**
Commencement of the Work, Definition of
8.1.2
Communications
3.9.1, **4.2.4**
Completion, Conditions Relating to
3.4.1, 3.11, 3.15, 4.2.2, 4.2.9, 8.2, 9.4.2, 9.8, 9.9.1, 9.10, 12.2, 14.1.2, 15.1.2
COMPLETION, PAYMENTS AND
9
Completion, Substantial
3.10.1, 4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, 9.8, 9.9.1, 9.10.3, 12.2, 15.1.2
Compliance with Laws
2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14.1.1, 14.2.1.3, 15.2.8, 15.4.2, 15.4.3
Concealed or Unknown Conditions
3.7.4, 4.2.8, 8.3.1, 10.3
Conditions of the Contract
1.1.1, 6.1.1, 6.1.4
Consent, Written
3.4.2, 3.14.2, 4.1.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3, 13.2, 15.4.4.2
Consolidation or Joinder
15.4.4
CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
1.1.4, **6**
Construction Change Directive, Definition of
7.3.1
Construction Change Directives
1.1.1, 3.4.2, 3.11, 3.12.8, 4.2.8, 7.1.1, 7.1.2, 7.1.3, **7.3**, 9.3.1.1
Construction Schedules, Contractor's
3.10, 3.11, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2
Contingent Assignment of Subcontracts
5.4, 14.2.2.2
Continuing Contract Performance
15.1.4
Contract, Definition of
1.1.2
CONTRACT, TERMINATION OR SUSPENSION OF THE
5.4.1.1, 5.4.2, 11.5, **14**
Contract Administration
3.1.3, 4, 9.4, 9.5
Contract Award and Execution, Conditions Relating to
3.7.1, 3.10, 5.2, 6.1
Contract Documents, Copies Furnished and Use of
1.5.2, 2.3.6, 5.3
Contract Documents, Definition of
1.1.1
Contract Sum
2.2.2, 2.2.4, 3.7.4, 3.7.5, 3.8, 3.10.2, 5.2.3, 7.3, 7.4, **9.1**, 9.2, 9.4.2, 9.5.1.4, 9.6.7, 9.7, 10.3.2, 11.5, 12.1.2, 12.3, 14.2.4, 14.3.2, 15.1.4.2, **15.1.5**, **15.2.5**
Contract Sum, Definition of
9.1
Contract Time
1.1.4, 2.2.1, 2.2.2, 3.7.4, 3.7.5, 3.10.2, 5.2.3, 6.1.5, 7.2.1.3, 7.3.1, 7.3.5, 7.3.6, 7, 7, 7.3.10, 7.4, 8.1.1, 8.2.1, 8.2.3, 8.3.1, 9.5.1, 9.7, 10.3.2, 12.1.1, 12.1.2, 14.3.2, 15.1.4.2, 15.1.6.1, 15.2.5
Contract Time, Definition of
8.1.1
CONTRACTOR
3
Contractor, Definition of
3.1, 6.1.2
Contractor's Construction and Submittal Schedules
3.10, 3.12.1, 3.12.2, 4.2.3, 6.1.3, 15.1.6.2

Init.
/
AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

Contractor's Employees
2.2.4, 3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3, 11.3, 14.1, 14.2.1.1
Contractor's Liability Insurance
11.1
Contractor's Relationship with Separate Contractors and Owner's Forces
3.12.5, 3.14.2, 4.2.4, 6, 11.3, 12.2.4
Contractor's Relationship with Subcontractors
1.2.2, 2.2.4, 3.3.2, 3.18.1, 3.18.2, 4.2.4, 5, 9.6.2, 9.6.7, 9.10.2, 11.2, 11.3, 11.4
Contractor's Relationship with the Architect
1.1.2, 1.5, 2.3.3, 3.1.3, 3.2.2, 3.2.3, 3.2.4, 3.3.1, 3.4.2, 3.5.1, 3.7.4, 3.10, 3.11, 3.12, 3.16, 3.18, 4.2, 5.2, 6.2.2, 7, 8.3.1, 9.2, 9.3, 9.4, 9.5, 9.7, 9.8, 9.9, 10.2.6, 10.3, 11.3, 12, 13.4, 15.1.3, 15.2.1
Contractor's Representations
3.2.1, 3.2.2, 3.5, 3.12.6, 6.2.2, 8.2.1, 9.3.3, 9.8.2
Contractor's Responsibility for Those Performing the Work
3.3.2, 3.18, 5.3, 6.1.3, 6.2, 9.5.1, 10.2.8
Contractor's Review of Contract Documents
3.2
Contractor's Right to Stop the Work
2.2.2, 9.7
Contractor's Right to Terminate the Contract
14.1
Contractor's Submittals
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 9.2, 9.3, 9.8.2, 9.8.3, 9.9.1, 9.10.2, 9.10.3
Contractor's Superintendent
3.9, 10.2.6
Contractor's Supervision and Construction Procedures
1.2.2, 3.3, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 7.3.6, 8.2, 10, 12, 14, 15.1.4
Coordination and Correlation
1.2, 3.2.1, 3.3.1, 3.10, 3.12.6, 6.1.3, 6.2.1
Copies Furnished of Drawings and Specifications
1.5, 2.3.6, 3.11
Copyrights
1.5, **3.17**
Correction of Work
2.5, 3.7.3, 9.4.2, 9.8.2, 9.8.3, 9.9.1, 12.1.2, **12.2**, 12.3, 15.1.3.1, 15.1.3.2, 15.2.1
Correlation and Intent of the Contract Documents
1.2
Cost, Definition of
7.3.4
Costs
2.5, 3.2.4, 3.7.3, 3.8.2, 3.15.2, 5.4.2, 6.1.1, 6.2.3, 7.3.3.3, 7.3.4, 7.3.8, 7.3.9, 9.10.2, 10.3.2, 10.3.6, 11.2, 12.1.2, 12.2.1, 12.2.4, 13.4, 14
Cutting and Patching
3.14, 6.2.5
Damage to Construction of Owner or Separate Contractors
3.14.2, 6.2.4, 10.2.1.2, 10.2.5, 10.4, 12.2.4
Damage to the Work
3.14.2, 9.9.1, 10.2.1.2, 10.2.5, 10.4, 12.2.4
Damages, Claims for
3.2.4, 3.18, 6.1.1, 8.3.3, 9.5.1, 9.6.7, 10.3.3, 11.3.2, 11.3, 14.2.4, 15.1.7
Damages for Delay
6.2.3, 8.3.3, 9.5.1.6, 9.7, 10.3.2, 14.3.2
Date of Commencement of the Work, Definition of
8.1.2
Date of Substantial Completion, Definition of
8.1.3
Day, Definition of
8.1.4
Decisions of the Architect
3.7.4, 4.2.6, 4.2.7, 4.2.11, 4.2.12, 4.2.13, 6.3, 7.3.4, 7.3.9, 8.1.3, 8.3.1, 9.2, 9.4, 9.5.1, 9.8.4, 9.9.1, 13.4.2, 14.2.2, 14.2.4, 15.1, 15.2
Decisions to Withhold Certification
9.4.1, **9.5**, 9.7, 14.1.1.3
Defective or Nonconforming Work, Acceptance, Rejection and Correction of
2.5, 3.5, 4.2.6, 6.2.3, 9.5.1, 9.5.3, 9.6.6, 9.8.2, 9.9.3, 9.10.4, 12.2.1
Definitions
1.1, 2.1.1, 3.1.1, 3.5, 3.12.1, 3.12.2, 3.12.3, 4.1.1, 5.1, 6.1.2, 7.2.1, 7.3.1, 8.1, 9.1, 9.8.1, 15.1.1
Delays and Extensions of Time
3.2, **3.7.4**, 5.2.3, 7.2.1, 7.3.1, **7.4**, **8.3**, 9.5.1, **9.7**, 10.3.2, **10.4**, 14.3.2, **15.1.6**, 15.2.5
Digital Data Use and Transmission
1.7
Disputes
6.3, 7.3.9, 15.1, 15.2
Documents and Samples at the Site
3.11
Drawings, Definition of
1.1.5
Drawings and Specifications, Use and Ownership of
3.11
Effective Date of Insurance
8.2.2
Emergencies
10.4, 14.1.1.2, **15.1.5**
Employees, Contractor's
3.3.2, 3.4.3, 3.8.1, 3.9, 3.18.2, 4.2.3, 4.2.6, 10.2, 10.3.3, 11.3, 14.1, 14.2.1.1
Equipment, Labor, or Materials
1.1.3, 1.1.6, 3.4, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 4.2.6, 4.2.7, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Execution and Progress of the Work
1.1.3, 1.2.1, 1.2.2, 2.3.4, 2.3.6, 3.1, 3.3.1, 3.4.1, 3.7.1, 3.10.1, 3.12, 3.14, 4.2, 6.2.2, 7.1.3, 7.3.6, 8.2, 9.5.1, 9.9.1, 10.2, 10.3, 12.1, 12.2, 14.2, 14.3.1, 15.1.4

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

Extensions of Time
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3, 7.4, 9.5.1, 9.7, 10.3.2, 10.4, 14.3, 15.1.6, **15.2.5**
Failure of Payment
9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2
Faulty Work
(See Defective or Nonconforming Work)
Final Completion and Final Payment
4.2.1, 4.2.9, 9.8.2, **9.10**, 12.3, 14.2.4, 14.4.3
Financial Arrangements, Owner's
2.2.1, 13.2.2, 14.1.1.4
GENERAL PROVISIONS
1
Governing Law
13.1
Guarantees (See Warranty)
Hazardous Materials and Substances
10.2.4, **10.3**
Identification of Subcontractors and Suppliers
5.2.1
Indemnification
3.17, **3.18**, 9.6.8, 9.10.2, 10.3.3, 11.3
Information and Services Required of the Owner
2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10.1, 6.1.3, 6.1.4, 6.2.5, 9.6.1, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4
Initial Decision
15.2
Initial Decision Maker, Definition of
1.1.8
Initial Decision Maker, Decisions
14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
Initial Decision Maker, Extent of Authority
14.2.4, 15.1.4.2, 15.2.1, 15.2.2, 15.2.3, 15.2.4, 15.2.5
Injury or Damage to Person or Property
10.2.8, 10.4
Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 12.2.1, 13.4
Instructions to Bidders
1.1.1
Instructions to the Contractor
3.2.4, 3.3.1, 3.8.1, 5.2.1, 7, 8.2.2, 12, 13.4.2
Instruments of Service, Definition of
1.1.7
Insurance
6.1.1, 7.3.4, 8.2.2, 9.3.2, 9.8.4, 9.9.1, 9.10.2, 10.2.5, **11**
Insurance, Notice of Cancellation or Expiration
11.1.4, 11.2.3
Insurance, Contractor's Liability
11.1
Insurance, Effective Date of
8.2.2, 14.4.2
Insurance, Owner's Liability
11.2
Insurance, Property
10.2.5, 11.2, 11.4, 11.5
Insurance, Stored Materials
9.3.2
INSURANCE AND BONDS
11
Insurance Companies, Consent to Partial Occupancy
9.9.1
Insured loss, Adjustment and Settlement of
11.5
Intent of the Contract Documents
1.2.1, 4.2.7, 4.2.12, 4.2.13
Interest
13.5
Interpretation
1.1.8, 1.2.3, **1.4**, 4.1.1, 5.1, 6.1.2, 15.1.1
Interpretations, Written
4.2.11, 4.2.12
Judgment on Final Award
15.4.2
Labor and Materials, Equipment
1.1.3, 1.1.6, **3.4**, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1, 10.2.4, 14.2.1.1, 14.2.1.2
Labor Disputes
8.3.1
Laws and Regulations
1.5, 2.3.2, 3.2.3, 3.2.4, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1, 10.2.2, 13.1, 13.3.1, 13.4.2, 13.5, 14, 15.2.8, 15.4
Liens
2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8
Limitations, Statutes of
12.2.5, 15.1.2, 15.4.1.1
Limitations of Liability
3.2.2, 3.5, 3.12.10, 3.12.10.1, 3.17, 3.18.1, 4.2.6, 4.2.7, 6.2.2, 9.4.2, 9.6.4, 9.6.7, 9.6.8, 10.2.5, 10.3.3, 11.3, 12.2.5, 13.3.1
Limitations of Time
2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2.7, 5.2, 5.3, 5.4.1, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15, 15.1.2, 15.1.3, 15.1.5
Materials, Hazardous
10.2.4, **10.3**
Materials, Labor, Equipment and
1.1.3, 1.1.6, 3.4.1, 3.5, 3.8.2, 3.8.3, 3.12, 3.13, 3.15.1, 5.2.1, 6.2.1, 7.3.4, 9.3.2, 9.3.3, 9.5.1.3, 9.10.2, 10.2.1.2, 10.2.4, 14.2.1.1, 14.2.1.2
Means, Methods, Techniques, Sequences and Procedures of Construction
3.3.1, 3.12.10, 4.2.2, 4.2.7, 9.4.2
Mechanic's Lien
2.1.2, 9.3.1, 9.3.3, 9.6.8, 9.10.2, 9.10.4, 15.2.8
Mediation
8.3.1, 15.1.3.2, 15.2.1, 15.2.5, 15.2.6, **15.3**, 15.4.1, 15.4.1.1
Minor Changes in the Work
1.1.1, 3.4.2, 3.12.8, 4.2.8, 7.1, **7.4**

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

MISCELLANEOUS PROVISIONS
13
Modifications, Definition of
1.1.1
Modifications to the Contract
1.1.1, 1.1.2, 2.5, 3.11, 4.1.2, 4.2.1, 5.2.3, 7, 8.3.1, 9.7, 10.3.2
Mutual Responsibility
6.2
Nonconforming Work, Acceptance of
9.6.6, 9.9.3, **12.3**
Nonconforming Work, Rejection and Correction of
2.4, 2.5, 3.5, 4.2.6, 6.2.4, 9.5.1, 9.8.2, 9.9.3, 9.10.4, 12.2
Notice
1.6, 1.6.1, 1.6.2, 2.1.2, 2.2.2., 2.2.3, 2.2.4, 2.5, 3.2.4, 3.3.1, 3.7.4, 3.7.5, 3.9.2, 3.12.9, 3.12.10, 5.2.1, 7.4, 8.2.2 9.6.8, 9.7, 9.10.1, 10.2.8, 10.3.2, 11.5, 12.2.2.1, 13.4.1, 13.4.2, 14.1, 14.2.2, 14.4.2, 15.1.3, 15.1.5, 15.1.6, 15.4.1
Notice of Cancellation or Expiration of Insurance
11.1.4, 11.2.3
Notice of Claims
1.6.2, 2.1.2, 3.7.4, 9.6.8, 10.2.8, **15.1.3**, 15.1.5, 15.1.6, 15.2.8, 15.3.2, 15.4.1
Notice of Testing and Inspections
13.4.1, 13.4.2
Observations, Contractor's
3.2, 3.7.4
Occupancy
2.3.1, 9.6.6, 9.8
Orders, Written
1.1.1, 2.4, 3.9.2, 7, 8.2.2, 11.5, 12.1, 12.2.2.1, 13.4.2, 14.3.1
OWNER
2
Owner, Definition of
2.1.1
Owner, Evidence of Financial Arrangements
2.2, 13.2.2, 14.1.1.4
Owner, Information and Services Required of the
2.1.2, **2.2**, 2.3, 3.2.2, 3.12.10, 6.1.3, 6.1.4, 6.2.5, 9.3.2, 9.6.1, 9.6.4, 9.9.2, 9.10.3, 10.3.3, 11.2, 13.4.1, 13.4.2, 14.1.1.4, 14.1.4, 15.1.4
Owner's Authority
1.5, 2.1.1, 2.3.32.4, 2.5, 3.4.2, 3.8.1, 3.12.10, 3.14.2, 4.1.2, 4.2.4, 4.2.9, 5.2.1, 5.2.4, 5.4.1, 6.1, 6.3, 7.2.1, 7.3.1, 8.2.2, 8.3.1, 9.3.2, 9.5.1, 9.6.4, 9.9.1, 9.10.2, 10.3.2, 11.4, 11.5, 12.2.2, 12.3, 13.2.2, 14.3, 14.4, 15.2.7
Owner's Insurance
11.2
Owner's Relationship with Subcontractors
1.1.2, 5.2, 5.3, 5.4, 9.6.4, 9.10.2, 14.2.2
Owner's Right to Carry Out the Work
2.5, 14.2.2
Owner's Right to Clean Up
6.3
Owner's Right to Perform Construction and to Award Separate Contracts
6.1
Owner's Right to Stop the Work
2.4
Owner's Right to Suspend the Work
14.3
Owner's Right to Terminate the Contract
14.2, 14.4
Ownership and Use of Drawings, Specifications and Other Instruments of Service
1.1.1, 1.1.6, 1.1.7, **1.5**, 2.3.6, 3.2.2, 3.11, 3.17, 4.2.12, 5.3
Partial Occupancy or Use
9.6.6, **9.9**
Patching, Cutting and
3.14, 6.2.5
Patents
3.17
Payment, Applications for
4.2.5, 7.3.9, 9.2, **9.3**, 9.4, 9.5, 9.6.3, 9.7, 9.8.5, 9.10.1, 14.2.3, 14.2.4, 14.4.3
Payment, Certificates for
4.2.5, 4.2.9, 9.3.3, **9.4**, 9.5, 9.6.1, 9.6.6, 9.7, 9.10.1, 9.10.3, 14.1.1.3, 14.2.4
Payment, Failure of
9.5.1.3, **9.7**, 9.10.2, 13.5, 14.1.1.3, 14.2.1.2
Payment, Final
4.2.1, 4.2.9, **9.10**, 12.3, 14.2.4, 14.4.3
Payment Bond, Performance Bond and
7.3.4.4, 9.6.7, 9.10.3, **11.1.2**
Payments, Progress
9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4
PAYMENTS AND COMPLETION
9
Payments to Subcontractors
5.4.2, 9.5.1.3, 9.6.2, 9.6.3, 9.6.4, 9.6.7, 14.2.1.2
PCB
10.3.1
Performance Bond and Payment Bond
7.3.4.4, 9.6.7, 9.10.3, **11.1.2**
Permits, Fees, Notices and Compliance with Laws
2.3.1, **3.7**, 3.13, 7.3.4.4, 10.2.2
PERSONS AND PROPERTY, PROTECTION OF
10
Polychlorinated Biphenyl
10.3.1
Product Data, Definition of
3.12.2
Product Data and Samples, Shop Drawings
3.11, **3.12**, 4.2.7
Progress and Completion
4.2.2, **8.2**, 9.8, 9.9.1, 14.1.4, 15.1.4
Progress Payments
9.3, **9.6**, 9.8.5, 9.10.3, 14.2.3, 15.1.4

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

Project, Definition of
1.1.4
Project Representatives
4.2.10
Property Insurance
10.2.5, **11.2**
Proposal Requirements
1.1.1
PROTECTION OF PERSONS AND PROPERTY
10
Regulations and Laws
1.5, 2.3.2, 3.2.3, 3.6, 3.7, 3.12.10, 3.13, 9.6.4, 9.9.1, 10.2.2, 13.1, 13.3, 13.4.1, 13.4.2, 13.5, 14, 15.2.8, 15.4
Rejection of Work
4.2.6, 12.2.1
Releases and Waivers of Liens
9.3.1, 9.10.2
Representations
3.2.1, 3.5, 3.12.6, 8.2.1, 9.3.3, 9.4.2, 9.5.1, 9.10.1
Representatives
2.1.1, 3.1.1, 3.9, 4.1.1, 4.2.10, 13.2.1
Responsibility for Those Performing the Work
3.3.2, 3.18, 4.2.2, 4.2.3, 5.3, 6.1.3, 6.2, 6.3, 9.5.1, 10
Retainage
9.3.1, 9.6.2, 9.8.5, 9.9.1, 9.10.2, 9.10.3
Review of Contract Documents and Field Conditions by Contractor
3.2, 3.12.7, 6.1.3
Review of Contractor's Submittals by Owner and Architect
3.10.1, 3.10.2, 3.11, 3.12, 4.2, 5.2, 6.1.3, 9.2, 9.8.2
Review of Shop Drawings, Product Data and Samples by Contractor
3.12
Rights and Remedies
1.1.2, 2.4, 2.5, 3.5, 3.7.4, 3.15.2, 4.2.6, 5.3, 5.4, 6.1, 6.3, 7.3.1, 8.3, 9.5.1, 9.7, 10.2.5, 10.3, 12.2.1, 12.2.2, 12.2.4, **13.3**, 14, 15.4
Royalties, Patents and Copyrights
3.17
Rules and Notices for Arbitration
15.4.1
Safety of Persons and Property
10.2, 10.4
Safety Precautions and Programs
3.3.1, 4.2.2, 4.2.7, 5.3, **10.1**, 10.2, 10.4
Samples, Definition of
3.12.3
Samples, Shop Drawings, Product Data and
3.11, **3.12**, 4.2.7
Samples at the Site, Documents and
3.11
Schedule of Values
9.2, 9.3.1
Schedules, Construction
3.10, 3.12.1, 3.12.2, 6.1.3, 15.1.6.2
Separate Contracts and Contractors
1.1.4, 3.12.5, 3.14.2, 4.2.4, 4.2.7, 6, 8.3.1, 12.1.2
Separate Contractors, Definition of
6.1.1
Shop Drawings, Definition of
3.12.1
Shop Drawings, Product Data and Samples
3.11, **3.12**, 4.2.7
Site, Use of
3.13, 6.1.1, 6.2.1
Site Inspections
3.2.2, 3.3.3, 3.7.1, 3.7.4, 4.2, 9.9.2, 9.4.2, 9.10.1, 13.4
Site Visits, Architect's
3.7.4, 4.2.2, 4.2.9, 9.4.2, 9.5.1, 9.9.2, 9.10.1, 13.4
Special Inspections and Testing
4.2.6, 12.2.1, 13.4
Specifications, Definition of
1.1.6
Specifications
1.1.1, **1.1.6**, 1.2.2, 1.5, 3.12.10, 3.17, 4.2.14
Statute of Limitations
15.1.2, 15.4.1.1
Stopping the Work
2.2.2, 2.4, 9.7, 10.3, 14.1
Stored Materials
6.2.1, 9.3.2, 10.2.1.2, 10.2.4
Subcontractor, Definition of
5.1.1
SUBCONTRACTORS
5
Subcontractors, Work by
1.2.2, 3.3.2, 3.12.1, 3.18, 4.2.3, 5.2.3, 5.3, 5.4, 9.3.1.2, 9.6.7
Subcontractual Relations
5.3, 5.4, 9.3.1.2, 9.6, 9.10, 10.2.1, 14.1, 14.2.1
Submittals
3.10, 3.11, 3.12, 4.2.7, 5.2.1, 5.2.3, 7.3.4, 9.2, 9.3, 9.8, 9.9.1, 9.10.2, 9.10.3
Submittal Schedule
3.10.2, 3.12.5, 4.2.7
Subrogation, Waivers of
6.1.1, **11.3**
Substances, Hazardous
10.3
Substantial Completion
4.2.9, 8.1.1, 8.1.3, 8.2.3, 9.4.2, **9.8**, 9.9.1, 9.10.3, 12.2, 15.1.2
Substantial Completion, Definition of
9.8.1
Substitution of Subcontractors
5.2.3, 5.2.4
Substitution of Architect
2.3.3
Substitutions of Materials
3.4.2, 3.5, 7.3.8
Sub-subcontractor, Definition of
5.1.2

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

Subsurface Conditions
3.7.4
Successors and Assigns
13.2
Superintendent
3.9, 10.2.6
Supervision and Construction Procedures
1.2.2, **3.3**, 3.4, 3.12.10, 4.2.2, 4.2.7, 6.1.3, 6.2.4, 7.1.3, 7.3.4, 8.2, 8.3.1, 9.4.2, 10, 12, 14, 15.1.4
Suppliers
1.5, 3.12.1, 4.2.4, 4.2.6, 5.2.1, 9.3, 9.4.2, 9.5.4, 9.6, 9.10.5, 14.2.1
Surety
5.4.1.2, 9.6.8, 9.8.5, 9.10.2, 9.10.3, 11.1.2, 14.2.2, 15.2.7
Surety, Consent of
9.8.5, 9.10.2, 9.10.3
Surveys
1.1.7, 2.3.4
Suspension by the Owner for Convenience
14.3
Suspension of the Work
3.7.5, 5.4.2, 14.3
Suspension or Termination of the Contract
5.4.1.1, 14
Taxes
3.6, 3.8.2.1, 7.3.4.4
Termination by the Contractor
14.1, 15.1.7
Termination by the Owner for Cause
5.4.1.1, **14.2**, 15.1.7
Termination by the Owner for Convenience
14.4
Termination of the Architect
2.3.3
Termination of the Contractor Employment
14.2.2

TERMINATION OR SUSPENSION OF THE CONTRACT
14
Tests and Inspections
3.1.3, 3.3.3, 3.7.1, 4.2.2, 4.2.6, 4.2.9, 9.4.2, 9.8.3, 9.9.2, 9.10.1, 10.3.2, 12.2.1, **13.4**
TIME
8
Time, Delays and Extensions of
3.2.4, 3.7.4, 5.2.3, 7.2.1, 7.3.1, 7.4, **8.3**, 9.5.1, 9.7, 10.3.2, 10.4, 14.3.2, 15.1.6, 15.2.5
Time Limits
2.1.2, 2.2, 2.5, 3.2.2, 3.10, 3.11, 3.12.5, 3.15.1, 4.2, 5.2, 5.3, 5.4, 6.2.4, 7.3, 7.4, 8.2, 9.2, 9.3.1, 9.3.3, 9.4.1, 9.5, 9.6, 9.7, 9.8, 9.9, 9.10, 12.2, 13.4, 14, 15.1.2, 15.1.3, 15.4
Time Limits on Claims
3.7.4, 10.2.8, 15.1.2, 15.1.3
Title to Work
9.3.2, 9.3.3
UNCOVERING AND CORRECTION OF WORK
12
Uncovering of Work
12.1
Unforeseen Conditions, Concealed or Unknown
3.7.4, 8.3.1, 10.3
Unit Prices
7.3.3.2, 9.1.2
Use of Documents
1.1.1, 1.5, 2.3.6, 3.12.6, 5.3
Use of Site
3.13, 6.1.1, 6.2.1
Values, Schedule of
9.2, 9.3.1
Waiver of Claims by the Architect
13.3.2
Waiver of Claims by the Contractor
9.10.5, 13.3.2, **15.1.7**
Waiver of Claims by the Owner
9.9.3, 9.10.3, 9.10.4, 12.2.2.1, 13.3.2, 14.2.4, **15.1.7**
Waiver of Consequential Damages
14.2.4, 15.1.7
Waiver of Liens
9.3, 9.10.2, 9.10.4
Waivers of Subrogation
6.1.1, **11.3**
Warranty
3.5, 4.2.9, 9.3.3, 9.8.4, 9.9.1, 9.10.2, 9.10.4, 12.2.2, 15.1.2
Weather Delays
8.3, 15.1.6.2
Work, Definition of
1.1.3
Written Consent
1.5.2, 3.4.2, 3.7.4, 3.12.8, 3.14.2, 4.1.2, 9.3.2, 9.10.3, 13.2, 13.3.2, 15.4.4.2
Written Interpretations
4.2.11, 4.2.12
Written Orders
1.1.1, 2.4, 3.9, 7, 8.2.2, 12.1, 12.2, 13.4.2, 14.3.1

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 09/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

Init.
/
AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
.2 Unit prices stated in the Contract Documents or subsequently agreed upon;
.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
.4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

.1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;

.2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;

.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor;
.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

.1 employees on the Work and other persons who may be affected thereby;
.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act

Init. / **AIA Document A201® – 2017.** Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

Init. / **AIA Document A201® – 2017.** Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or

.4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

Init. /

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269953)

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Init.
/

AIA Document A201® – 2017. Copyright © 1911, 1915, 1918, 1925, 1937, 1951, 1958, 1961, 1963, 1966, 1970, 1976, 1987, 1997, 2007 and 2017 by The American Institute of Architects. All rights reserved. The "American Institute of Architects," "AIA," the AIA Logo, "A201," and "AIA Contract Documents" are registered trademarks and may not be used without permission. This document was produced by AIA software at 14:12:53 ET on 07/27/2022 under Order No.3104236590 which expires on 02/24/2023, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents® Terms of Service. To report copyright violations, e-mail copyright@aia.org.
User Notes: (1431269963)

This page intentionally left blank

PART 1 GENERAL

1.01 PROJECT

A. Project Name: CATA Renovation 511 S. Washington

B. The Project consists of the construction of Interior and exterior renovations to the building located at 511 S Washington Ave in Lansing, MI. Site work includes modifications to existing pavement, striping, and sidewalks. Building renovations include the creation of a new board room and resource center with a new exterior glass storefront vestibule. Roof and mechanical systems will be replaced. Exterior consists of masonry repointing and painting the building. Documents include a Add Alternate for a new elevator and stairr.

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 5200 - Agreement Form.

1.03 OWNER OCCUPANCY

A. Owner intends to continue to occupy adjacent existing CATA Transportation Center and exterior functions there of during the entire construction period.

B. Owner intends to occupy the Project upon Substantial Completion.

C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

D. Schedule the Work to accommodate Owner occupancy.

1.04 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.

B. Arrange use of site and premises to allow:
   1. Owner occupancy.

C. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

SECTION 01 2000 PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparation and submittal of applications for progress payments.

B. Documentation of changes in Contract Sum and Contract Time.

C. Change procedures.

D. Correlation of Contractor submittals based on changes.

E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS

A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.

B. Section 01 2100 - Allowances: Payment procedures relating to allowances.

C. Section 01 2200 - Unit Prices: Monetary values of unit prices; Payment and modification procedures relating to unit prices.

1.03 SCHEDULE OF VALUES

A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.

B. Forms filled out by hand will not be accepted.

C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.

D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification section. Identify site mobilization and de-mobilization .

E. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.

F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.

G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS

A. Payment Period: Submit at intervals stipulated in the Agreement.

B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.

C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect for approval.

D. Forms filled out by hand will not be accepted.

E. Execute certification by signature of authorized officer.

F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of work.

H. Submit one electronic and 0 hard-copies of each Application for Payment.

I. Include the following with the application:
   1. Transmittal letter as specified for submittals in Section 01 3000.
   2. Construction progress schedule, revised and current as specified in Section 01 3000.
   3. Current construction photographs specified in Section 01 3000.
   4. Partial release of liens from major subcontractors and vendors.
   5. Affidavits attesting to off-site stored products.
   6. Retainage: 10 percent through substantial completion and 5 percent thereafter until final payment

J. When Architect requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
   1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
   2. Promptly execute the change.

C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within 10 days.

D. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
   1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
   2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
   3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
   4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.

E. Substantiation of Costs: Provide full information required for evaluation.
   1. On request, provide the following data:
      a. Quantities of products, labor, and equipment.
      b. Taxes, insurance, and bonds.
      c. Overhead and profit.
      d. Justification for any change in Contract Time.
      e. Credit for deletions from Contract, similarly documented.
   2. Support each claim for additional costs with additional information:
      a. Origin and date of claim.
      b. Dates and times work was performed, and by whom.
      c. Time records and wage rates paid.
      d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
   3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

F. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

G. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

H. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

I. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
   1. All closeout procedures specified in Section 01 7000.
   2. Requirements of Owner - Contractor Agreement..

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Contingency allowance.

1.02 CONTINGENCY ALLOWANCE

A. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.

B. Funds will be drawn from the Contingency Allowance only by Change Order.

C. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.03 ALLOWANCES SCHEDULE

A. Section 040100: Include the stipulated sum of $30,000 for repointing and replacment of brick unit masonry.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. List of unit prices, for use in preparing Bids.

B. Measurement and payment criteria applicable to Work performed under a unit price payment method.

C. Also see section 04 0100

1.02 RELATED REQUIREMENTS

A. Document 00 2113 - Instructions to Bidders: Instructions for preparation of pricing for Unit Prices.

B. Document 00 4322 - Unit Prices Form: List of Unit Prices as supplement to Bid Form

C. Document 04 0100 - Maintenance of Masonry: Pricing and Payment Proceedures.

1.03 COSTS INCLUDED

A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

1.04 UNIT QUANTITIES SPECIFIED

A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

1.05 MEASUREMENT OF QUANTITIES

A. Take all measurements and compute quantities. Measurements and quantities will be verified by Architect.

B. Take all measurements and compute quantities. Measurements and quantities will be verified by Owner.

C. Assist by providing necessary equipment, workers, and survey personnel as required.

D. Measurement by Area: Measured by square dimension using mean length and width or radius.

E. Contractor's Engineer Responsibilities: Sign surveyor's field notes or keep duplicate field notes , calculate and certify quantities for payment purposes.

1.06 PAYMENT

A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect, multiplied by the unit price.

1.07 DEFECT ASSESSMENT

A. Replace Work, or portions of the Work, not complying with specified requirements. Verify quanity of work with the Architect prior to start.

B. The authority of Architect to assess the defect and identify payment adjustment is final.

C. The authority of Owner to assess the defect and identify payment adjustment is final.

1.08 SCHEDULE OF UNIT PRICES

A. Item: 1; Section Repointing Brick Masonry Veneer Walls (per SF).

B. Item: 2; Section Replacing Brick Masonry Veneer Units with Like Kind (per SF).

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Description of Alternates.

1.02 RELATED REQUIREMENTS

A. Document 00 2113 - Instructions to Bidders: Instructions for preparation of pricing for Alternates.

B. Document 00 4323 - Alternates Form: List of Alternates as supplement to Bid Form.

1.03 ACCEPTANCE OF ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.04 SCHEDULE OF ALTERNATES

A. Alternate No. 1 - Elevator and Stair Addition: Provide materials and labor for work all work associated with construction of a new elevator and stair as described in the drawings.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

SECTION 01 2500 SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Procedural requirements for proposed substitutions.

1.02 RELATED REQUIREMENTS

A. Section 00 4325 - Substitution Request Form - During Procurement: Required form for substitution requests made prior to award of contract (During procurement).

B. Section 01 6000 - Product Requirements: Fundamental product requirements, product options, delivery, storage, and handling.

1.03 DEFINITIONS

A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
   1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
      a. Unavailability.
      b. Regulatory changes.
   2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
      a. Substitution requests offering advantages solely to the Contractor will not be considered.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
   2. Agrees to provide the same warranty for the substitution as for the specified product.
   3. Agrees to provide same or equivalent maintenance service and source of replacement parts, as applicable.
   4. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
   5. Waives claims for additional costs or time extension that may subsequently become apparent.
   6. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.

B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
   1. Note explicitly any non-compliant characteristics.

C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
   1. Forms included in the Project Manual are adequate for this purpose, and must be used.

D. Limit each request to a single proposed substitution item.

3.02 SUBSTITUTION PROCEDURES DURING PROCUREMENT

A. Submittal Time Restrictions:
   1. Instructions to Bidders specifies time restrictions and the documents required for submitting substitution requests during the bidding period.

B. Submittal Form (before award of contract):
   1. Submit substitution requests by completing the form in Section 00 4325; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

3.03 SUBSTITUTION PROCEDURES DURING CONSTRUCTION

A. Submittal Form (after award of contract):

1. Submit substitution requests by completing the form in Section 00 6325; see this section for additional information and instructions. Use only this form; other forms of submission are unacceptable.

B. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.

C. Substitutions will not be considered under one or more of the following circumstances:
1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
2. Without a separate written request.
3. When acceptance will require revisions to Contract Documents.

3.04 RESOLUTION

A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

3.05 ACCEPTANCE

A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

B. Include completed Substitution Request Forms as part of the Project record. Include both approved and rejected Requests.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General administrative requirements.

B. Preconstruction meeting.

C. Progress meetings.

D. Construction progress schedule.

E. Submittals for review, information, and project closeout.

F. Number of copies of submittals.

G. Requests for Interpretation (RFI) procedures.

H. Submittal procedures.

1.02 RELATED REQUIREMENTS

A. Section 00 7200 - General Conditions: Dates for applications for payment.

B. Section 01 6000 - Product Requirements: General product requirements.

C. Section 01 7000 - Execution and Closeout Requirements: Additional coordination requirements.

D. Section 01 7800 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.

B. Make the following types of submittals to Architect:
   1. Requests for Interpretation (RFI).
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Design data.
   6. Manufacturer's instructions and field reports.
   7. Applications for payment and change order requests.
   8. Progress schedules.
   9. Coordination drawings.
   10. Correction Punch List and Final Correction Punch List for Substantial Completion.
   11. Closeout submittals.

1.04 PROJECT COORDINATOR

A. Project Coordinator: Design-Builder.

B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for site access, traffic, and parking facilities.

C. During construction, coordinate use of site and facilities through the Project Coordinator.

D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.

E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities. Responsibility for providing temporary utilities and construction facilities is identified in Section 01 1000 - Summary.

F. Coordinate field engineering and layout work under instructions of the Project Coordinator.

G. Make the following types of submittals to Architect through Procore Construction Management Software under Design-Builder's license:
   1. Requests for Interpretation.
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Design data.

6. Manufacturer's instructions and field reports.
7. Applications for payment and change order requests.
8. Progress schedules.
9. Coordination drawings.
10. Closeout submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Attendance Required:
1. Owner.
2. Architect.
3. Subcontractors.

B. Agenda:
1. Execution of Design Builder - Subcontractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
5. Designation of personnel representing the parties to Contract, owner and Architect.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.

3.02 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Project Coordinator will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

D. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Design-Builder, as appropriate to agenda topics for each meeting.

E. Agenda:
1. Review minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of RFIs log and status of responses.
7. Review of off-site fabrication and delivery schedules.
8. Maintenance of progress schedule.
9. Corrective measures to regain projected schedules.
10. Planned progress during succeeding work period.
11. Coordination of projected progress.
12. Maintenance of quality and work standards.
13. Effect of proposed changes on progress schedule and coordination.
14. Other business relating to work.

F. Record minutes and distribute copies within two days after meeting to participants, with 1 copy to Architect, Owner, participants, and those affected by decisions made.

3.03 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

3.04 PROGRESS PHOTOGRAPHS

A. Submit photographs with each application for payment to the Owner and Architect, taken not more than 3 days prior to submission of application for payment.

B. Photography Type: Digital; electronic files.

C. Provide photographs of site and construction throughout progress of work produced.

D. Views:
   1. Provide non-aerial photographs from four cardinal views at each specified time, until date of Substantial Completion.
   2. Provide factual presentation.
   3. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

3.05 REQUESTS FOR INTERPRETATION (RFI)

A. Definition: A request seeking one of the following:
   1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
   2. A resolution to an issue which has arisen due to field conditions and affects design intent.

B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.

C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
   1. Prepare a separate RFI for each specific item.
      a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
      b. Do not forward requests which solely require internal coordination between subcontractors.

D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
   1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
   2. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
      a. Approval of submittals (use procedures specified elsewhere in this section).
      b. Approval of substitutions (see Section - 01 6000 - Product Requirements)
      c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).
      d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
   3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
   4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
      a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.

E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
   1. Official Project name and number, and any additional required identifiers established in Contract Documents.
   2. Submit on form found in Section 00 6313 - Request for Interpretation, providing all information requested or through Procore Project Management Software.

F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.

G. Review Time: Architect will respond and return RFIs to Contractor within three calendar days of receipt, excluding Saturday and Sunday. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
   1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.

H. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
   1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
   2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
   3. Notify Architect within two calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

I. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.

J. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.

K. Samples will be reviewed for aesthetic, color, or finish selection.

L. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Material Safety Data Sheets (MSDS).
   8. Other types indicated.

3.06 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 7800 - Closeout Submittals:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   4. Bonds.
   5. Other types as indicated.

D. Submit for Owner's benefit during and after project completion.

3.07 NUMBER OF COPIES OF SUBMITTALS

A. Electronic Documents: Submit one electronic copy in PDF format; an electronically-marked up file will be returned. Create PDFs at native size and right-side up; illegible files will be rejected.

B. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.

1. Retained samples will not be returned to Contractor unless specifically so stated.

3.08 SUBMITTAL PROCEDURES

A. General Requirements:
   1. Use a separate transmittal for each item.
   2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
   3. Transmit using approved form.
      a. Use Contractor's form, subject to prior approval by Architect.
   4. Sequentially identify each item. For revised submittals use original number and a sequential numerical suffix.
   5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number and article/paragraph, as appropriate on each copy.
   6. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
      a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
   7. Schedule submittals to expedite the Project, and coordinate submission of related items.
      a. For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.
      b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
   8. Provide space for Contractor and Architect review stamps.
   9. When revised for resubmission, identify all changes made since previous submission.
   10. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
   11. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
   12. Submittals not requested will be recognized, and will be returned "Not Reviewed",

B. Product Data Procedures:
   1. Submit only information required by individual specification sections.
   2. Collect required information into a single submittal.
   3. Do not submit (Material) Safety Data Sheets for materials or products.

C. Shop Drawing Procedures:
   1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
   2. Do not reproduce Contract Documents to create shop drawings.
   3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.

D. Samples Procedures:
   1. Transmit related items together as single package.
   2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
   3. Include with transmittal high-resolution image files of samples to facilitate electronic review and approval. Provide separate submittal page for each item image.
      a. Photographs of each sample submitted for electronic filing for record purposes.
      b. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
      c. Delivery Medium: Via email.
      d. File Naming: Include project identification.

3.09 SUBMITTAL REVIEW

A. Submittals for Review: Architect will review each submittal, or take other appropriate action.

B. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken or an actual stamp on hard copies of submittals.

C. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.

D. Architect's Action: General: Except for submittals for the record and similar purposes, where action and return on submittals are required or requested, the Architect will review each submittal and mark with appropriate "action" within 10 working days. Where the submittal must be held for coordination, the Architect will so advise the Contractor without delay. The Architect's review of a specific item shall not indicate review of an assembly of which the item is a component.

1. Architect's Action Stamp: The Architect will stamp each submittal to be returned with a uniform, self explanatory action stamp, appropriately marked and executed. It shall read as follows:
   a. "This submittal is reviewed for general conformance with the design concept of the project and with information given in the Contract Documents. This review shall not constitute approval of safety precautions and is not conducted for substantiating instructions for installation or performance of equipment or systems. This review does not relieve the contractor of responsibility for conformance with the Contract Documents and applicable codes, all of which have priority over this submittal. The Architect/Engineer does not warrant or represent that the information within the submittal is either accurate or complete. The contractor is responsible for coordinating and verifying all quantities, dimensions, tolerances, clearances, fabrication processes, techniques, sequences, means, methods of construction and compatibility of materials. It is also understood that the contractor has reviewed and coordinated all related trades and components of an assembly prior to issuing a submittal for review."
   b. Marking X No Exceptions Taken
      1) Final unrestricted release. Where the submittals are marked as above, the work covered by the submittal may proceed, provided it complies with the requirements of the contract documents; acceptance of the work will depend upon that compliance.
   c. Marking X Make Corrections Noted
      1) Final but restricted release. When submittals are marked as above, work covered by submittal may proceed, provided it complies with both Architect's notations or corrections on the submittal and with the requirements of the contract documents; acceptance of the work will depend on that compliance.
   d. Marking X Revise and Resubmit
      1) Returned for resubmittal. When submittal is marked as above, revise or prepare new submittal in accordance with Architect's notations stating reasons for returning submittal; cloud all revisions to expedite review; resubmit submittal without delay. Repeat if necessary to obtain a different action marking. Do not permit submittals with the above marking to be used at the project site or elsewhere where work is in progress.
   e. Marking X Rejected
      1) Returned for resubmittal. When the submittal is marked as above, do not proceed with the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise the submittal, or prepare a new submittal in accordance with the Architect's notations stating the reasons for returning the submittal. Resubmit the submittal without delay. Repeat if necessary to obtain a different action marking. Do not permit submittals with the above marking to be used at the project site or elsewhere where work is in progress."
   f. Marking X For Record Purposes Only
      1) No Action Taken/Required or Not Required for Review. When a submittal is marked as above, the A/E has retained submittal for their record keeping purposes or to track informational submittals that do not require review or approval. These submittals are processed only as a record of the construction.

END OF SECTION

SECTION 01 3219 SUBMITTALS SCHEDULE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittal schedule.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Submittals Schedule.

1.03 SUBMITTALS

A. Within 10 days after date of Agreement, provide schedule of submittal submissions.

B. Submit in PDF format.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTENT

A. Identify each item by specification section number, following the numbering in Procore. Include, as applicable, submittal dates for shop drawings, product data, samples, products identified under Allowances, and dates reviewed submittals will be required from Design-Builder. Indicate decision dates for selection of finishes.

3.02 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of initial schedule with Architect.

3.03 SCHEDULE

A. Preliminary submittal schedule attached following this section as a starting point for contractor generated submittal schedule.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submittals.

B. Quality assurance.

C. References and standards.

D. Testing and inspection agencies and services.

E. Control of installation.

F. Mock-ups.

G. Manufacturers' field services.

H. Defect Assessment.

1.02 RELATED REQUIREMENTS

A. Section 01 4216 - Definitions.

B. Section 01 6000 - Product Requirements: Requirements for material and product quality.

C. Section 04 0100 - Maintenance of Masonry:

1.03 REFERENCE STANDARDS

A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants; 2008 (Reapproved 2023).

B. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation; 2024.

C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry; 2023.

D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.

E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.

F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing; 2015.

G. ASTM E699 - Standard Specification for Agencies Involved in Testing, Quality Assurance, and Evaluating of Manufactured Building Components; 2016.

H. IAS AC89 - Accreditation Criteria for Testing Laboratories; 2025.

1.04 CONTRACTOR'S DESIGN-RELATED PROFESSIONAL DESIGN SERVICES

A. Coordination: Contractor's professional design services are subject to requirements of project's Conditions for Construction Contract.

B. Base design on performance and/or design criteria indicated in individual specification sections.

C. Scope of Contractor's Professional Design Services: Provide for the following items of work:

1. Structural Design of Formwork: As described in Section 03 1000 - Concrete Forming and Accessories.
2. Concrete Mix Design: As described in Section 03 3000 - Cast-in-Place Concrete. No specific designer qualifications are required.
3. Structural Design of Masonry Veneer Anchors and supports: As described in Section 04 2000 - Unit Masonry: Brick Veneer
4. Structural Design of Steel Connections: As described in Section 05 1200 - Structural Steel Framing.
5. Structural Design of Steel Connections: As described in Section 05 2100 - Steel Joist Framing.
6. Structural Design of Steel Decking: As described in Section 05 3100 - Steel Decking.
7. Structural Design of Metal Framing: As described in Section 05 4000 - Cold-Formed Metal Framing.
8. Structural Design of Metal Fabrications: As described in Section 05 5000 - Metal Fabrications.
9. Structural Design of Stairs: As described in Section 05 5100 - Metal Stairs.
10. Structural Design of Railings: As described in Section 05 5213 - Pipe and Tube Railings.

11. Structural Design: Include physical characteristics, engineering calculations, and resulting dimensional limitations as described in Section 08 4313 - Aluminum-Framed Storefronts.
12. Structural Design: Include calculations for resisting wind loads, physical characteristics, resulting dimensional limitations as described in Section 08 6300 - Metal-Framed Skylights.
13. Design of Structural Fill: As described in Section 31 2323 - Fill.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Designer's Qualification Statement: Submit for Architect's knowledge as contract administrator, or for Owner's information.
   1. Include information for each individual professional responsible for producing, or supervising production of, design-related professional services provided by Contractor.
      a. Full name.
      b. Professional licensure information.
      c. Statement addressing extent and depth of experience specifically relevant to design of items assigned to Contractor.

C. Design Data: Submit for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
   1. Include calculations that have been used to demonstrate compliance to performance and regulatory criteria provided, and to determine design solutions.
   2. Include required product data and shop drawings.
   3. Include a statement or certification attesting that design data complies with criteria indicated, such as building codes, loads, functional, and similar engineering requirements.
   4. Include signature and seal of design professional responsible for allocated design services on calculations and drawings.

D. Test Reports: After each test/inspection, promptly submit 1 copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Compliance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test report submittals are for Architect's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.

E. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator or for Owner.
   1. Submit for information for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications:
   1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.

B. Designer Qualifications: Where professional engineering design services and design data submittals are specifically required of Contractor by Contract Documents, provide services of a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.

1.07 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.

1.08 TESTING AND INSPECTION AGENCIES AND SERVICES

A. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing.

B. Design-Builder shall employ and pay for services of an independent testing agency to perform other specified

C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

D. Contractor Employed Agency:
1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
3. Laboratory: Authorized to operate in the State in which the Project is located.
4. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
5. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Tests shall be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Architect will use accepted mock-ups as a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, protect mock-up throughout construction, remove mock-up and clear area when directed to do so by Architect.

3.03 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Design-Builder and Subcontractors in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests/inspections specified.

B. Limits on Testing/Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the Work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the Work.

C. Contractor Responsibilities:
   1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
   2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to Work to be tested/inspected.
      b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
      c. To facilitate tests/inspections.
      d. To provide storage and curing of test samples.
   4. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
   5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

D. Re-testing required because of non-compliance with specified requirements shall be performed by the same agency on instructions by Architect.

E. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.

3.04 MANUFACTURERS' FIELD SERVICES

A. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.05 DEFECT ASSESSMENT

A. Replace Work or portions of the Work not complying with specified requirements.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY OF REFERENCE STANDARDS

A. Regulatory requirements applicable to this project are the following:

1. 28 CFR 36 - Nondiscrimination by Public Accommodations and in Commercial Facilities; Final Rule; Department of Justice; current edition.
2. 29 CFR 1910 - Occupational Safety and Health Standards; Current Edition.
3. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
4. ICC (IFC) - International Fire Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
5. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
6. Building Code: Michigan Building Code 2015.
7. Plumbing Code: Michigan Plumbing Code 2015.
8. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
9. Energy Code: Michigan Uniform Energy Code 2015.
10. Erosion and Sedimentation Control Regulations:.
11. Inland Lakes and Streams: Inland Lakes and Streams Act 346, 1972, and all subsequent amendments.
12. Construction Lien Laws:
13. Wage Rates:
14. Equal Opportunity for Employment (Michigan): comply with all applicable provisions of the Federal Civil rights Act and the Michigan Fair Employment Practices Act.

1.02 RELATED REQUIREMENTS

A. Section 01 4000 - Quality Requirements.

1.03 PERMITS, FEES, AND NOTICES

A. Contractor(s) responsibilities shall be in accordance with Article 3.7 of the General Conditions of the Contract [except as noted below].

1.04 QUALITY ASSURANCE

A. Contractor's Designer Qualifications: Refer to Section - 01 4000 - Quality Requirements.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SUMMARY

A. Other definitions are included in individual specification sections.

1.02 DEFINITIONS

A. Furnish: To supply, deliver, unload, and inspect for damage.

B. Install: To unpack, assemble, erect, apply, place, finish, cure, protect, clean, start up, and make ready for use.

C. Product: Material, machinery, components, equipment, fixtures, and systems forming the work result. Not materials or equipment used for preparation, fabrication, conveying, or erection and not incorporated into the work result. Products may be new, never before used, or re-used materials or equipment.

D. Project Manual: The book-sized volume that includes the procurement requirements (if any), the contracting requirements, and the specifications.

E. Provide: To furnish and install.

F. Supply: Same as Furnish.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

SECTION 01 4533 CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Code-required special inspections.

B. Testing services incidental to special inspections.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittal procedures.

B. Section 01 4000 - Quality Requirements.

1.03 DEFINITIONS

A. Code or Building Code: ICC (IBC), International Building Code, Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements and specifically, Chapter 17 - Special Inspections and Tests.

B. Code or Building Code: ICC (IBC), 2015 Edition of the International Building Code and specifically, Chapter 17 - Special Inspections and Tests.

C. Special Inspection:

1.04 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code for Structural Concrete—Code Requirements and Commentary; 2025.

B. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field; 2026a.

C. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete; 2025.

D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction; 2012a.

E. ASTM E329 - Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection; 2018.

F. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. SDI QA/QC - Standard for Quality Control and Quality Assurance for Installation of Steel Deck; 2022.

H. SJI 100 - Standard Specifications for K-Series, LH-Series, and DLH-Series Open Web Steel Joists, and for Joist Girders; 2020.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Testing Agency Qualifications: Prior to the start of work, the Testing Agency is required to:

C. Test Reports: After each test or inspection, promptly submit at least two copies of report; one to Architect and one to AHJ.

1.06 TESTING AND INSPECTION AGENCIES

A. Owner or Architect may employ services of an independent testing agency to perform additional testing and sampling associated with special inspections but not required by the building code.

B. Employment of agency in no way relieves Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.07 QUALITY ASSURANCE

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 SPECIAL INSPECTIONS FOR CONCRETE CONSTRUCTION

A. Reinforcement, Including Prestressing Tendons, and Verification of Placement: Verify compliance with ACI CODE-318, Chapters 20, 25.2, 25.3, 26.6.1-26.6.3; periodic.

B. Reinforcing Bar Welding: Verify compliance with AWS D1.4/D1.4M and ACI CODE-318, 26.6.4; periodic.

C. Anchors Cast in Concrete: Verify compliance with ACI CODE-318; periodic.

D. Bolts Installed in Concrete: Where allowable loads have been increased or where strength design is used, verify compliance with approved Contract Documents and ACI CODE-318, Sections 8.1.3 and 21.2.8 prior to and during placement of concrete; continuous.

E. Anchors Post-Installed in Hardened Concrete: Verify compliance with ACI CODE-318.

F. Design Mix: Verify plastic concrete complies with the design mix in approved Contract Documents and with ACI CODE-318, Chapter 19, 16.4.3, 26.4.4; periodic.

G. Concrete Sampling Concurrent with Strength Test Sampling: Each time fresh concrete is sampled for strength tests, verify compliance with ASTM C172/C172M, ASTM C31/C31M, and ACI CODE-318, Chapter 26.5, 26.12, and record the following, continuous:
   1. Slump.
   2. Air content.
   3. Temperature of concrete.

3.02 SPECIAL INSPECTIONS FOR SOILS

A. Materials and Placement: Verify each item below complies with approved construction documents and approved geotechnical report.
   1. Design bearing capacity of material below shallow foundations; periodic.
   2. Design depth of excavations and suitability of material at bottom of excavations; periodic.
   3. Materials, densities, lift thicknesses; placement and compaction of backfill: continuous.
   4. Subgrade, prior to placement of compacted fill verify proper preparation; periodic.

B. Testing: Classify and test excavated material; periodic.

3.03 SPECIAL INSPECTIONS FOR SPRAYED FIRE RESISTANT MATERIALS

A. Bond Strength: Verify adhesive and cohesive bond strength of sprayed fire resistant materials is no less than 150 pounds per square foot when in-place samples of the cured material are tested according to ASTM E736/E736M and as described below.

3.04 TESTING AGENCY DUTIES AND RESPONSIBILITIES

A. Testing Agency Duties:
   1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
   2. Perform specified sampling and testing of products in accordance with specified standards.
   3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of work or products.
   5. Perform additional tests and inspections required by Architect.
   6. Submit reports of all tests or inspections specified.

B. Limits on Testing or Inspection Agency Authority:
   1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
   2. Agency may not approve or accept any portion of the work.
   3. Agency may not assume any duties of Contractor.
   4. Agency has no authority to stop the work.

C. On instructions by Architect, perform re-testing required because of non-compliance with specified requirements, using the same agency.

D. Contractor will pay for re-testing required because of non-compliance with specified requirements.

3.05 CONTRACTOR DUTIES AND RESPONSIBILITIES

A. Contractor Responsibilities, General:
   1. Deliver to agency at designated location, adequate samples of materials for special inspections that require material verification.
   2. Cooperate with agency and laboratory personnel; provide access to approved documents at project site, to the work, to manufacturers' facilities, and to fabricators' facilities.
   3. Provide incidental labor and facilities:
      a. To provide access to work to be tested or inspected.

b. To obtain and handle samples at the site or at source of Products to be tested or inspected.
c. To facilitate tests or inspections.
d. To provide storage and curing of test samples.

4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing or inspection services.
5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

3.06 MANUFACTURERS' AND FABRICATORS' FIELD SERVICES

A. When specified in individual specification sections, require material suppliers, assembly fabricators, or product manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, to test, adjust, and balance equipment as applicable, and to initiate instructions when necessary.

B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Dewatering

B. Temporary utilities.

C. Temporary telecommunications services.

D. Temporary sanitary facilities.

E. Temporary Controls: Barriers, enclosures, and fencing.

F. Vehicular access and parking.

G. Waste removal facilities and services.

H. Project identification sign.

I. Field offices.

J. Removal of Utilities, Facilities and Controls.

1.02 RELATED REQUIREMENTS

A. Section 01 5100 - Temporary Utilities.

1.03 DEWATERING

A. Provide temporary means and methods for dewatering all temporary facilities and controls.

1.04 TEMPORARY UTILITIES - SEE SECTION 01 5100

1.05 TELECOMMUNICATIONS SERVICES

A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.

B. Telecommunications services shall include:
   1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
   2. Telephone Land Lines: One line, minimum; one handset per line.
   3. Internet Connections: Minimum of one; DSL modem or faster.

1.06 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.

B. Maintain daily in clean and sanitary condition.

1.07 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.08 FENCING

A. Construction: Contractor's option.

B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.09 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.10 INTERIOR ENCLOSURES

A. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces:

B. Paint surfaces exposed to view from Owner-occupied areas.

1.11 VEHICULAR ACCESS AND PARKING

A. Coordinate access and haul routes with governing authorities and Owner.

B. Provide and maintain access to fire hydrants, free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets.

D. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.

1.12 WASTE REMOVAL

A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.

B. Provide containers with lids. Remove trash from site periodically.

C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.13 PROJECT IDENTIFICATION

A. Provide project identification sign of design and construction indicated on drawings.

B. Erect on site at location indicated.

C. No other signs are allowed without Owner permission except those required by law.

1.14 FIELD OFFICES

A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons.

C. Locate offices a minimum distance of 30 feet from existing and new structures.

1.15 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.

B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 5100 TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities: Provision of electricity, lighting, heat, and water.

1.02 RELATED REQUIREMENTS

A. Section 01 5000 - Temporary Facilities and Controls:
   1. Temporary telecommunications services for administrative purposes.
   2. Temporary sanitary facilities required by law.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

1.04 TEMPORARY ELECTRICITY

A. Cost: By Contractor.

B. Connect to Owner's existing power service.
   1. Exercise measures to conserve energy.
   2. Provide separate metering and reimburse Owner for cost of energy used.

C. Provide temporary electric feeder from existing building electrical service at location as directed.

D. Complement existing power service capacity and characteristics as required.

E. Provide power outlets for construction operations, with branch wiring and distribution boxes located at each floor. Provide flexible power cords as required.

F. Provide main service disconnect and over-current protection at convenient location and meter.

G. Permanent convenience receptacles may be utilized during construction.

H. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.05 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain LED, compact fluorescent, or high-intensity discharge lighting as suitable for the application for construction operations in accordance with requirements of 29 CFR 1926 and authorities having jurisdiction.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lighting and provide routine repairs.

D. Permanent building lighting may be utilized during construction.

1.06 TEMPORARY HEATING

A. Cost of Energy: By Contractor.

B. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in specifications.

1.07 TEMPORARY WATER SERVICE

A. Cost of Water Used: By Contractor.

B. Provide and maintain suitable quality water service for construction operations at time of project mobilization.

C. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prevention of erosion due to construction activities.

B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.

C. Restoration of areas eroded due to insufficient preventive measures.

D. Compensation of Owner for fines levied by authorities having jurisdiction due to non-compliance by Contractor.

1.02 RELATED REQUIREMENTS

A. Section 31 1000 - Site Clearing: Limits on clearing; disposition of vegetative clearing debris.

B. Section 31 2200 - Grading: Temporary and permanent grade changes for erosion control.

1.03 REFERENCE STANDARDS

A. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc-Type Apparatus; 2021.

B. ASTM D4491/D4491M - Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 2022.

C. ASTM D4533/D4533M - Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2015 (Reapproved 2023).

D. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a (Reapproved 2023).

E. ASTM D4751 - Standard Test Methods for Determining Apparent Opening Size of a Geotextile; 2021a.

F. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).

1.04 PERFORMANCE REQUIREMENTS

A. Develop and follow an Erosion and Sedimentation Prevention Plan and submit periodic inspection reports.

B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.

C. Provide to Authority Having Jurisdiction (AHJ) a Performance Bond covering erosion and sedimentation preventive measures only, in an amount equal to the amount required by AHJ for cost of erosion and sedimentation control work.

D. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

E. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
   1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.

F. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
   1. Control movement of sediment and soil from temporary stockpiles of soil.
   2. Prevent development of ruts due to equipment and vehicular traffic.
   3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

G. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
   1. Prevent windblown soil from leaving the project site.
   2. Prevent tracking of mud onto public roads outside site.
   3. Prevent mud and sediment from flowing onto sidewalks and pavements.

4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.

H. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
   2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.

I. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
   1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.

J. Open Water: Prevent standing water that could become stagnant.

K. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

L. Temporary vegetation: provide temporary vegetative cover for all areas left exposed greater than 14 days from original disturbance.

M. Construction Access: Provide stabilized construction access per drawings.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Erosion and Sedimentation Control Plan:
   1. Obtain the approval of the Plan by authorities having jurisdiction.

C. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.

D. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.

PART 2 PRODUCTS

2.01 MATERIALS

A. Grass Seed For Temporary Cover: Select a species appropriate to climate, planting season, and intended purpose. If same area will later be planted with permanent vegetation, do not use species known to be excessively competitive or prone to volunteer in subsequent seasons.

B. Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
   1. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested in accordance with ASTM D4751.
   2. Permittivity: 0.05 sec^-1, minimum, when tested in accordance with ASTM D4491/D4491M.
   3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355/D4355M after 500 hours exposure.
   4. Tensile Strength: 100 pounds-force, minimum, in cross-machine direction; 124 pounds-force, minimum, in machine direction; when tested in accordance with ASTM D4632/D4632M.
   5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632/D4632M.
   6. Tear Strength: 55 pounds-force, minimum, when tested in accordance with ASTM D4533/D4533M.
   7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.

C. Silt Fence Posts: One of the following, minimum 5 feet long:
   1. Hardwood, 2 by 2 inches in cross section.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

3.03 SCOPE OF PREVENTIVE MEASURES

A. In all cases, if permanent erosion resistant measures have been installed temporary preventive measures are not required.

B. Construction Entrances: Traffic-bearing aggregate surface.
   1. Width: As required; 20 feet, minimum.
   2. Length: 50 feet, minimum.
   3. Provide at each construction entrance from public right-of-way.
   4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.

C. Linear Sediment Barriers: Made of silt fences.
   1. Provide linear sediment barriers:
      a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
   2. Space sediment barriers with the following maximum slope length upslope from barrier:
      a. Slope of Less Than 2 Percent: 100 feet..
      b. Slope Between 2 and 5 Percent: 75 feet.
      c. Slope Between 5 and 10 Percent: 50 feet.
      d. Slope Between 10 and 20 Percent: 25 feet.
      e. Slope Over 20 Percent: 15 feet.

D. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.

E. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.

F. Soil Stockpiles:
   1. Provide silt fencing around the base of the soil stockpiles.

G. Temporary Seeding: Use where temporary vegetated cover is required.

3.04 INSTALLATION

A. Temporary Construction Access Aggregate Surface:
   1. Excavate minimum of 6 inches.
   2. Place geotextile fabric full width and length, with minimum 12 inch overlap at joints.
   3. Place and compact at least 6 inches of 1 1/2 to 3 1/2 inch diameter stone.

B. Silt Fences:
   1. Store and handle fabric in accordance with ASTM D4873/D4873M.
   2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch high barriers with minimum 36 inch long posts spaced at 6 feet maximum, with fabric embedded at least 4 inches in ground.
   3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch high barriers, minimum 48 inch long posts spaced at 6 feet maximum, with fabric embedded at least 6 inches in ground.
   4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet, use nominal 32 inch high barriers with woven wire reinforcement and steel posts spaced at 4 feet maximum, with fabric embedded at least 6 inches in ground.
   5. Install with top of fabric at nominal height and embedment as specified.
   6. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
   7. Fasten fabric to wood posts using one of the following:
      a. Four nails per post with 3/4 inch diameter flat or button head, 1 inch long, and 14 gauge, 0.083 inch shank diameter.
      b. Five staples per post with at least 17 gauge, 0.0453 inch wire, 3/4 inch crown width and 1/2 inch long legs.

8. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches high with post spacing not more than 4 feet.

C. Temporary Seeding:
   1. When hydraulic seeder is used, seedbed preparation is not required.
   2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
   3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
   4. On soils of very low fertility, apply 10-10-10 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
   5. Incorporate fertilizer into soil before seeding.
   6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
   7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion.
   8. Repeat irrigation as required until grass is established.

3.05 MAINTENANCE

A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.

B. Repair deficiencies immediately.

C. Silt Fences:
   1. Promptly replace fabric that deteriorates unless need for fence has passed.
   2. Remove silt deposits that exceed one-third of the height of the fence.
   3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.

D. Clean out temporary sediment control structures weekly and relocate soil on site.

E. Place sediment in appropriate locations on site; do not remove from site.

3.06 CLEAN UP

A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Architect.

B. Remove silt fencing and silt sacks from catch basins.

C. Clean out temporary sediment control structures that are to remain as permanent measures.

D. Clean catch basins and storm sewer piping if sediments have accumulated in those structures during construction.

E. Remove accumulated sediment from storm water basins (detention or retention) to re-establish and achieve final storm storage volumes.

F. Retention and infiltration storm basins that require infiltration of soils to operate properly shall require removal of sediments and disking of the top 12-inches of final storm pond bottom.

G. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

END OF SECTION

SECTION 01 6000 PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.

B. Product option requirements.

C. Substitution limitations.

D. Procedures for Owner-supplied products.

1.02 RELATED REQUIREMENTS

A. Section 01 2500 - Substitution Procedures: Substitutions made during procurement and/or construction phases.

B. Section 01 4000 - Quality Requirements: Product quality monitoring.

C. Section 01 7419 - Construction Waste Management and Disposal: Waste disposal requirements potentially affecting product selection, packaging and substitutions.

D. Section 23 0513 - Common Motor Requirements for HVAC Equipment: Motors for HVAC equipment.

1.03 REFERENCE STANDARDS

A. NEMA MG 00001 - Motors and Generators; 2024.

1.04 SUBMITTALS

A. All product submittal information (i.g. test reports, make and color selections, product accessories, installer qualifications, etc), submitted to the architect, is to be package into one single PDF as single submittal.

B. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by Contract Documents.

B. Use of products having any of the following characteristics is not permitted:

1. Made outside the United States, its territories, Canada, or Mexico.
2. Made using or containing CFC's or HCFC's.
3. Containing lead, cadmium, or asbestos.

C. Motors: Refer to Section 22 0513 - Common Motor Requirements for Plumbing Equipment, NEMA MG 00001 Type. Specific motor type is specified in individual specification sections.

D. Motors: Refer to Section 23 0513 - Common Motor Requirements for HVAC Equipment, NEMA MG 00001 Type. Specific motor type is specified in individual specification sections.

2.02 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

PART 3 EXECUTION

3.01 SUBSTITUTION LIMITATIONS

A. See Section 01 2500 - Substitution Procedures.

3.02 OWNER-SUPPLIED PRODUCTS

3.03 TRANSPORTATION AND HANDLING

A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.

B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.

C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

D. Transport and handle products in accordance with manufacturer's instructions.

E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.

F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.

G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.

H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION

A. Store and protect products in accordance with manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.

D. For exterior storage of fabricated products, place on sloped supports above ground.

E. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.

F. Comply with manufacturer's warranty conditions, if any.

G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

H. Prevent contact with material that may cause corrosion, discoloration, or staining.

I. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

J. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 7000 EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.

B. Surveying for laying out the work.

C. Cleaning and protection.

D. Demonstration and instruction of Owner personnel.

E. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on working in existing building; continued occupancy; work sequence; identification of salvaged and relocated materials.

B. Section 01 3000 - Administrative Requirements: Submittals procedures.

C. Section 01 4000 - Quality Requirements: Testing and inspection procedures.

D. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties.

E. Section 02 4100 - Demolition: Demolition of whole structures and parts thereof; site utility demolition.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in compliance with Contract Documents.

C. Cutting and Patching: Submit written request in advance of cutting or alteration that affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate Contractor.

D. Project Record Documents: Accurately record actual locations of capped and active utilities.

1.04 QUALIFICATIONS

A. For surveying work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect. Submit evidence of surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate. Employ only individual(s) trained and experienced in collecting and recording accurate data relevant to ongoing construction activities,

1.05 PROJECT CONDITIONS

A. Use of explosives is not permitted.

B. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

C. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

D. Perform dewatering activities, as required, for the duration of the project.

E. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

F. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere and over adjacent property.
   1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.

G. Erosion and Sediment Control: See Section 01 5713

H. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

I. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

J. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations. Comply with federal, state, and local regulations.

1.06 COORDINATION

A. See Section 01 1000 for occupancy-related requirements.

B. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

C. Notify affected utility companies and comply with their requirements.

D. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

E. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of work of separate sections.

H. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.

B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points and benchmarks prior to starting work. If existing benchmarks are to be removed during construction, set new benchmarks (minimum of 2).

B. Promptly notify Architect of any discrepancies discovered.

C. Control datum for survey is that established by Owner provided survey.

D. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

E. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

G. Utilize recognized engineering survey practices.

H. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.

I. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations, and and associated concrete work.

J. Periodically verify layouts by same means.

K. Maintain a complete and accurate log of control and survey work as it progresses.

L. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of alterations work constitutes acceptance of existing conditions.

B. Keep areas in which alterations are being conducted separated from other areas that are still occupied.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
   1. Where openings in exterior enclosure exist, provide construction to make exterior enclosure weatherproof.
   2. Insulate existing ducts or pipes that are exposed to outdoor ambient temperatures by alterations work.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.
   2. Relocate items indicated on drawings.
   3. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
   4. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove, relocate, and extend existing systems to accommodate new construction.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
   2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
   3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
      a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
      b. See Section 01 1000 for other limitations on outages and required notifications.
      c. Provide temporary connections as required to maintain existing systems in service.
   4. Verify that abandoned services serve only abandoned facilities.
   5. Remove abandoned pipe, ducts, conduits, and equipment , including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.

F. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.

G. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
   1. When existing finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Architect.
   2. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls, and ceilings to a smooth plane without breaks, steps, or bulkheads.

H. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.

I. Refinish existing surfaces as indicated:
   1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
   2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.

J. Clean existing systems and equipment.

K. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.

L. Do not begin new construction in alterations areas before demolition is complete.

M. Comply with all other applicable requirements of this section.

3.07 CUTTING AND PATCHING

A. Whenever possible, execute the work by methods that avoid cutting or patching.

B. See Alterations article above for additional requirements.

C. Perform whatever cutting and patching is necessary to:
   1. Complete the work.
   2. Fit products together to integrate with other work.
   3. Provide openings for penetration of mechanical, electrical, and other services.
   4. Match work that has been cut to adjacent work.
   5. Repair areas adjacent to cuts to required condition.
   6. Repair new work damaged by subsequent work.
   7. Remove samples of installed work for testing when requested.
   8. Remove and replace defective and non-complying work.

D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.

E. Employ original installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

F. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

G. Restore work with new products in accordance with requirements of Contract Documents.

H. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

I. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material , to full thickness of the penetrated element.

J. Patching:
   1. Finish patched surfaces to match finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
   2. Match color, texture, and appearance.
   3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.

3.08 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

3.09 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

F. Protect work from spilled liquids. If work is exposed to spilled liquids, immediately remove protective coverings, dry out work, and replace protective coverings.

G. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

H. Prohibit traffic from landscaped areas.

I. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.

3.10 SYSTEM STARTUP

A. Coordinate schedule for start-up of various equipment and systems.

B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

D. Verify that wiring and support components for equipment are complete and tested.

E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.

F. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

G. Submit a written report that equipment or system has been properly installed and is functioning correctly.

3.11 FINAL CLEANING

A. Use cleaning materials that are nonhazardous.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.

C. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.

D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.

E. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.12 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities.
   1. Provide copies to Architect.

B. Accompany Project Coordinator on preliminary inspection to determine items to be listed for completion or correction in the Contractor's Correction Punch List for Contractor's Notice of Substantial Completion.

C. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.

D. Submit written certification containing Contractor's Correction Punch List, that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's Substantial Completion inspection.

E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect.

F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.

G. Notify Architect when work is considered finally complete and ready for Architect's Substantial Completion final inspection.

H. Complete items of work determined by Architect listed in executed Certificate of Substantial Completion.

3.13 MAINTENANCE

END OF SECTION

This page intentionally left blank

SECTION 01 7419 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.01 WASTE MANAGEMENT REQUIREMENTS

A. Owner requires that this project generate the least amount of trash and waste possible.

B. Employ processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors.

C. Minimize trash/waste disposal in landfills; reuse, salvage, or recycle as much waste as economically feasible.

D. Methods of trash/waste disposal that are not acceptable are:
   1. Burning on the project site.
   2. Burying on the project site.
   3. Dumping or burying on other property, public or private.
   4. Other illegal dumping or burying.

E. Regulatory Requirements: Contractor is responsible for knowing and complying with regulatory requirements, including but not limited to Federal, state and local requirements, pertaining to legal disposal of all construction and demolition waste materials.

1.02 RELATED REQUIREMENTS

A. Section 01 6000 - Product Requirements: Waste prevention requirements related to delivery, storage, and handling.

B. Section 01 7000 - Execution and Closeout Requirements: Trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash, debris, and rubble resulting from construction, remodeling, repair and demolition operations.

C. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity or reactivity.

D. Nonhazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitibility, corrosivity, toxicity, or reactivity.

E. Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

F. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

G. Recycle: To remove a waste material from the project site to another site for remanufacture into a new product for reuse by others.

H. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste.

I. Return: To give back reusable items or unused products to vendors for credit.

J. Reuse: To reuse a construction waste material in some manner on the project site.

K. Salvage: To remove a waste material from the project site to another site for resale or reuse by others.

L. Sediment: Soil and other debris that has been eroded and transported by storm or well production run-off water.

M. Source Separation: The act of keeping different types of waste materials separate beginning from the first time they become waste.

N. Toxic: Poisonous to humans either immediately or after a long period of exposure.

O. Trash: Any product or material unable to be reused, returned, recycled, or salvaged.

P. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

PART 3 EXECUTION

2.01 WASTE MANAGEMENT PROCEDURES

A. See Section 01 3000 for additional requirements for project meetings, reports, submittal procedures, and project documentation.

B. See Section 01 6000 for waste prevention requirements related to delivery, storage, and handling.

C. See Section 01 7000 for trash/waste prevention procedures related to demolition, cutting and patching, installation, protection, and cleaning.

2.02 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: Designate an on-site person or persons responsible for instructing workers and overseeing and documenting results of the Waste Management Plan.

B. Communication: Distribute copies of the Waste Management Plan to job site foreman, each subcontractor, Owner, and Architect.

C. Instruction: Provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all parties at the appropriate stages of the project.

D. Facilities: Provide specific facilities for separation and storage of materials for recycling, salvage, reuse, return, and trash disposal, for use by all contractors and installers.
   1. Provide adequate space for pick-up and delivery and convenience to subcontractors.
   2. Keep recycling and trash/waste bin areas neat and clean and clearly marked in order to avoid contamination of materials.

E. Hazardous Wastes: Separate, store, and dispose of hazardous wastes according to applicable regulations.

F. Recycling: Separate, store, protect, and handle at the site identified recyclable waste products in order to prevent contamination of materials and to maximize recyclability of identified materials. Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

G. Reuse of Materials On-Site: Set aside, sort, and protect separated products in preparation for reuse.

END OF SECTION

SECTION 01 7610 TEMPORARY PROTECTIVE COVERINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Temporary protective coverings for installed floors, walls, and other surfaces.

1.02 REFERENCE STANDARDS

A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

B. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2023, with Errata.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide materials that are easily removed without damage to the surfaces covered and with the following characteristics:
   1. Impact resistant.
   2. Slip resistant.
   3. Flame retardant.

2.02 MATERIALS

A. Sheet Materials:
   1. Flame Retardance: Meet requirements of NFPA 701.

B. Rolled Materials:
   1. Self-adhering polyethylene film.
   2. Flame Retardance: Meet requirements of NFPA 701.
   3. Surface Burning Characteristics: Maximum flame spread index of 25 and smoke developed index of 450; when system tested in accordance with ASTM E84.

C. Corner and Door Jamb Protection Materials:
   1. Cardboard, shaped specifically for application.
   2. PVC plastic.

PART 3 EXECUTION

3.01 PREPARATION

A. Remove dirt and debris from surfaces to be protected.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Trim or overlap sheet materials to fit area to be covered.

C. Roll out and cut rolled materials to fit area to be covered.

D. Tape seams. Avoid taping directly to finished surfaces.

E. Stretch self-adhering film materials to completely cover surface.

3.03 REMOVAL

A. Remove protective coverings prior to Date of Substantial Completion. Reuse or recycle materials if possible.

END OF SECTION

This page intentionally left blank

SECTION 01 7800 CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Project record documents.

B. Operation and maintenance data.

C. Warranties and bonds.

1.02 RELATED REQUIREMENTS

A. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.

B. Individual Product Sections: Specific requirements for operation and maintenance data.

C. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS

A. Project Record Documents: Submit documents to Architectand Owner with claim for final Application for Payment.

B. Operation and Maintenance Data:
   1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
   2. Submit one copy of completed documents 10 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
   3. Submit two sets of revised final documents in final form within 10 days after final inspection.

C. Warranties and Bonds:
   1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
   2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
   3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 3 EXECUTION

2.01 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Addenda.
   3. Change Orders and other modifications to the Contract.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress.

E. Record Drawings: Legibly mark each item to record actual construction including:
   1. Field changes of dimension and detail.
   2. Details not on original Contract drawings.

2.02 OPERATION AND MAINTENANCE DATA

A. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

B. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

C. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

2.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

2.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

E. Include manufacturer's printed operation and maintenance instructions.

2.05 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS

A. Assemble operation and maintenance data into PDF manuals for Owner's personnel use, with data arranged in the same sequence as, and identified by, the specification sections.

B. Project Directory: Title and address of Project; names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.

C. Tables of Contents: List every item separated by a divider, using the same identification as on the divider tab; where multiple volumes are required, include all volumes Tables of Contents in each volume, with the current volume clearly identified.

2.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Demonstration of products and systems to be commissioned and where indicated in specific specification sections.

1.02 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures; except:

B. Draft Training Plans: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
   1. Submit not less than two weeks prior to start of training.
   2. Revise and resubmit until acceptable.
   3. Provide an overall schedule showing all training sessions.
   4. Include at least the following for each training session:
      a. Identification, date, time, and duration.
      b. Description of products and/or systems to be covered.
      c. Name of firm and person conducting training; include qualifications.
      d. Intended audience, such as job description.
      e. Objectives of training and suggested methods of ensuring adequate training.
      f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
      g. Media to be used, such a slides, hand-outs, etc.
      h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

1.03 QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
   2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstrations conducted during Functional Testing need not be repeated unless Owner personnel training is specified.

C. Demonstration may be combined with Owner personnel training if applicable.

D. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Do not start training until Functional Testing is complete, unless otherwise specified or approved by the Commissioning Provider.

C. Provide training in minimum two hour segments.

D. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

E. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
   1. The location of the O&M manuals and procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of the O&M manuals.

F. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.
   2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
   4. Provide hands-on training on all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
   9. Review recommended tools and spare parts inventory suggestions of manufacturers.
   10. Review spare parts and tools required to be furnished by Contractor.
   11. Review spare parts suppliers and sources and procurement procedures.

G. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION

SECTION 02 4100 DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Selective demolition of building elements for alteration purposes.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

D. Section 01 5713 - Temporary Erosion and Sediment Control.

E. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

F. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

G. Section 31 1000 - Site Clearing: Vegetation and existing debris removal; earth stripping and stockpiling.

H. Section 31 2200 - Grading: Rough and fine grading.

I. Section 31 2323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 DEMOLITION

A. Remove concrete paving and curbs to the nearest joint as required to accomplish new work.

B. Remove bituminous pavement, drives, walks, and valley gutter to the full depth. Do not mix with other materials.

C. Within area of new building and parking construction, remove foundation walls and footings in their entirety.

D. Remove other items indicated, for salvage and recycling.

E. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified in Section 31 2200.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.

6. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements to remain in place and not removed.
1. Provide bracing and shoring.
2. Prevent movement or settlement of adjacent structures.
3. Stop work immediately if adjacent structures appear to be in danger.

D. Hazardous Materials:
1. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCBs, and mercury.

E. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

F. All utilities to be abandoned in place and filled with flowable fill shall be cut at each end of the pipe and filled from one end until the fill material comes out the other end. All open ends of the pipe to be filled are to be plugged with a concrete cap.

3.03 EXISTING UTILITIES

A. Notify the Owner of all underground utilities before starting any work. Contact Miss Dig (811 or 1-800-482-7171) at least 3 working days prior to the start of construction. Building sewer connections, water and gas services, and other utility lines may not be indicated on the drawings; Make every effort to locate all underground utilities using information obtained from the utility owner or by prospecting in advance of trench excavation.

B. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

C. Protect existing utilities to remain from damage.

D. Any damage done to public or private utilities shall be immediately repaired or replaced at the Contractor's expense and reported to the Engineer.

E. Do not disrupt public utilities without permit from authority having jurisdiction.

F. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

G. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

H. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

I. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

J. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone. Identify and mark, in same manner as other utilities to remain, utilities to be reconnected.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Existing construction and utilities indicated on drawings are based on casual field observation and existing record documents only.
1. Verify construction and utility arrangements are as indicated.
2. Report discrepancies to Architect before disturbing existing installation.
3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Remove existing work as indicated and required to accomplish new work.
1. Remove items indicated on drawings.

C. Services including, but not limited to, HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications: Remove existing systems and equipment as indicated.

1. Maintain existing active systems to remain in operation, and maintain access to equipment and operational components.
2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
3. Verify that abandoned services serve only abandoned facilities before removal.
4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings. Remove back to source of supply where possible, otherwise cap stub and tag with identification.

D. Protect existing work to remain.
1. Prevent movement of structure. Provide shoring and bracing as required.
2. Perform cutting to accomplish removal work neatly and as specified for cutting new work.
3. Repair adjacent construction and finishes damaged during removal work.
4. Patch to match new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

This page intentionally left blank

SECTION 03 1000 CONCRETE FORMING AND ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formwork for cast-in-place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form stripping.

1.02 RELATED REQUIREMENTS

A. Section 03 2000 - Concrete Reinforcing.

B. Section 03 3000 - Cast-in-Place Concrete.

C. Section 05 1200 - Structural Steel Framing: Placement of embedded steel anchors and plates in cast-in-place concrete.

1.03 REFERENCE STANDARDS

A. ACI 301 - Specifications for Concrete Construction; 2020.

B. ACI 318 - Building Code Requirements for Structural Concrete; 2019 (Reapproved 2022).

C. ACI 347R - Guide to Formwork for Concrete; 2014 (Reapproved 2021).

D. ACI CODE-318 - Building Code for Structural Concrete—Code Requirements and Commentary; 2025.

E. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).

F. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials and Commentary; 2010 (Reapproved 2015).

G. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

H. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2025.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver prefabricated forms and installation instructions in manufacturer's packaging.

B. Store prefabricated forms off ground in ventilated and protected manner to prevent deterioration from moisture.

C. Protect plastic foam products from damage and exposure to sunlight.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.

B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.

C. Chamfer outside corners of beams, joists, columns, and walls.

D. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.

E. Comply with relevant portions of ACI CODE-318, ACI PRC-347, and ACI SPEC-301.

2.02 WOOD FORM MATERIALS

A. Form Materials: At the discretion of the Contractor.

2.03 FORMWORK ACCESSORIES

A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, free of defects that could leave holes larger than 1 inch in concrete surface.

B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.

1. Do not use materials containing diesel oil or petroleum-based compounds.
2. Composition: Colorless, reactive, solvent-based compound.
    a. VOC Content: In compliance with applicable local, State, and federal regulations.

C. Dowel Sleeves: Plastic sleeve and nailable plastic base for smooth, round, steel load-transfer dowels.

D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

E. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 1200.

F. Waterstops: Bentonite and butyl rubber.
   1. Configuration: As indicated on drawings.
   2. Size: As indicated on drawings.
   3. Manufacturers:
      a. AVM Industries, Inc; Aussie Swell Red: www.avmindustries.com/#sle.
      b. Cetco, a Mineral Technologies Company; Waterstop-RX: www.mineralstech.com
      c. GCP Applied Technologies; Adcor ES: www.gcpat.com
      d. WR Medows; Waterstop EC Plus; www.wrmedows.com.
      e. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI SPEC-301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to a minimum.

3.04 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items that will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.

D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement.

F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.06 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.
   1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI SPEC-117, unless otherwise indicated.

3.08 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

This page intentionally left blank

SECTION 03 2000 CONCRETE REINFORCING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel for cast-in-place concrete.

B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

A. Section 03 1000 - Concrete Forming and Accessories.

B. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code for Structural Concrete—Code Requirements and Commentary; 2025.

B. ACI MNL-66 - ACI Detailing Manual; 2020.

C. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2026.

E. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement; 2026.

F. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.

G. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.

H. CRSI (DA4) - Manual of Standard Practice; 2024.

I. CRSI (P1) - Placing Reinforcing Bars, 10th Edition; 2019.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

C. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
   1. Deformed billet-steel bars.
   2. Unfinished.

B. Steel Welded Wire Reinforcement (WWR): Plain type; ASTM A1064/A1064M.
   1. Form: Flat Sheets.
   2. WWR Style: As indicated on drawings.

C. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
   3. Provide stainless steel, galvanized, or plastic components for placement within 1-1/2 inches of weathering surfaces.

2.02 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Welding of reinforcement is permitted only with the specific approval of Architect. Perform welding in accordance with AWS D1.4/D1.4M.

C. Locate reinforcing splices not indicated on drawings at point of minimum stress.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Accommodate placement of formed openings.

C. Comply with applicable code for concrete cover over reinforcement.

3.02 FIELD QUALITY CONTROL

A. An independent testing agency, as specified in Section 01 4000 - Quality Requirements, will inspect installed reinforcement for compliance with contract documents before concrete placement.

END OF SECTION

SECTION 03 3000 CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete for composite floor construction.

B. Floors and slabs on grade.

C. Concrete foundation walls and footings.

D. Joint devices associated with concrete work.

E. Miscellaneous concrete elements, including equipment pads.

F. Concrete curing.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ACI 211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

B. ACI 301 - Specifications for Concrete Construction; 2020.

C. ACI 302.1R - Guide to Concrete Floor and Slab Construction; 2015.

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

E. ACI 305R - Guide to Hot Weather Concreting; 2020.

F. ACI 306R - Guide to Cold Weather Concreting; 2016.

G. ACI 308R - Guide to External Curing of Concrete; 2016.

H. ACI 318 - Building Code Requirements for Structural Concrete; 2019 (Reapproved 2022).

I. ACI CODE-318 - Building Code for Structural Concrete—Code Requirements and Commentary; 2025.

J. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

K. ACI PRC-302.1 - Guide to Concrete Floor and Slab Construction; 2015.

L. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

M. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.

N. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.

O. ACI PRC-308 - Curing of Concrete—Guide; 2026.

P. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

Q. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.

R. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.

S. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2026a.

T. ASTM C143/C143M - Standard Test Method for Slump of Concrete; 2026a.

U. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.

V. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2020.

W. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2024.

X. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2025.

Y. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2024.

Z. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2025a.

AA. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2025a.

BB. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2020a.

CC. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.

DD. ASTM C1116/C1116M - Standard Specification for Fiber-Reinforced Concrete; 2023.

EE. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures; 2020.

FF. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete; 2025.

GG. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.

HH. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types); 2023.

II. ASTM E1155/E1155M - Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers; 2023.

JJ. ASTM E1643 - Standard Practice for Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2024.

KK. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2017 (Reapproved 2023).

LL. COE CRD-C 48 - Handbook for Concrete and Cement Standard Test Method for Water Permeability of Concrete; 1992.

MM. COE CRD-C 572 - Handbook for Concrete and Cement Corps of Engineers Specifications for Polyvinylchloride Waterstop; 1974.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
   1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.

C. Mix Design: Submit proposed concrete mix design.
   1. Indicate proposed mix design complies with requirements of ACI CODE-318, Chapter 5 - Concrete Quality, Mixing and Placing.

D. Test Reports: Submit report for each test or series of tests specified.

1.05 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.

B. Follow recommendations of ACI PRC-305 when concreting during hot weather.

C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

PART 2 PRODUCTS

2.01 FORMWORK

A. Comply with requirements of Section 03 1000.

2.02 REINFORCEMENT MATERIALS

A. Comply with requirements of Section 03 2000.

2.03 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type or ASTM C595/C595M, Type IL - Portland Limestone cement
   1. Acquire cement for entire project from same source.

B. Fine and Coarse Aggregates: ASTM C33/C33M.

C. Fly Ash: ASTM C618, Class C or F.

D. Calcined Pozzolan: ASTM C618, Class N.

E. Silica Fume: ASTM C1240, proportioned in accordance with ACI PRC-211.1.

F. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

G. Structural Fiber Reinforcement: ASTM C1116/C1116M.
   1. Fiber Type: Alkali-resistant synthetic.
   2. Products:
      a. Fibermesh; Fibermesh 300 @ 1.5 pounds per cubic yard: www.fibermesh.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ADMIXTURES

A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.

B. Air Entrainment Admixture: ASTM C260/C260M.

C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.

D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.

E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.

F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.

G. Water Reducing Admixture: ASTM C494/C494M Type A.

H. Waterproofing Admixture: Admixture formulated to reduce permeability to liquid water, with no adverse effect on concrete properties.
   1. Admixture Composition: Crystalline, functioning by growth of crystals in capillary pores.
   2. Permeability of Cured Concrete: No measurable leakage when tested in accordance with COE CRD-C 48 at 200 psi; provide test reports.
   3. Products:
      a. Kryton International, Inc; Krystol Internal Membrane (KIM): www.kryton.com/#sle.
      b. Penetron; PENETRON ADMIX SB: www.penetron.com/#sle.
      c. Xypex Chemical Corporation; Bio-San C500: www.xypex.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

2.05 ACCESSORY MATERIALS

A. Underslab Vapor Retarder:
   1. Sheet Material: ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single-ply polyethylene is prohibited.
   2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
   3. Products:
      a. Fortifiber Building Systems Group ; Moistop Ultra 10: www.fortifiber.com.
      b. Henry Company; Moistop Ultra 10: www.henry.com/#sle.
      c. ISI Building Products; Viper VaporCheck II 10-mil (Class A): www.isibp.com/#sle.
      d. Poly-America; Husky Yellow Guard Class A 10-mil Vapor Barrier: www.yellowguard.com/#sle.
      e. Reef Industries: Vaporguard: www.reefindustries.com
      f. Stego Industries, LLC; Stego Wrap Class A - 10 mils (0.25 mm): www.stegoindustries.com/#sle.
      g. W. R. Meadows, Inc; PERMINATOR Class A - 10 mils (0.25 mm): www.wrmeadows.com/#sle.
      h. Substitutions: See Section 01 6000 - Product Requirements.

2.06 BONDING AND JOINTING PRODUCTS

A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.

B. Epoxy Bonding System:
   1. Complying with ASTM C881/C881M and of Type required for specific application.

C. Waterstops: PVC, complying with COE CRD-C 572.
   1. Configuration: As indicated on drawings.
   2. Size: As indicated on drawings.
   3. Products:
      a. BoMetals, Inc: www.bometals.com/#sle.

b. Substitutions: See Section 01 6000 - Product Requirements.

D. Slab Isolation Joint Filler: 1/2-inch thick, height equal to slab thickness, with removable top section forming 1/2-inch deep sealant pocket after removal.
1. Material: ASTM D1751, cellulose fiber.

2.07 CURING MATERIALS

A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.

B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.

C. Curing and Sealing Compound, Moisture Emission-Reducing, Membrane-Forming: Clear, liquid sealer for application to newly-placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
3. VOC Content: Less than 100 g/L.
4. Solids Content: 25 percent, minimum.

D. Moisture-Retaining Sheet: ASTM C171.
1. Polyethylene film, white opaque, minimum nominal thickness of 4 mil, 0.004 inch.
2. White-burlap-polyethylene sheet, weighing not less than 3.8 ounces per square yard.

E. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301.
1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

C. Normal Weight Concrete:
1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As indicated on drawings.
2. Fly Ash Content: Maximum 25 percent of cementitious materials by weight.
3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
4. Silica Fume Content: Maximum 5 percent of cementitious materials by weight.
5. Maximum Aggregate Size: 5/8 inch.

2.09 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.

B. Transit Mixers: Comply with ASTM C94/C94M.

C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

A. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
2. Use latex bonding agent only for non-load-bearing applications.

B. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
   1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as indicated on drawings. Do not use sand.

3.03 PLACING CONCRETE

A. Place concrete in accordance with ACI PRC-304.

B. Place concrete for floor slabs in accordance with ACI PRC-302.1.

C. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

D. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

E. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.04 SLAB JOINTING

A. Locate joints as indicated on drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.

3.05 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for compliance with specified tolerances.

B. Measure F(F) Floor Flatness and F(L) Floor Levelness in accordance with ASTM E1155/E1155M, within 48 hours after slab installation; report both composite overall values and local values for each measured section.

C. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.

D. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.06 CONCRETE FINISHING

A. Repair surface defects, including tie holes, immediately after removing formwork.

B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
   1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal. Smooth rubbed finish to be used when finish is not indicated in drawings.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

E. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
   1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI PRC-302.1; thick floor coverings include quarry tile, ceramic tile, and Portland cement terrazzo with full bed setting system.

2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI PRC-302.1; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
3. Decorative Exposed Surfaces: Trowel as described in ACI PRC-302.1; take measures necessary to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to receive liquid hardeners, surfaces to receive dry-shake hardeners, surfaces to be polished, and all other exposed slab surfaces.

F. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.07 CURING AND PROTECTION

A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
1. Normal concrete: Not less than seven days.

C. Surfaces Not in Contact with Forms:
1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
3. Final Curing: Begin after initial curing but before surface is dry.
a. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.08 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. Provide free access to concrete operations at project site and cooperate with appointed firm.

C. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.

D. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.

E. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

F. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.

3.09 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.

3.10 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

SECTION 03 3543 POLISHED CONCRETE FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Joint fillers.

B. Dyed and polished concrete.

1.02 RELATED SECTIONS

A. Section 03 3000 - Cast-in-Place Concrete.

1.03 REFERENCES

A. American Concrete Institute (ACI): ACI 302.1R - Guide for Concrete Floor and Slab Construction.

B. American National Standards Institute (ANSI): Standards B-101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials

C. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

D. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.

E. ASTM C 779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.

F. Reunion Internationale des Laboratoires D'Essais et de Recherches sur les Materiaux et les Constructions (RILEM): Rilem Test Method 11.4 - Standard Measurement of Reduction of Moisture Penetration through Horizontal Concrete Surfaces.

G. National Floor Safety Institute (NFSI): NFSI Test Method 101-A - Standard for Evaluating High-Traction Flooring Materials.

H. CPC - Concrete Polishing Council (formerly CCPA) a specialty council of ASCC (American Society of Concrete Contractors)

1.04 SYSTEM DESCRIPTION

A. Performance Requirements: Provide polished flooring that has been designed, manufactured and installed to achieve the following:
   1. Abrasion Resistance: ASTM C779, Method A, high resistance, no more than 0.008 inch (0.20 mm) wear in 30 minutes.
   2. Reflectivity: Increase of 35 percent as determined by standard gloss meter.
   3. Waterproof Properties: Rilem Test Method 11.4, 70 percent or greater reduction in absorption.
   4. High Traction Rating: NFSI 101-A, ANSI B-101.1 2009 non-slip properties.

B. Design Requirements:
   1. Hardened Concrete Properties:
      a. Minimum Concrete Compressive Strength: 3500 psi.
      b. Normal Weight Concrete: No lightweight aggregate.
      c. Non-air entrained.
   2. Placement Properties:
      a. Natural concrete slump of 4-1/2 inches to 5 inches. Admixtures may be used.
      b. Flatness Requirements:
         1) Overall FF 50.
         2) Local FF 40.
   3. Hard-Steel Troweled (3 passes) Concrete: No burnishing marks. Finish to ACI 302.1R, Class 5 floor.
   4. Curing Options:
      a. Membrane forming curing compounds (ASTM C309, Type 1, Class B, all resin, dissipating cure).
         1) Acrylic curing and sealing compounds not recommended.
      b. Sheet membrane (ASTM C171); polyethylene film not recommended.
      c. Damp Curing: Seven day cure.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate information on shop drawings as follows:
   1. Typical layout including dimensions and floor grinding schedule.

2. Plan view of floor and joint pattern layout.
3. Areas to receive colored surface treatment.
4. Hardener, sealer, densifier identified in notes.

C. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.
1. Material Safety Data Sheets (MSDS).
2. Preparation and concrete grinding procedures.

D. Quality Assurance Submittals:
1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties as cited in Performance Requirements.
2. Certificates:
a. Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
b. Letter of certification from the National Floor Safety Institute confirming the system has been tested and passed phase Two Level of certification when tested by Method 101-A. ANSI B-101.1 non-slip properties.
c. Current contractor's certificate signed by manufacturer declaring Contractor as an approved installer of polishing system.
3. Manufacturer's Instructions: Manufacturer's installation instructions.

E. Warranty: Submit warranty documents specified.

F. Operation and Maintenance Data: Submit operation and maintenance data for installed products.
1. Manufacturer's instructions on maintenance renewal of applied treatments.
2. Protocols and product specifications for joint filing, crack repair and/or surface repair.

1.06 QUALITY ASSURANCE

A. Installer Qualifications:
1. Installer with a minimum of 5 years experience in performing work of this section who has specialized in installation of work similar to that required for this project.
2. Installer trained and holding a current certificate as an authorized installer.
3. Current Certification from the CPC (formerly CPAA) stating that the technicians are trained craftsmen.

B. Concrete finishing components and materials shall be from single manufacturer.

C. Manufacturer Qualifications:
1. Manufacturer capable of providing field service representation during construction and approving application method.
2. Minimum 5 years of experience in manufacturing components similar to or exceeding requirements of project.

D. Regulatory Requirements: Comply with NFSI Test Method 101-A Phase Two Level High Traction Material.

E. Mock-Ups:
1. Mock-Up Size: 100 square feet sample panel at jobsite at location as directed under conditions similar to those which will exist during actual placement.
2. Mock-up will be used to judge workmanship, concrete substrate preparation, operation of equipment, material application, color selection and shine.
3. Allow 24 hours for inspection of mock-up before proceeding with work.
4. When accepted, mock-up will demonstrate minimum standard of quality required for this work.
a. Approved mock-up may not remain as part of finished work. Remove mock-up and dispose of materials when no longer required and when directed by Architect.
5. Mock-Up will demonstrate required level of cut:
a. Level 2 - Salt/Pepper Finish: Expose the fine aggregate such as sand and small aggregate with the concrete. The depth of grind will depend greatly on the placement and finishing procedures. Generally, this level of cut can be achieved within 1/16" of the surface.
b. Sheen Level A: Sheen (medium gloss) as determined by a gloss reading of 45 - 60.

F. Pre-installation Meetings: Conduct a pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements. Review the following:
   1. Environmental requirements.
   2. Scheduling and phasing of work.
   3. Coordinating with other work and personnel. Remind all trades that they are working on a surface that is to become a finished surface.
   4. Protection of adjacent surfaces.
   5. Surface preparation.
   6. Repair of defects and defective work prior to installation.
   7. Cleaning.
   8. Installation of polished floor finishes.
   9. Application of liquid hardener, densifier.
   10. Protection of finished surfaces after installation.
   11. Placing of materials on the concrete surface that may cause staining, etching or scratching.

1.07 DELIVERY, STORAGE AND HANDLING

A. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Delivery: Deliver materials in manufacturer's original packaging with identification labels and seals intact.

C. Storage and Protection: Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

1.08 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

B. Protect Concrete Slab:
   1. Protect from petroleum stains during construction.
   2. Diaper hydraulic power equipment.
   3. Restrict vehicular parking.
   4. Restrict use of pipe cutting machinery.
   5. Restrict placement of reinforcing steel on slab.
   6. Restrict use of acids or acidic detergents on slab.

1.09 PROJECT AMBIENT CONDITIONS

A. Installation Location: Comply with manufacturer's written recommendations.

1.10 SEQUENCING

A. Sequence with Other Work: Comply with manufacturer's written recommendations for sequencing construction operations.

1.11 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official.

B. Manufacturer's warranty is in addition to, and does not limit, other rights Owner may have under Contract Documents.

PART 2 PRODUCTS

2.01 POLISHED CONCRETE SYSTEM

A. Polished Concrete System: Materials, equipment, and procedures designed and furnished by a single manufacturer to produce dense polished concrete of the specified sheen.
   1. Acceptable Systems:
      a. L&M Construction Chemicals, Inc., a subsidiary of Laticrete International, Inc; FGS Permashine Concrete Polishing System: www.lmcc.com.
      b. ARDEX Engineered Cements: www.ardexamericas.com.
      c. Euclid Chemical Company; DOUBLE DIAMOND POLISHED CONCRETE FLOOR SYSTEMS: www.euclidchemical.com/#sle.

d. L.M. Scofield Company; SCOFIELD Formula One Ground & Polished Concrete Systems: www.scofield.com.
e. PROSOCO, Inc; Consolideck Polished Concrete System: www.prosoco.com/consolideck/sle.
f. W.R. Meadows, Inc; Induroshine and Bellatrix Concrete Enhancer: www.wrmeadows.com/sle.
g. Solomon Colors; Lythic: www.solomoncolors.com.
h. Substitutions: See Section 01 6000 - Product Requirements.

2.02 POLISHED CONCRETE

A. Products/Systems:
1. Hardener, Sealer, Densifier: Proprietary, water based, odorless liquid, VOC compliant, environmentally safe chemical hardening solution leaving no surface film.
a. Basis of Design: L & M Construction Chemicals, Inc., FGS Hardener Plus.
2. Joint Filler: Semi-rigid, 2-component, self-leveling, 100% solids, rapid curing, polyurea control joint and crack filler with Shore A 80 or higher hardness.
a. Basis of Design: L & M Construction Chemicals, Inc., Joint Tite 750.
3. Oil Repellent Sealer: Ready to use, silane, siloxane and fluoropolymer blended water based solution sealer, quick drying, low-odor, oil and water repellent, VOC compliant and compatible with chemically hardened floors.
a. Basis of Design: L & M Construction Chemicals, Inc., Petrotex.
4. Cleaning Solution: Proprietary, mild, highly concentrated liquid concrete cleaner and conditioner containing wetting and emulsifying agents; biodegradable, environmentally safe and certified High Traction by National Floor Safety Institute (NFSI).
a. Basis of Design: L & M Construction Chemicals, Inc., FGS Concrete Conditioner.
5. Finish: Medium gloss (MG-1), 800 grit.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions:
1. Verify that concrete substrate conditions, which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of concrete finishing materials.

B. Do not begin installation until substrates have been properly prepared.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. Verify Concrete Slab Performance Requirements:
1. Verify concrete is cured to 28 day duration and 3500 psi (24 MPa) strength.
2. Verify concrete surfaces have received a hard steel-trowel finish (3 passes) during placement.
3. Verify overall floor flatness is a minimum of ff 40.

3.02 PREPARATION

A. Ensure surfaces are clean and free of dirt and other foreign matter harmful to performance of concrete finishing materials.

B. Examine surface to determine soundness of concrete for polishing.

3.03 INSTALLATION

A. Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions.

B. Floor Surface Polishing and Treatment:
1. Provide polished concrete floor treatment in entirety of slab indicated by drawings. Provide consistent finish in all contiguous areas.
2. Apply floor finish prior to installation of fixtures and accessories.
3. Diamond polish concrete floor surfaces with power disc machine recommended by floor finish manufacturer. Sequence with coarse to fine grit. Installer to determine the optimum starting grit in order to achieve the specified aggregate exposure.
a. Comply with manufacturer's recommended polishing grits for each sequence to achieve desired finish level.

1) Following the initial passes of metal bond diamonds, the installer to drop back a minimum of one grit level when transitioning to resin bond diamonds. Separation in grit designation to be a minimum of 50 for the transitioning step.
2) Refine each abrasive grit to its fullest potential before moving on to the next level.
3) Floor to be thoroughly scrubbed between each grit pass to remove all loose material.
4) Level of sheen to match that of approved mock-up.

b. Expose aggregate in concrete surface only as determined by approved mock-up.
c. All concrete surfaces to be as uniform in appearance as possible.

4. Hardener and Densifier Application:
   a. First coat of FGS Hardener Plus at 250 square feet per gallon, following the 400 grit level.
   b. Second coat of FGS Hardener Plus at 350 square feet per gallon, prior to the final polishing pass.
   c. Follow manufacturer's recommendations for drying time between successive coats.
5. Remove defects and re-polish defective areas.
6. Finish edges of floor finish adjoining other materials in a clean and sharp manner.

3.04 ADJUSTMENTS

A. Re-polish areas not meeting specified gloss levels per mock-up.

B. Fill joints flush to surface prior to the start of polishing operations.

3.05 FINAL CLEANING

A. Remove surplus and excess materials, rubbish, tools and equipment.

3.06 PROTECTION

A. Protect installed product from damage during construction in accordance with manufacturer's recommendations.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water cleaning of brick veneer masonry surfaces.

B. Replacement of brick veneer masonry units.

C. Repointing mortar joints.

D. Repair of damaged masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 0511 - Masonry Mortaring and Grouting.

1.03 PRICE AND PAYMENT PROCEDURES

A. See Section 01 2200 - Unit Prices, for additional unit price requirements.

B. Brick Replacement: By the square foot. Includes areas where brick masonry is cracked, spalled, missing, or otherwise cannot be salvaged..

C. Repointing: By the square foot. Includes Areas where mortar having cracked joints greater than 3/16", crumbling or missing mortar, mortar with voids, loose or misaligned bricks, visible gaps between bricks.

1.04 REFERENCE STANDARDS

A. ICC-ES AC125 - Acceptance Criteria for Concrete and Reinforced and Unreinforced Masonry Strengthening Using Externally Bonded Fiber-Reinforced Polymer (FRP) Composite Systems; 2021, with Editorial Revision (2022).

B. ICC-ES AC178 - Acceptance Criteria for Inspection and Verification of Concrete and Reinforced and Unreinforced Masonry Strengthening Using Fiber-Reinforced Polymer (FRP) or Steel-Reinforced Polymer (SRP) Composite Systems; 2017, with Editorial Revision (2020).

C. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.05 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
   1. Require attendance of parties directly affecting work of this section.
   2. Review conditions of installation, installation procedures, and coordination with related work.

1.06 QUALITY ASSURANCE - MASONRY WORK

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.

B. Restorer: Company specializing in masonry restoration with minimum three years of documented experience.

1.07 FIELD CONDITIONS - MASONRY WORK

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

B. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.

C. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

PART 2 PRODUCTS

2.01 MORTAR MATERIALS

A. Comply with requirements of Section 04 0511.

PART 3 EXECUTION

3.01 PREPARATION

A. Protect surrounding elements from damage due to restoration procedures.

B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.

C. Separate areas to be protected from restoration areas using means adequate to prevent damage.

D. Mask immediately adjacent surfaces with material that will withstand cleaning and restoration procedures.

3.02 REBUILDING

A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.

B. Support structure as necessary in advance of cutting out units.

C. Cut away loose or unsound adjoining masonry as directed.

D. Ensure that anchors are correctly located and built in.

E. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

3.03 REPOINTING

A. Perform repointing prior to cleaning masonry surfaces.

B. Cut out loose or disintegrated mortar in joints to minimum 1/2 inch depth or until sound mortar is reached.

C. Use power tools only after test cuts determine no damage to masonry units will result.

D. Do not damage masonry units.

E. When cutting is complete, remove dust and loose material by brushing.

F. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact concave joint to match existing.

G. Moist cure for 72 hours.

3.04 CLEANING NEW MASONRY

A. Verify mortar is fully set and cured.

B. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.

C. Protect area below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar continuously for duration of cleaning.

3.05 RESTORATION CLEANING

A. Clean surfaces and remove large particles with wood scrapers or non-ferrous wire brush.

END OF SECTION

SECTION 04 0511 MASONRY MORTARING AND GROUTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar for masonry.

B. Grout for masonry.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Installation of mortar and grout.

B. Section 08 1113 - Hollow Metal Doors and Frames: Products and execution for grouting steel door frames installed in masonry.

1.03 REFERENCE STANDARDS

A. ASTM C91/C91M - Standard Specification for Masonry Cement; 2025.

B. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2026a.

C. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

D. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

E. ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2025a.

F. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2024.

G. ASTM C1019 - Standard Test Method for Sampling and Testing Grout for Masonry; 2026.

H. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2025.

I. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Include design mix and indicate Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.

C. Samples: Submit two samples of mortar, illustrating mortar color and color range.

D. Reports: Submit reports on mortar indicating compliance of mortar to property requirements of ASTM C270 and test and evaluation reports per ASTM C780.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 PRECONSTRUCTION TESTING

A. Testing will be conducted by an independent test agency, in accordance with provisions of Section 01 4000 - Quality Requirements.

B. Mortar Mixes: Test mortars prebatched by weight in accordance with ASTM C780 recommendations for preconstruction testing.
   1. Test results will be used to establish optimum mortar proportions and establish quality control values for construction testing.

C. Grout Mixes: Test grout batches in accordance with ASTM C1019 procedures.
   1. Test results will be used to establish optimum grout proportions and establish quality control values for construction testing.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.07 FIELD CONDITIONS

A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 MORTAR AND GROUT APPLICATIONS

A. Use only factory premixed packaged dry materials for mortar and grout, with addition of water only at project site.

B. Mortar Color: Natural gray unless otherwise indicated.

C. Mortar Mix Designs: ASTM C270, Property Specification.
   1. Masonry below grade and in contact with earth: Type S.
   2. Exterior Masonry Veneer: Type N.
   3. Exterior, Loadbearing Masonry: Type S.
   4. Exterior, Non-loadbearing Masonry: Type N.
   5. Interior, Loadbearing Masonry: Type S.
   6. Interior, Non-loadbearing Masonry: Type N.

D. Grout Mix Designs:
   1. Bond Beams and Lintels: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
      a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
      b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
   2. Engineered Masonry: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
      a. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
      b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.02 MATERIALS

A. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.

B. Packaged Dry Material for Mortar for Stone: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C387/C387M, premixed masonry cement and mason's sand; complying with ASTM C387/C387M, or premixed mortar cement and mason's sand; complying with ASTM C387/C387M and C1329 and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Type: Building stone masonry mortar for hard stone.
      a. Compressive strength at 28 days: 1800 minimum psi.
   2. Color: Mineral pigments added as required to produce approved color sample.
   3. Manufacturers:
      a. Spec Mix, LLC; Building Stone Mortar, Hard: www.specmix.com..
      b. Substitutions: See Section 01 6000 - Product Requirements.

C. Packaged Dry Material for Mortar for Repointing: Premixed Portland cement, graded sand, and chemical admixtures complying with ASTM C91/C91M with the addition of water only.
   1. Color: To match adjacent mortar color.

D. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.

E. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
   1. Color(s): As scheduled.
   2. Manufacturers:
      a. Davis Colors: www.daviscolors.com/#sle.
      b. Lambert Corporation: www.lambertusa.com/#sle.
      c. Solomon Colors; Solomon Colors Concentrated A, H, and X Series: www.solomoncolors.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

F. Water: Clean and potable.

G. Accelerating Admixture: Nonchloride type for use in cold weather.

2.03 MORTAR MIXING

A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C270 and in quantities needed for immediate use.

B. Maintain sand uniformly damp immediately before the mixing process.

C. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio; mix in accordance with manufacturer's instructions, uniform in coloration.

D. Do not use anti-freeze compounds to lower the freezing point of mortar.

E. If water is lost by evaporation, re-temper only within two hours of mixing.

2.04 GROUT MIXING

A. Mix grout in accordance with ASTM C94/C94M.

B. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

C. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 PREPARATION

A. Plug clean-out holes for grouted masonry with block masonry units. Brace masonry to resist wet grout pressure.

3.02 INSTALLATION

A. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.

3.03 GROUTING

A. Perform all grouting by means of low-lift technique. Do not employ high-lift grouting.

B. Low-Lift Grouting:
   1. Limit height of pours to 12 inches.
   2. Limit height of masonry to 16 inches above each pour.
   3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
   4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 4000 - Quality Requirements.

B. Test and evaluate mortar in accordance with ASTM C780 procedures.

C. Test and evaluate grout in accordance with ASTM C1019 procedures.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete block.

B. Clay facing brick.

C. Common brick.

D. Mortar and grout.

1.02 RELATED REQUIREMENTS

A. Section 04 0511 - Masonry Mortaring and Grouting.

1.03 REFERENCE STANDARDS

A. ASTM C62 - Standard Specification for Building Brick (Solid Masonry Units Made from Clay or Shale); 2023.

B. ASTM C67/C67M - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile; 2025.

C. ASTM C73 - Standard Specification for Calcium Silicate Brick (Sand-Lime Brick); 2023.

D. ASTM C90 - Standard Specification for Dry-Cast Loadbearing Concrete Masonry Units; 2024a.

E. ASTM C91/C91M - Standard Specification for Masonry Cement; 2025.

F. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2025.

G. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2024.

H. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale); 2026.

I. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

J. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.

K. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

L. ASTM C652 - Standard Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale); 2022.

M. ASTM C780 - Standard Test Methods for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry; 2025a.

N. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2025.

O. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all relevant installers.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

A. Concrete Block: Comply with referenced standards and as follows:

2.02 BRICK UNITS

A. Facing Brick: ASTM C216, Type FBS Smooth, Grade SW.
   1. Nominal size: As indicated on drawings.
   2. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.

B. Building (Common) Brick: ASTM C62, Grade SW; solid units.
   1. Nominal size: As indicated on drawings.

2.03 MORTAR AND GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M, Type N.

B. Water: Clean and potable.

C. Accelerating Admixture: Nonchloride type for use in cold weather.

D. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
   1. Color: Standard gray.

2.04 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.

PART 3 EXECUTION

3.01 COLD AND HOT WEATHER REQUIREMENTS

A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

END OF SECTION

SECTION 04 4200 EXTERIOR STONE CLADDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cut oolitic limestone, dolomitic limestone, marble, serpentine, travertine, granite, slate, and sandstone veneer at exterior and interior walls.

B. Metal anchors and supports.

1.02 REFERENCE STANDARDS

A. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2026.

B. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

C. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

1.03 QUALITY ASSURANCE

1.04 FIELD CONDITIONS

A. During temporary storage on site, at the end of working day, and during rainy weather, cover stone work exposed to weather with non-staining waterproof coverings, securely anchored.

PART 2 PRODUCTS

2.01 STONE

2.02 MORTAR

A. Mortar: ASTM C270, Type N, Proportion specification, using Portland cement of white color.

2.03 ANCHORS AND ACCESSORIES

A. Anchors and Other Components in Contact with Stone: Stainless steel, ASTM A666 Type 304.
   1. Sizes and configurations: As required for vertical and horizontal support of stone and applicable loads.
   2. Wire ties are not permitted.

B. Support Components not in Contact with Stone: Stainless steel, ASTM A240/A240M Type 304.

C. Setting Buttons and Shims: Lead type.

2.04 STONE FABRICATION

A. Thickness: 3/4 inch.

B. Fabricate units for uniform coloration between adjacent units and over the full area of the installation.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Architectural cast stone.

B. Units required are:

1. Exterior wall units, including wall caps, coping, and sills.

1.02 RELATED REQUIREMENTS

A. Section 04 0511 - Masonry Mortaring and Grouting: Mortar for setting cast stone.

B. Section 04 2000 - Unit Masonry: Installation of cast stone in conjunction with masonry.

C. Section 07 9200 - Joint Sealants: Sealing joints indicated to be left open for sealant.

1.03 REFERENCE STANDARDS

A. ACI CODE-318 - Building Code for Structural Concrete—Code Requirements and Commentary; 2025.

B. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2026.

C. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2016.

D. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement; 2019, with Editorial Revision (2020).

E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2018a.

F. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.

G. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.

H. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025b.

I. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2024.

J. ASTM C1364 - Standard Specification for Architectural Cast Stone; 2025.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Test results of cast stone components made previously by the manufacturer.

C. Shop Drawings: Include elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, and piece numbers.

D. Mortar Color Selection Samples.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. A firm with a minimum of 5 years experience producing cast stone of types required for project.
2. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.

B. Number each piece individually to match shop drawings and schedule.

C. Store cast stone components and installation materials in accordance with manufacturer's instructions.

D. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.

E. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.

F. Store mortar materials where contamination can be avoided.

G. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Cast Stone:
   1. Any current producer member of the Architectural Precast Association.
   2. Any current producer member of the Cast Stone Institute.
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ARCHITECTURAL CAST STONE

A. Cast Stone: Architectural concrete product manufactured to simulate appearance of natural granite, complying with ASTM C1364.
   1. Compressive Strength: As specified in ASTM C1364; calculate strength of pieces to be field cut at 80 percent of uncut piece.
   2. Freeze-Thaw Resistance: Demonstrated by laboratory testing in accordance with ASTM C1364.
   3. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 20 feet.
   4. Remove cement film from exposed surfaces before packaging for shipment.

B. Shapes: Provide shapes indicated on drawings.
   1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch or length divided by 360, whichever is greater, but not more than 1/4 inch.
   2. Unless otherwise indicated on drawings, provide:
      a. Wash or slope of 1:12 on exterior horizontal surfaces.
      b. Drips on projecting components, wherever possible.
      c. Raised fillets at back of sills and at ends to be built in.

C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI CODE-318.

2.03 MATERIALS

A. Portland Cement: ASTM C150/C150M.
   1. For Mortar: Type I or II, except Type III may be used in cold weather.

B. Coarse Aggregate: ASTM C33/C33M, except for gradation; granite, quartz, or limestone.

C. Fine Aggregate: ASTM C33/C33M, except for gradation; natural or manufactured sands.

D. Admixtures: ASTM C494/C494M.

E. Water: Potable.

F. Reinforcing Bars: ASTM A615/A615M, Grade 40 (40,000 psi), deformed bars, galvanized.
   1. Galvanized in accordance with ASTM A767/A767M, Class I.

G. Steel Welded Wire Reinforcement: ASTM A1064/A1064M, galvanized or ASTM A884/A884M, epoxy coated.

H. Embedded Anchors, Dowels, and Inserts: Type 304 stainless steel, of type and size as required for conditions.

I. Mortar: Portland cement-lime, as specified in Section 04 0511 ; do not use masonry cement.

J. Cleaner: General-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine construction to receive cast stone components. Notify Architect if construction is not acceptable.

B. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

A. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 2000.

B. Mechanically anchor cast stone units indicated; set remainder in mortar.

C. Setting:
   1. Drench cast stone components with clear, running water immediately before installation.
   2. Set units in a full bed of mortar unless otherwise indicated.
   3. Fill vertical joints with mortar.
   4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

3.03 TOLERANCES

A. Joints: Make all joints 3/8 inch, except as otherwise detailed.
   1. Rake mortar joints 3/4 inch for pointing.
   2. Remove excess mortar from face of stone before pointing joints.
   3. Point joints with mortar in layers 3/8 inch thick and tool to a slight concave profile.
   4. Leave the following joints open for sealant:
      a. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
      b. Joints in projecting units.
      c. Joints between rigidly anchored units, including soffits, panels, and column covers.
      d. Joints below lugged sills and stair treads.
      e. Joints below ledge and relieving angles.
      f. Joints labeled "expansion joint".

3.04 REPAIR

A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.

B. Repair with matching touch-up material provided by the manufacturer and in accordance with manufacturer's instructions.

C. Repair methods and results subject to Architect 's approval.

3.05 CLEANING

A. Keep cast stone components clean as work progresses.

3.06 PROTECTION

A. Protect completed work from damage.

B. Clean, repair, or restore damaged or mortar-splashed work to condition of new work.

END OF SECTION

This page intentionally left blank

SECTION 05 1200 STRUCTURAL STEEL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Structural steel framing members.

B. Base plates.

C. Grouting under base plates.

1.02 RELATED REQUIREMENTS

A. Section 05 3100 - Steel Decking: Support framing for small openings in deck.

B. Section 05 5000 - Metal Fabrications: Steel fabrications affecting structural steel work.

1.03 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual; 2023, with Errata (2026).

B. AISC 207 - Certification Standard for Steel Fabrication and Erection, and Manufacturing of Metal Components

C. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges; 2022, with Errata (2025).

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

E. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2020.

F. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished; 2018.

G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

H. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2026.

I. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric); 2026.

J. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2022.

K. ASTM E94/E94M - Standard Guide for Radiographic Examination Using Industrial Radiographic Film; 2022.

L. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments; 2024.

M. ASTM E165/E165M - Standard Practice for Liquid Penetrant Testing for General Industry; 2023.

N. ASTM E709 - Standard Guide for Magnetic Particle Testing; 2021.

O. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions; 2024.

P. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2020.

Q. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2021.

R. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

S. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

T. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Amendment (2026).

U. RCSC (HSBOLT) - Specification for Structural Joints Using High-Strength Bolts; Research Council on Structural Connections; 2020.

V. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

W. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

X. SSPC-SP 3 - Power Tool Cleaning; 2018.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
   1. Indicate sizes, spacing, locations of structural members, openings, attachments, fasteners, and profiles.
   2. Connections not detailed.
   3. Indicate cambers and loads.
   4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.

C. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.

D. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.

E. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

F. Connection Calculations:
   1. Engineer licenced to practice in the jurisdiction where project is located, and shall sign, date, and seal all shop drawings and design calculations before submittal.
   2. Alternative connection details may be submitted on shop drawings. Calculations must be submitted for review concurrent with shop drawing erection plans.

G. Fabricator's Qualification Statement.

H. Erector's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Fabricate structural steel members in accordance with AISC (MAN) "Steel Construction Manual."

B. Structural steel members designated as architecturally-exposed structural steel (AESS) to also comply with Section 05 1213.

C. Maintain one copy of each document on site.

D. Fabricator: Company specializing in performing the work of this section with minimum 5 years of documented experience.

E. Fabricator Qualifications: A qualified steel fabricator that is accredited by the American Institute of Steel Construction (AISC) Certification Program for Fabricators of Steel Buildings (BU) in accordance with AISC 207.

F. Erector: Company specializing in performing the work of this section with minimum 5 years of documented experience.

G. Erector Qualifications: A qualified steel erector that is accredited by the American Institute of Steel Construction (AISC) Certification Program for Structural Steel Erectors (CSE) in accordance with AISC 207.

H. Design connections not detailed on drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Angles and Plates: ASTM A36/A36M.

B. Steel W Shapes and Tees: ASTM A992/A992M.

C. Rolled Steel Structural Shapes: ASTM A992/A992M.

D. Steel Shapes, Plates, and Bars: ASTM A529/A529M high-strength, carbon-manganese structural steel, Grade 50.

E. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade C.

F. Pipe: ASTM A53/A53M, Grade B, Finish black.

G. Shear Stud Connectors: Made from ASTM A108 Grade 1015 bars.

H. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563/A563M nuts and ASTM F436/F436M washers.

I. Headed Anchor Rods: ASTM F1554 Grade 36, plain.

J. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

K. Grout: ASTM C1107/C1107M; Non-shrink; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
   1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
   2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.

L. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

M. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Shop fabricate to greatest extent possible.

B. Fabricate connections for bolt, nut, and washer connectors.

C. Develop required camber for members.

2.03 FINISH

A. Prepare structural component surfaces in accordance with SSPC-SP 3.

B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.
   1. Apply to provide a dry film thickness of not less than 1.5 mils.
   2. Stripe paint corners, crevices, bolts, welds, and sharp edges.

2.04 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. High-Strength Bolts: Provide testing and verification of shop-bolted connections in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts," testing at least 2 percent of bolts at each connection.

C. Welded Connections: Visually inspect all shop-welded connections and test at least 2 percent of welds using one of the following:
   1. Radiographic testing performed in accordance with ASTM E94/E94M.
   2. Ultrasonic testing performed in accordance with ASTM E164.
   3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
   4. Magnetic particle inspection performed in accordance with ASTM E709.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

A. Erect structural steel in compliance with AISC 303.

B. Allow for erection loads and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.

C. Field weld components and shear studs indicated on shop drawings.

D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts".

E. Do not field cut or alter structural members without approval of Architect.

F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. High-Strength Bolts: Provide testing and verification of field-bolted connections in accordance with RCSC (HSBOLT) "Specification for Structural Joints Using High-Strength Bolts," testing at least 2 percent of bolts at each connection.

C. Welded Connections: Visually inspect all field-welded connections and test at least 2 percent of welds using one of the following:
   1. Radiographic testing performed in accordance with ASTM E94/E94M.
   2. Ultrasonic testing performed in accordance with ASTM E164.
   3. Liquid penetrant inspection performed in accordance with ASTM E165/E165M.
   4. Magnetic particle inspection performed in accordance with ASTM E709.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof deck.

B. Composite floor deck.

C. Supplementary framing for openings up to and including 18 inches.

1.02 RELATED REQUIREMENTS

A. Section 05 1200 - Structural Steel Framing: Support framing for openings larger than 18 inches.

1.03 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual; 2023, with Errata (2026).

B. AISC 207 - Certification Standard for Steel Fabrication and Erection, and Manufacturing of Metal Components

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

D. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2026.

E. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

F. AWS D1.3/D1.3M - Structural Welding Code - Sheet Steel; 2025, with Errata (2026).

G. SDI (DM) - Publication No.30, Design Manual for Composite Decks, Form Decks, and Roof Decks; 2007.

H. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittals procedures.

B. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.

C. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, and accessories.

D. Certificates: Certify that products furnished meet or exceed specified requirements.

E. Submit manufacturer's installation instructions.

F. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

G. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under AISC 207.

H. Erector's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified steel fabricator that is accredited by the American Institute of Steel Construction (AISC) Certification Program for Fabricators of Steel Buildings (BU) in accordance with AISC 207.

B. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Cut plastic wrap to encourage ventilation.

B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

PART 2 PRODUCTS

2.01 STEEL DECK

A. All Deck Types: Size and profile as indicated on drawings.

B. Roof Deck: Non-composite type, fluted steel sheet:
   1. Ungalvanized Steel Sheet: ASTM A1008/A1008M, Designation SS, Grade 33, Type 1.

2. Primer: Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
3. Gage as indicated on the drawings.
4. Height as indicated on the drawings.
5. Profile: Fluted; SDI NR.
6. Formed Sheet Width: 36 inch.
7. Side Joints: Lapped, mechanically fastened.
8. End Joints: Lapped 2 inches minimum, welded.

C. Composite Floor Deck: Fluted steel sheet embossed to interlock with concrete:
1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 50/340, Class 1, 2, or 4, with G60/Z180 galvanized coating.
2. Primer: Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
3. Structural Properties as indicated on the drawings.
4. Formed Sheet Width: 24 inch.
5. Side Joints: Lock seam.
6. End Joints: Lapped 2 inches minimum, welded.

2.02 ACCESSORY MATERIALS

A. Fasteners: Galvanized hardened steel, self tapping.

B. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

C. Flute Closures: Closed cell foam rubber, 1 inch thick; profiled to fit tight to the deck.

2.03 FABRICATED DECK ACCESSORIES

A. Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 22 gauge, 0.0299 inch thick sheet steel; of profile and size as indicated; finished same as deck.

B. Roof Sump Pans: Formed sheet steel, 14 gauge, 0.0747 inch minimum thickness, flat bottom, sloped sides, recessed 1-1/2 inches below roof deck surface, bearing flange 3 inches wide, sealed watertight.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

3.02 INSTALLATION

A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.

B. On steel supports provide minimum 1-1/2 inch bearing.

C. Weld deck in accordance with AWS D1.3/D1.3M.

D. Close openings above walls and partitions perpendicular to deck flutes with single row of foam cell closures.

E. Position roof drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.

F. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

3.03 REPAIR

A. Deck exposed to view which has been damaged as a result of welding misalignment, erection, or misuse may be replaced as determined by the Architect. The cost will be borne by Contractor when defective deck is identified.

END OF SECTION

SECTION 05 4000 COLD-FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Formed steel stud exterior wall and interior wall framing.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).

B. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).

C. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2010, with 2013 Supplements and Errata.

D. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.

E. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.

F. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories; 2020 (Reapproved 2024).

G. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with work of other sections that is to be installed in or adjacent to metal framing systems, including but not limited to structural anchors, cladding anchors, utilities, insulation, and firestopping.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.

C. Product Data: For lateral-force resisting systems, provide product data sheets on hold-down, showing compliance with requirements.

D. Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
   1. Indicate stud layout.
   2. Describe method for securing studs to tracks and for bolted framing connections.

E. Designer's Qualification Statement.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design framing system under direct supervision of a professional structural engineer experienced in designing this work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, and with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Structural Framing:
   1. ClarkDietrich: www.clarkdietrich.com/#sle.
   2. Jaimes Industries: www.jaimesind.com/#sle.
   3. The Steel Network, Inc: www.SteelNetwork.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.
   5. Same manufacturer as metal framing.

2.02 PERFORMANCE REQUIREMENTS

A. Comply with requirements for Contractor's design-related professional design services indicated in Section 01 4000 - Quality Requirements.

B. Design Requirements: Design cold-formed framing systems, components and connectors to withstand specified design loads in compliance with ICC (IBC), ASCE 7, AISI S100, and AISI S240.

2.03 MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S240.

2.04 STRUCTURAL FRAMING COMPONENTS

A. Wall Studs and Track Sections: AISI S240; c-shaped studs and u-shaped track sections in stud-matching nominal width and compatible height.

1. Thickness and Depth: Depth as indicated on the drawings; thickness and structural grade as required to meet design criteria.
2. At studs backing up masonry veneer use 18-gauge minimum.

2.05 CONNECTIONS

2.06 MISCELLANEOUS CONNECTIONS

2.07 SHEATHING

A. Wall Sheathing: See Section 06 1000 - Rough Carpentry.

2.08 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.

B. Galvanizing Repair: Touch up bare steel with zinc-rich paint in compliance with ASTM A780/A780M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify field measurements and adjust installation as required.

3.02 INSTALLATION - GENERAL

A. Install structural members and connections in compliance with ASTM C1007.

3.03 INSTALLATION OF STUDS

A. Install wall studs plumb and level.

B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center. Coordinate installation of sealant with floor and ceiling tracks.

C. Place studs at 16 inches on center; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using clip and tie method.

D. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.

E. Install load-bearing studs; brace, and reinforce to develop full strength and achieve design requirements.

F. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.

G. Install intermediate studs above and below openings to align with wall stud spacing.

H. Provide deflection allowance in stud track, directly below horizontal building framing at non-loadbearing framing.

I. Attach cross studs to studs for attachment of fixtures anchored to walls.

J. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

K. Touch-up field welds and damaged corrosion protected surfaces with primer.

3.04 INSTALLATION OF WALL SHEATHING

A. Install wall sheathing with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using self-tapping screws.

3.05 TOLERANCES

A. Maximum Variation from True Position: 1/4 inch.

B. Maximum Variation of any Member from Plane: 1/8 inch.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop fabricated steel items.

B. Slotted channel framing.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. AISC (MAN) - Steel Construction Manual; 2023, with Errata (2026).

B. AISC 207 - Standard for Certification Programs; 2025.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2020.

E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

G. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

H. ASTM A576 - Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality; 2023.

I. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

J. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings; 2020.

K. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2026.

L. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

M. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

N. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts and Assemblies, Steel and Alloy Steel, Heat Treated, Inch Dimensions 120 ksi and 150 ksi Minimum Tensile Strength, and Metric Dimensions 830 MPa and 1040 MPa Minimum Tensile Strength; 2021.

O. ASTM F 1043 - Fence Pipe

P. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

Q. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification; 2021, with Errata (2023).

R. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Amendment (2026).

S. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 2004.

T. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic); 2019.

U. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated no more than 12 months before start of scheduled welding work.

D. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is certified under AISC 207.

1.05 QUALITY ASSURANCE

A. Design shop drawings under direct supervision of a Professional Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Fabricator Qualifications:
   1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 207.

C. Fabricator Qualifications: A qualified steel fabricator that is accredited by the American Institute of Steel Construction (AISC) Certification Program for Fabricators of Steel Buildings (BU) in accordance with AISC 207.

D. Verify that field measurements are as indicated on shop drawings.

E. All metal items affecting safety of persons shall comply with requirements of Part 1910 of the Federal Occupational Safety and Health Regulations.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

A. Steel Sections: ASTM A 36/A 36M.

B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.

C. Plates: ASTM A283/A283M.

D. Pipe: ASTM A 53/A 53M Grade B Schedule 40, black finish.

E. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.

F. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

G. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

H. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members by continuous welds.

D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

F. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 FABRICATED ITEMS

A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; Galvanized finish at exterior and primed finish at interior.

B. Ledge Angles, Shelf Angles, Channels, and Plates Not Attached to Structural Framing: For support of masonry; galvanized finish.

C. Lintels: As detailed; galvanized finish.

D. Slotted Channel Framing: Fabricate channels and fittings from structural steel complying with the referenced standards; factory-applied, rust-inhibiting thermoset acrylic enamel finish.
   1. Manufacturers:
      a. Unistrut Corp: www.unistrut.com
      b. Flex-Strut, Inc.: www.flexstrut.com

c. Substitutions: See Section 01 6000 - Product Requirements.

2. Channel:
   a. Roll-formed steel into channel configurations.
   b. Material:
      1) Cold Rolled: ASTM A1008/A1008M
      2) Hot-Rolled: ASTM A1011/A1011M
      3) Physical Requirements of: ASTM A653/A653M, Grade 33.
   c. Design: AISI - Specifl cation for the Design of Cold-Formed Steel Structural Member.
   d. Finishes:
      1) Thermoset acrylic enamel paint applied by electro-deposition, thoroughly baked.
      2) Color: Selected by architect from manufacturers standard.
3. Channel Nuts:
   a. Case hardened. Conform to ASTM A575 or ASTM A576.
   b. Finish: Electro-galvanized zinc per ASTM B633.
4. Fittings:
   a. Cold formed for specific channel connection application. Conform to ASTM A569 or ASTM A575.
   b. Finish:
      1) Polyester powder coat, thoroughly baked.
      2) Color: Selected by architect from manufacturers standard.

2.04 FINISHES - STEEL

A. Prime paint steel items.
   1. Exceptions: Galvanize items to be embedded in concrete and items to be embedded in masonry.

B. Prepare surfaces to be primed in accordance with SSPC-SP2.

C. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

D. Prime Painting: One coat.

E. Galvanizing of Non-structural Items: Galvanize after fabrication to ASTM A123/A123M requirements.

2.05 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.

3.03 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Field weld components as indicated on drawings.

D. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Obtain approval prior to site cutting or making adjustments not scheduled.

F. After erection, prime welds, abrasionsand surfaces not shop primed or galvanized , except surfaces to be in contact with concrete.

G. Obtain Architect/Engineer approval prior to site cutting or making adjustments not scheduled.

H. Touch Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

I. For Galvanized Surfaces: Clean field welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780/A780M.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stairs with concrete treads.

B. Structural steel stair framing and supports.

C. Handrails and guards.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. AISC 207 - Standard for Certification Programs; 2025.

B. ASTM A6/A6M - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling; 2026a.

C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2020.

E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

G. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2023.

H. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2021.

I. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2026.

J. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

K. ASTM E935 - Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings; 2021.

L. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; 2020.

M. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025, with Amendment (2026).

N. SSPC-SP 2 - Hand Tool Cleaning; 2018.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Include the design engineer's seal and signature on each sheet of shop drawings.

C. Design Data: As required by authorities having jurisdiction.

D. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is certified under AISC 207.

1.05 QUALITY ASSURANCE

A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

B. Fabricator Qualifications:
   1. A qualified steel fabricator that is certified by the American Institute for Steel Construction (AISC) under AISC 207.

C. Verify that field measurements are as indicated on shop drawings.

PART 2 PRODUCTS

2.01 METAL STAIRS - GENERAL

A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
   1. Regulatory Requirements: Provide stairs and railings that comply with most stringent requirements of local, state, and federal regulations; where requirements of Contract Documents exceed those of regulations, comply with Contract Documents.
   2. Handrails: Comply with applicable accessibility requirements of ADA Standards.
   3. Structural Design: Provide complete stair and railing assemblies that comply with the applicable local code.
      a. Railing Assemblies:
         1) Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 75 pounds per linear foot applied to the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.
         2) Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction, without damage or permanent set. Test in accordance with ASTM E 935.
   4. Dimensions: As indicated on drawings.
   5. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
   6. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
   7. Separate dissimilar metals using paint or permanent tape.

B. Metal Jointing and Finish Quality Levels:
   1. Architectural: All joints as inconspicuous as possible, whether welded or mechanical.
      a. Welded Joints: Continuously welded and ground smooth and flush.
      b. Mechanical Joints: Butted tight, flush, and hairline; concealed fastenings only.
      c. Exposed Edges and Corners: Eased to small uniform radius.
      d. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for highest quality gloss finish.
   2. Commercial: Exposed joints as inconspicuous as possible, whether welded or mechanical; underside of stair not covered by soffit IS considered exposed to view.
      a. Welded Joints: Intermittently welded on back side, filled with body putty, and sanded smooth and flush.
      b. Welds Exposed to View: Ground smooth and flush.
      c. Mechanical Joints: Butted tight, flush, and hairline.
      d. Bolts Exposed to View: Countersunk flat or oval head bolts; no exposed nuts.
      e. Exposed Edges and Corners: Eased to small uniform radius.
      f. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for satin or matte finish.

C. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.

D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.

2.02 METAL STAIRS WITH CONCRETE TREADS

A. Jointing and Finish Quality Level: Architectural, as defined above.

B. Risers: Closed.

C. Treads: Metal pan with field-installed concrete fill.
   1. Concrete Depth: 1-1/2 inches, minimum.
   2. Tread Pan Material: Steel sheet.
   3. Tread Pan Thickness: As required by design; 14 gauge, 0.075 inch minimum.
   4. Pan Anchorage to Stringers: Welded or bolted to carrier angles welded or bolted to stringers.

5. Concrete Reinforcement: Welded wire mesh.
6. Concrete Finish: For resilient floor covering.

D. Risers: Same material and thickness as tread pans.
1. Riser/Nosing Profile: Sloped riser with rounded nosing of minimum radius.
2. Nosing Depth: Not more than 1-1/2 inch overhang.
3. Nosing Return: Flush with top of concrete fill, not more than 1/2 inch wide.

E. Stringers: Rolled steel channels.
1. Stringer Depth: As indicated on drawings.
2. End Closure: Sheet steel of same thickness as risers welded across ends.

F. Landings: Similar construction, using corrugated steel decking, supported and reinforced as required to achieve design load capacity.

G. Railings: Steel picket railings.

H. Finish: Shop - or factory-prime painted.

I. Under Side of Stair: Exposed to view, to be finished same as specified for other exposed to view surfaces.

2.03 HANDRAILS AND GUARDS

A. Wall-Mounted Rails: Round pipe or tube rails unless otherwise indicated.
1. Outside Diameter: 1-1/4 inch, minimum, to 1-1/2 inches, maximum.
2. Outside Diameter: 1-1/2 inches, round.

B. Guards:
1. Top Rails and Intermediate Rails: Round pipe or tube rails unless otherwise indicated.
a. Outside Diameter: 1-1/2 inches, round.
2. Infill at Picket Railings: Vertical pickets.
a. Horizontal Spacing: Maximum 4 inches on center.
b. Material: Solid steel bar.
c. Shape: Square.
d. Size: 1/2 inch square.
e. Top Mounting: Welded to underside of top rail.
f. Bottom Mounting: As indicated on drawings.
3. Infill at Mesh Railings: Woven wire mesh panels.
a. Material and Finish: Same as stair.
b. Wire Size: No. 8 guage
c. Wire Spacing: 2 inch.
d. Mounting: In 1 x 1/2 x 1/8 inch hot rolled channel frames in pipe guard rail as indicated on drawings
4. End and Intermediate Posts: Same material and size as top rails.
a. Horizontal Spacing: As indicated on drawings.
b. Mounting: Welded to top surface of stringer.

2.04 MATERIALS

A. Steel Sections: ASTM A 36/A 36M.

B. Steel Tubing: ASTM A500/A500M or ASTM A501/A501M structural tubing, round and shapes as indicated.

C. Steel Plates: ASTM A6/A6M or ASTM A283/A283M.

D. Pipe: ASTM A 53/A 53M Grade B Schedule 40, black finish.

E. Ungalvanized Steel Sheet: Hot- or cold-rolled, except use cold-rolled where finished work will be exposed to view.
1. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Designation CS (commercial steel).
2. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Designation CS (commercial steel).

F. Concrete Fill: See Section 03 3000.

G. Concrete Reinforcement: Mesh type as detailed, galvanized.

2.05 SHOP FINISHING

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Prime Painting: Use specified shop- and touch-up primer.
   1. Preparation of Steel: In accordance with SSPC-SP 2 Hand Tool Cleaning.
   2. Number of Coats: One.

D. Galvanizing: Hot-dip galvanize to minimum requirements of ASTM A123/A123M.
   1. Touch up abraded areas after fabrication using specified touch-up primer for galvanized surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. When field welding is required, clean and strip primed steel items to bare metal.

3.03 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects.

B. Provide anchors, plates, angles, hangers, and struts required for connecting stairs to structure.

C. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

D. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.

E. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.

F. Obtain approval prior to site cutting or creating adjustments not scheduled.

G. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prefabricated ladders.

1.02 RELATED REQUIREMENTS

A. Section 05 5100 - Metal Stairs.

1.03 REFERENCE STANDARDS

A. ANSI A14.3 - American National Standard for Ladders - Fixed - Safety Requirements; 2008 (Reaffirmed 2018).

B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

C. ASTM B210/B210M - Standard Specification for Aluminum and Aluminum-Alloy Drawn Seamless Tubes; 2019a.

D. ASTM B211/B211M - Standard Specification for Aluminum and Aluminum-Alloy Rolled or Cold Finished Bar, Rod, and Wire; 2023.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
   1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.

1.05 QUALITY ASSURANCE

A. Design ladder under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 MATERIALS - ALUMINUM

A. Extruded Aluminum: ASTM B211/B211M, 6063 alloy, T6 temper.

B. Sheet Aluminum: ASTM B209/B209M, 5052 alloy, H32 or H22 temper.

C. Aluminum-Alloy Drawn Seamless Tubes: ASTM B210/B210M, 6061 alloy, T6 temper.

D. Aluminum-Alloy Bars: ASTM B211/B211M, 6061 alloy, T6 temper.

E. Bolts, Nuts, and Washers: Stainless steel.

2.02 FABRICATION

A. Fit and shop assemble items in largest practical sections, for delivery to site.

B. Fabricate items with joints tightly fitted and secured.

C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

2.03 PREFABRICATED LADDERS

A. Prefabricated Ladder: Welded metal unit complying with ANSI A14.3; factory fabricated to greatest degree practical and in the largest components possible.
   1. Components: Manufacturer's standard rails, rungs, treads, handrails. returns, platforms and safety devices complying with the requirements of the MATERIALS article of this section.
   2. Safety Cage: Where detailed and indicated on drawings.
   3. Safety Post: 60 inches long by 1 1/2 inch by 1 1/2 inch tube with supporting hardware.
   4. Materials: Aluminum; 6063 alloy, T52 temper.
   5. Finish: Mill finish aluminum.
   6. Manufacturers:
      a. Industrial Ladder & Scaffolding, Inc: www.anyladder.com/#sle.
      b. Basis of Design: O'Keeffe's Inc; Model 500: www.okeeffes.com/#sle.
      c. Precision Ladders, LLC: www.precisionladders.com/#sle.

d. Substitutions: See Section 01 6000 - Product Requirements.

2.04 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 INSTALLATION

A. Install items plumb and level, accurately fitted, free from distortion or defects.

B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.

C. Obtain approval prior to site cutting or making adjustments not scheduled.

3.03 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.

C. Maximum Out-of-Position: 1/4 inch.

END OF SECTION

PART 1 - GENERAL

1.01 REFERENCE STANDARDS

A. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

1.02 SUMMARY

A. This Section includes the Plastic Fabrication as shown and specified in the described system(s):
   1. Partitions

B. Related Sections include the following:
   1. Section 06 06 20 Schedules for Finish Carpentry; Section 06 06
      a. 40 Schedules for Architectural Woodwork; Section 06 06 50 Schedules for Structural Plastics; Section 06 06 60 Schedules for Plastic Fabrications; Section 06 06 70 Schedules for Structural
      b. Composites; Section 06 06 80 Schedules for Composite Assemblies

1.03 SUBMITTALS

A. General: Submit the following in accordance with conditions of contact and Division 1 specification section 01 33 00 “Submittal Procedures”.

B. Shop Drawings: Include plans, elevations, sections, panel dimensions, details, and attachments to other work digital rendering.

C. Samples for Initial Selection:
   1. Submit minimum 2-inch by 2-inch samples. Indicate full color, texture and pattern variation.

1.04 QUALITY ASSURANCE

A. Manufacturers Qualifications
   1. Materials and systems shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least five (5) consecutive years and which can show evidence of those materials being satisfactorily used on at least six (6) projects of similar size, scope
      a. and location. At least three (3) of the projects shall have been successful for use five (5) years or longer.
   2. Manufactured panels must be produced from a minimum of 40% pre-consumer recycle content. This recycle content must be certified by a recognized 3rd party certification group, such as Scientific Certification Systems (SCS).
   3. Completely PVC – Free product
   4. Manufacturer must offer a documented reclaim process that will take back, at the manufacturers cost, panels that are at their end- of life cycle. Return process is preceded by following requirements highlighted in Section 02 42 00 Removal and Salvage of Construction Materials.
   5. Manufacturer must have a 3rd party completed Life Cycle Analysis
   6. Manufacturer must have an Environmental Product Declaration (EPD).

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver Plastic Fabrications, systems and specified items in manufacturer’s standard protective packaging.

B. Do not deliver Plastic Fabrications, system, components and accessories to Project site until areas are ready for installation.

C. Store materials in a flat orientation in a dry place that is not exposed to exterior elements.

D. Handle materials to prevent damage to finished surfaces. Provide protective coverings to prevent damage or staining following installation for duration of project.

E. Before installing Plastic Fabrications, permit them to reach room temperature.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Do not install Solid Polymer Fabrications until spaces are enclosed and weatherproof, and ambient temperatures and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.07 WARRANTY

A. Manufacturer's Special Warranty on Plastic Fabrications: Manufacturer's standard form agreeing to repair or replace units that fail in material or workmanship within the specified warranty period.

B. Warranty Period: 1 year after the date of substantial completion.

C. The warranty shall not deprive the owner of other rights or remedies the Owner may have under other provisions of the Contract Documents,
   1. and is in addition to and runs concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Manufacturer: 3form, LLC., Salt Lake City, Utah, USA / telephone 801- 649-2500

2.02 MATERIALS

A. As indicated in drawings
   1. Engineered co-polyester resin produced in the USA

B. Interlayer Materials: Compatible with polyesters and bonding process to create a monolithic sheet of material when complete.

C. Attachment methods
   1. frameless top and bottom channel partition.

2.03 FABRICATION

A. General: Fabricate Plastic Fabrications to designs, sizes and thicknesses indicated and to comply with indicated standards. Sizes, profiles and other characteristics are indicated on the drawings.

B. Comply with manufacturer's written recommendations for fabrication.

C. Machining: Acceptable means of machining are listed below. Ensure that material is not chipped or warped by machining operations.
   1. Sawing: Select equipment and blades suitable for type of cut required.
   2. Drilling: Drills specifically designed for use with plastic products.
   3. Milling: Climb cut where possible.
   4. Routing
   5. Tapping

D. Laminating: Laminate to substrates indicated using adhesives and techniques recommended by manufacturer.

2.04 MISCELLANEOUS MATERIALS

A. General: Provide products of material, size, and shape required for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaner: Type recommended by manufacturer.

C. Fasteners: Use screws designed specifically for plastics. Self- threading screws are acceptable for permanent installations. Provide threaded metal inserts for applications requiring frequent disassembly such as light fixtures.

D. Bonding Cements: May be achieved with solvents or adhesives, suitable for use with product and application.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions where installation of Plastic Fabrications will occur, with Installer present, for compliance with manufacturer's requirements. Verify that substrates and conditions are satisfactory for installation and comply with requirements specified.

3.02 INSTALLATION

A. General: Comply with manufacturer's written instructions for the installation of Plastic Fabrications.

B. Manufacturer's shop to fabricate items to the greatest degree possible.

C. Utilize fasteners, adhesives and bonding agents recommended by manufacturer for type of installation indicated. Material that is chipped, warped, hazed or discolored as a result of installation or fabrication methods will be rejected.

D. Install components plumb, level and rigid, scribed to adjacent finishes, in accordance with approved shop drawings and product data.

E. Form field joints using manufacturer's recommended procedures. Locate seams in panels so that they are not directly in line with seams in substrates.

3.03 CLEANING AND PROTECTION

A. Protect surfaces from damage until date of substantial completion. Repair work or replace damaged work, which cannot be repaired to Architect's satisfaction.

1. End of Section 06 06 60

END OF SECTION

This page intentionally left blank

SECTION 06 1000 ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roofing nailers.

B. Preservative treated wood materials.

C. Communications and electrical room mounting boards.

D. Concealed wood blocking, nailers, and supports.

E. Miscellaneous wood nailers, furring, and grounds.

1.02 RELATED REQUIREMENTS

A. Section 09 2116 - Gypsum Board Assemblies: Gypsum-based sheathing.

1.03 REFERENCE STANDARDS

A. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

B. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

D. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.

E. PS 1 - Structural Plywood; 2023.

F. PS 20 - American Softwood Lumber Standard; 2025.

G. WWPA G-5 - Western Lumber Grading Rules; 2025.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.

C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

D. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. For Fire-Retardant Treated wood materials and Preservative Treated wood materials, see drawings for location and treat in accordance with article titled FACTORY WOOD TREATMENT below.

B. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.

1. If no species is specified, provide species graded by the agency specified; if no grading agency is specified, provide lumber graded by grading agency meeting the specified requirements.
2. Grading Agency: Grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee at www.alsc.org, and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
3. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.

C. Provide wood harvested within a 500 mile radius of the project site.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Grading Agency: Western Wood Products Association; WWPA G-5.

B. Sizes: Nominal sizes as indicated on drawings, S4S.

C. Moisture Content: S-dry or MC19.

D. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade.
   2. Boards: Standard or No. 3.

2.03 STRUCTURAL COMPOSITE LUMBER

A. At Contractor's option, structural composite lumber may be substituted for concealed dimension lumber and timbers.

B. Structural Composite Lumber: Factory fabricated beams, headers, and columns, of sizes and types indicated on drawings; structural capacity as published by manufacturer.
   1. Plates: Use laminated veneer lumber, laminated strand lumber, or parallel strand lumber.
   2. Products:
      a. Boise Cascade Company: www.bc.com.
      b. Weyerhaeuser Company: www.weyerhaeuser.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

2.04 CONSTRUCTION PANELS

A. Wall Sheathing: See Section 09 2116.

B. Wall Sheathing: Extruded Polystyrene (XPS) board insulation, ASTM C578.

C. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.05 PARAPET/WALL CAP FRAMING SYSTEM

A. Manufacturer: PreBuck Products; www.prebuckproducts.com
   1. Contact: J. Costen; j.costen@j2sales.net or (616)826-9122.

B. Laminated Strand Lumber (LSL).
   1. MDI resin. 100 percent waterproof bonding agent.

C. Treatment: Zinc borate for insect and decay resistance.

D. Pitch: as detailed on drawings.

E. Length: Maximum length available to work with building details.

F. Non-insulated.

G. Self alignment metal flange: size as required to attach to building edge condition.

H. Countersinking cutouts: Slotted holes at 24 inches on center located to be centered over masonry cores. No cutouts required at wood framed construction.

I. Warranty: 25 year limited warranty for use category 2 (uc2).

2.06 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel complying with ASTM A153/A153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere.
   2. Drywall Screws: Bugle head, hardened steel, power driven type, length three times thickness of sheathing.

2.07 FACTORY WOOD TREATMENT

A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

B. Preservative Treatment:
   1. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber in contact with roofing, flashing, or waterproofing.
      c. Treat lumber in contact with masonry or concrete.

2. Preservative Pressure Treatment of Plywood Above Grade: AWPA U1, Use Category UC2 and UC3B, Commodity Specification F using waterborne preservative.
   a. Kiln dry plywood after treatment to maximum moisture content of 19 percent.
   b. Treat plywood in contact with roofing, flashing, or waterproofing.
   c. Treat plywood in contact with masonry or concrete.
   d. Treat plywood less than 18 inches above grade.
3. Preservative Pressure Treatment of Lumber in Contact with Soil: AWPA U1, Use Category UC4A, Commodity Specification A using waterborne preservative.
   a. Preservative for Field Application to Cut Surfaces: As recommended by manufacturer of factory treatment chemicals for brush-application in the field.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.

B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.02 PARAPET/WALL CAP FRAMING SYSTEM INSTALLATION.

A. Install per Manufacturer's instructions.

3.03 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to authorities having jurisdiction may be used in lieu of solid wood blocking.

C. In metal stud walls, provide continuous blocking around door and window openings for anchorage of frames, securely attached to stud framing where wood trim and wood door frames are used.

D. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

E. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

F. Provide the following specific nonstructural framing and blocking:
   1. Cabinets and shelf supports.
   2. Wall brackets.
   3. Handrails.
   4. Grab bars.
   5. Towel and bath accessories.
   6. Wall-mounted door stops.
   7. Tackboards and markerboards.
   8. Wall paneling and trim.
   9. Joints of rigid wall coverings that occur between studs.
   10. Display Monitors.

3.04 ROOF-RELATED CARPENTRY

A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

B. Provide wood curb at each roof opening except where specifically indicated otherwise; form corners by alternating lapping side members.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.

1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.
4. Size and Location: As indicated on drawings.

3.06 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

B. Variation from Plane, Other than Floors: 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.07 CLEANING

A. Waste Disposal: See Section 01 7419 - Construction Waste Management and Disposal.
1. Comply with applicable regulations.
2. Do not burn scrap on project site.
3. Do not burn scraps that have been pressure treated.
4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.

B. Do not leave wood, shavings, sawdust, etc. on the ground or buried in fill.

C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Fire-retardant-treated wood materials.

1.02 RELATED REQUIREMENTS

A. Section 09 9113 - Exterior Painting.

B. Section 09 9123 - Interior Painting.

C. Section 09 9300 - Staining and Transparent Finishing.

1.03 REFERENCE STANDARDS

A. ANSI A135.4 - Basic Hardboard; 2012 (Reaffirmed 2020).

B. ANSI A208.1 - American National Standard for Particleboard; 2022.

C. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

D. AWI (QCP) - Quality Certification Program; Current Edition.

E. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

F. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

G. AWPA U1 - Use Category System: User Specification for Treated Wood; 2025.

H. GSA CID A-A-1936 - Adhesives, Contact, Neoprene Rubber; 1996a (Validated 2013).

I. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood; 2024.

J. ITS (DIR) - Directory of Listed Products; Current Edition.

K. NHLA G-101 - Rules for the Measurement and Inspection of Hardwood and Cypress; 2023.

L. PS 20 - American Softwood Lumber Standard; 2025.

M. UL (DIR) - Online Certifications Directory; Current Edition.

N. WDMA I.S. 4 - Industry Specification for Preservative Treatment for Millwork; 2025.

O. WI (CCP) - Certified Compliance Program (CCP); Current Edition.

P. WI (CSIP) - Certified Seismic Installation Program (CSIP); Current Edition.

Q. WI (MCP) - Monitored Compliance Program (MCP); Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with electrical rough-in.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data:
   1. Provide data on wood treatment.

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
   3. Include certification program label.

D. Samples: Submit two samples of wood trim 4 inch long.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.
   1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification:

1. Comply with AWI (QCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section: www.awiqcp.org/#sle.
2. Provide labels or certificates indicating that work complies with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade or grades specified.
3. Provide designated labels on shop drawings as required by certification program.
4. Provide designated labels on installed products as required by certification program.
5. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver factory-fabricated units to project site in original packages, containers or bundles bearing brand name and identification.

B. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.

C. Protect from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

C. Interior Woodwork Items:
1. Moldings, Bases, Casings, and Miscellaneous Trim: Clear white pine; prepare for paint finish.
2. Door, Glazed Light, and Pocket Door Frames: White birch; prepare for paint finish.

2.02 LUMBER MATERIALS

A. Softwood Lumber: species, poplar sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.
1. Grading: In accordance with rules certified by ALSC; www.alsc.org.

2.03 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Adhesive for factory-fabricated units: Manufacturer's recommended adhesive for application.

C. Concealed Joint Fasteners: Threaded steel.

2.04 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Wood Filler: Solvent base, tinted to match surface finish color.

2.05 FIRE-RETARDANT TREATMENT (FRT)

A. Factory-treat wood members in accordance with AWPA U1 and use category indicated.

B. Kiln-dry after treatment to maximum moisture content of 19 percent for sawn material and 15 percent plywood.

C. Fabrication of FRT Wood:
1. Ripping or milling of boards, lumber, and timber is not permitted after treatment.
2. Field cutting to length and drilling of holes in boards, lumber, and timber are permitted without additional treatment.
3. Field cutting and drilling of holes in plywood are permitted.

D. Label or brand FRT wood with classification mark of UL (DIR) or ITS (DIR) or other approved inspection agency, the treatment plant, name of treatment, species of wood, flame spread and smoke developed indexes, method of drying after treatment, and treating standard.

2.06 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

2.07 SITE-FINISHING MATERIALS

A. See Sections 09 9113, 09 9123, and 09 9300.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.

B. Set and secure materials and components in place, plumb and level.

C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

3.03 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

3.04 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Specially fabricated cabinet units.

B. Hardware.

C. Preparation for installing utilities.

1.02 RELATED REQUIREMENTS

A. Section 12 3600 - Countertops.

1.03 REFERENCE STANDARDS

A. BHMA A156.9 - Cabinet Hardware; 2020.

B. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
   2. Provide information required by AWI/AWMAC/WI (AWS).

C. Product Data: Provide data for hardware accessories.

D. Product Verification: Samples are not required. Confirm with digital image indicating product, style, size and color as indicated on drawings or as specified herein.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

B. Single Source Responsibility: Provide and install this work from single fabricator.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from moisture damage.

1.07 FIELD CONDITIONS

A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

PART 2 PRODUCTS

2.01 CABINETS

A. Quality Grade: Unless otherwise indicated provide products of quality specified by AWI//AWMAC/WI (AWS) for Grades as indicated.

B. Panel Core Material: Industrial Grade Particleboard: ANSI A208.1; Grade M2; Density of 45-50 lbs./cu.ft.
   1. Application: Typical Cabinet

C. Panel Core Material Wet Locations: Moisture Resistant Industrial Grade Particleboard: ANSI A208.1; Grade M2; Desnity of 45-50 lbs./cu.ft.
   1. Application: Sink base cabinets

D. Plastic Laminate Faced Cabinets: Custom grade.
   1. Finish - Exposed Exterior Surfaces: Decorative laminate.
   2. Finish - Exposed Interior Surfaces: Decorative laminate.
   3. Finish - Concealed Surfaces: Manufacturer's option; high pressure cabinet liner (CLS) or thermally fused melamine (TFM).
   4. Door and Drawer Front Edge Profiles: Square edge with matching 3mm PVC edge band..
   5. Door and Drawer Front Retention Profiles: Fixed panel.
   6. Casework Construction Type: Type A - Frameless.
   7. Interface Style for Cabinet and Door: Style 1 - Overlay; flush overlay.
   8. Grained Face Layout for Cabinet and Door Fronts: Flush panel.
      a. Custom Grade: Doors, drawer fronts and false fronts wood grain to run and match vertically within each cabinet unit.
   9. Adjustable Shelf Loading: 50 psf.
      a. Deflection: L/144.

10. Cabinet Style: Flush overlay.
11. Cabinet Doors and Drawer Fronts: Flush style.
12. Construction: Doweled and glued.
13. Drawer Construction Technique: Dovetail joints.

2.02 LAMINATE MATERIALS

A. Manufacturers:
   1. As indicated in Drawings.
   2. Substitutions: See Section 01 6000 - Product Requirements.

B. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
   1. Provide specific types as indicated.
      a. Vertical Surfaces: VGS, 0.028 inch nominal thickness, through color, finish as indicated.
      b. Cabinet Liner: CLS, 0.020 inch nominal thickness, through color, white, finish as indicated.
      c. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

C. Low Pressure Laminate: Melamine; standard colors as selected by architect, [<>] and matte surface texture.

2.03 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Plastic Edge Banding: Extruded PVC, flat shaped; smooth finish; of width to match component thickness.
   1. Color: As selected by Architect from manufacturer's full range.
   2. Use 1 mm thickness at all exposed plywood edges.
   3. Use 1 mm thickness at all exposed shelf edges.
   4. Use 3 mm thickness at all door and drawer front edges..

C. Fasteners: Size and type to suit application.

D. Concealed Joint Fasteners: Threaded steel.

2.04 HARDWARE

A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.

B. Adjustable Shelf Supports: Standard side-mounted system using multiple holes for pin supports and coordinated self rests, polished chrome finish, for nominal 1 inch spacing adjustments.

C. Countertop Brackets; L-shaped, top of knee wall mounting.
   1. Materials: Steel plates.
   2. Finish: Manufacturer's standard, factory-applied, powder coat.
   3. Color: Black.
   4. Height: 14 inches.
   5. Plate Thickness and Width: 3/8 inch by 2-1/2 inches.
   6. Products:
      a. Centerline Brackets; Standard Granite Countertop Support Bracket: www.countertopbracket.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

D. Drawer and Door Pulls:
   1. As shown in drawings typical.

E. Cabinet Catches and Latches:
   1. Type: Roller catch.
   2. Manufacturers:
      a. Knape & Vogt Manufacturing Company: www.knapeandvogt.com/#sle.
      b. Sugatsune America, Inc: www.sugatsune.com/#sle.
      c. Titus Cabinet Hardware; Push Latch: www.titusplus.com/us/en/#sle.
   3. Substitutions: See Section 01 6000 - Product Requirements.

F. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Commercial gradetypical. Heavyduty where noted on drawings.
   3. Mounting: Side mounted.
   4. Features: Provide self closing/stay closed type.
   5. Manufacturers:
      a. Accuride International, Inc: www.accuride.com/#sle.
      b. Blum, Inc: www.blum.com/#sle.
      c. Grass America Inc: www.grassusa.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

G. Hinges: European style concealed self-closing type, steel with satin finish.
   1. Manufacturers:
      a. Blum, Inc: www.blum.com/#sle.
      b. Grass America Inc: www.grassusa.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

2.05 FABRICATION

A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.

B. Edging: Fit shelves, doors, drawer fronts and exposed edges with specified edging. Do not use more than one piece for any single length.

C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.

D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners.
   1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.

E. Provide cutouts for outlet boxes and fixtures and fittings. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION

A. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.

B. Use fixture attachments in concealed locations for wall mounted components.

C. Use concealed joint fasteners to align and secure adjoining cabinet units.

D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.

E. Secure cabinets to floor using appropriate angles and anchorages.

3.03 ADJUSTING

A. Adjust installed work.

B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION

This page intentionally left blank

SECTION 07 0553 FIRE AND SMOKE ASSEMBLY IDENTIFICATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Identification markings for fire and smoke rated partitions, and fire rated walls.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting: Paint finish.

1.03 REFERENCE STANDARDS

A. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Schedule: Completely define scope of proposed marking, and indicate location of affected walls and partitions, and number of markings.

1.05 FIELD CONDITIONS

A. Do not install painted markings when ambient temperature is lower than recommended by coating manufacturer.

PART 2 PRODUCTS

2.01 FIRE AND SMOKE ASSEMBLY IDENTIFICATION

A. Regulatory Requirements: Comply with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of ICC (IBC).
   1. Wording examples. See code compliance drawing for corresponding language and ratings:
      a. 1 HR OR 2 HR FIRE BARRIER
   2. Size: 3 inch high with 3/8 inch stroke, minimum.

B. Applied Fire and Smoke Assembly Identification: Identification markings applied to partition with paint and a code compliant stencil. See Section 09 9123 for products.

C. Color: In concealed spaces, Red.

D. Color: In exposed spaces, Medium Gray or color approved by architect.

E. Languages: Provide sign markings in English.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

3.02 PREPARATION

A. See Section 09 9123 for substrate preparation for painted markings.

3.03 INSTALLATION

A. Locate markings as required by ICC (IBC).
   1. Locate within 15 feet of end of wall and at intervals not exceeding 30 feet. Apply 12 inched aboove ceilngs or at top of wall at exposed areas.
   2. Locate where there is an accessable concealed floor, floor-ceiling or attic space. Includes both sides of wall.
   3. Locate where there is an accessable concealed floor, floor-ceiling or attic space and at all exposed full height walls. Includes both sides of wall.

B. Install applied markings in accordance with Section 09 9123.

C. Install neatly, with horizontal edges level.

D. Protect from damage until Date of Substantial Completion; repair or replace damaged markings.

END OF SECTION

This page intentionally left blank

SECTION 07 1113 BITUMINOUS DAMPPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Bituminous dampproofing.

1.02 REFERENCE STANDARDS

A. ASTM D4479/D4479M - Standard Specification for Asphalt Roof Coatings - Asbestos-Free; 2007 (Reapproved 2018).

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide properties of primer, bitumen, and mastics.

C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with at least three years of documented experience.

1.05 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application until dampproofing has cured.

PART 2 PRODUCTS

2.01 BITUMINOUS DAMPPROOFING

A. Bituminous Dampproofing: Cold-applied, spray-grade; asphalt base, volatile petroleum solvents, and other content, suitable for application by spray, brush, roller, or squeegee; asbestos-free; suitable for application on vertical and horizontal surfaces.
   1. Application: Cavity wall over concrete masonry units.
   2. Composition: ASTM D4479/D4479M Type I, asbestos free.
   3. VOC Content: Not more than permitted by local, State, and federal regulations.
   4. Applied Thickness: 1/16 inch, minimum, wet film.
   5. Products:
      a. Henry Company; HE788: www.henry.com
      b. Mar-Flex Systems, Inc; ArmorBlock 361WB: www.mar-flex.com/#sle.
      c. Master Builder Solutions; Masterseal 610: www.master-builders-solutions.com
      d. W. R. Meadows, Inc; Sealmastic Spray-Mastic: www.wrmeadows.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting this work.

B. Verify substrate surfaces are durable, free of matter detrimental to adhesion or application of dampproofing system.

C. Verify that items penetrating surfaces to receive dampproofing are securely installed.

3.02 APPLICATION

A. Perform this work in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

B. Apply bitumen by spray application.

C. Seal items watertight with mastic, that project through dampproofing surface.

END OF SECTION

This page intentionally left blank

SECTION 07 1713 BENTONITE PANEL WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Bentonite clay panel waterproofing and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 2100 - Thermal Insulation: Rigid insulation board used as protection board.

1.03 REFERENCE STANDARDS

A. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide product criteria, characteristics, accessories, jointing and seaming methods, and termination conditions.

C. Shop Drawings: Indicate required flashings, control joints, and expansion joints, sealing at openings, projections, penetrations, reglets, and sleeves.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store and handle materials in accordance with manufacturer's written instructions.

C. Maintain minimum ambient storage temperature of 40 degrees F for bentonite panel products.

1.06 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for at least 24 hours before and during application.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Bentonite Panel Waterproofing:
   1. CETCO, a division of Minerals Technologies Inc: www.mineralstech.com/#sle.
   2. Carlisle Coatings and Waterproofing, Inc; CCW MiraCLAY: www.carlisleccw.com.
   3. EPRO Services, Inc; Bento-Pro Plus: www.eproinc.com.
   4. Tremco Commercial Sealants and Waterproofing; Paraseal GM: www.tremcosealants.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Bentonite: Pure bentonite clay, granulated, dry, and comprised of at least 50 percent sodium montmorillonite with at least 90 percent passing No.20 mesh sieve, and maximum of 10 percent passing No.200 mesh sieve.

B. Panels: Corrugated core filled with self expanding bentonite clay granules.
   1. Thickness: 20 mils.
   2. Minimum Bentonite Fill: 1 lb/sq ft.

C. Joint Seal: Moist and hydrated bentonite clay gel using water and glycol for below-freezing application and water for above-freezing application.

2.03 ACCESSORIES

A. Adhesive: Manufacturer's recommended type.

B. Protection Board: Rigid insulation; see Section 07 2100.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting this work.

B. Verify substrate surfaces are smooth, durable, and free of matter detrimental to application of waterproofing system.

C. Verify items that penetrate surfaces to receive waterproofing are securely installed.

3.02 PREPARATION

A. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's installation instructions.

B. Remove concrete fins, projections, and form ties.

C. Fill holes, cracks, honeycombs, and voids with joint sealant at least 1/8 inch thick, and extend at least 3 inches beyond defect.

3.03 INSTALLATION

A. Install panels in accordance with manufacturer's installation instructions and applicable requirements of NRCA (WM).

B. Cut panels parallel to corrugations to prevent loss of bentonite.

C. Seal construction joints and top of panels at grade with joint seal.

D. Vertical Surfaces:
   1. Install single-ply panels with masonry screws, starting at base of foundation.
   2. Fold panels around corners with corrugations vertical, and install unfolded panels with corrugations horizontal.
   3. Lap adjoining panels 1-1/2 inches.

E. Below Slabs: Under hydrostatic conditions.
   1. Install polyethylene sheet over subgrade; lap joints at least 4 inches.
   2. Lay single-ply panels in slab form and align panels with edge of slab. Do not lay panels over pile caps or footings supporting slab edges; stagger joints of adjoining panel rows.
   3. Lap joints at least 1-1/2 inches; secure laps to prevent displacement.
   4. Install joint seal in 1-inch high beads around penetrations through panels and 1/2-inch high beads around support legs not placed on pads; cover beads with polyethylene sheet collars and cut to size.
   5. Lay joint seal continuously along and around protrusions, penetrations, and at abutting walls; secure properly to prevent movement.

F. Protection Board:
   1. Install protection board directly over waterproofing; butt joints.
   2. Scribe and cut boards around projections, penetrations, and interruptions.
   3. Adhere protection board to substrate with mastic.

3.04 PROTECTION

A. Do not permit traffic over unprotected or uncovered waterproofing.

B. Cover installed panel waterproofing with temporary polyethylene sheeting; remove sheeting just before backfilling begins.

END OF SECTION

SECTION 07 2100 THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Board insulation at cavity wall construction, perimeter foundation wall, underside of floor slabs, exterior wall behind metal panel wall finish, and in precast wall panels..

1.02 RELATED REQUIREMENTS

A. Section 07 0543 - Cladding Support Systems: Thermal Girt to retain continuous board insulation.

B. Section 07 5300 - Elastomeric Membrane Roofing: Installation requirements for board insulation over low slope roof deck.

1.03 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2023.

B. ASTM C 947 - Standard Test Method for Flexural Properties of Thin-Section Glass-Fiber-Reinforced Concrete (Using Simple Beam With Third-Point Loading).

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

D. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components; 2019.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages with manufacturer's labels intact and clearly identifying products.

B. Store materials covered, dry and protected from weather, surface contamination, corrosion, damaging temperatures, construction traffic, and the causes.

C. Keep panels, steel components and fasteners protected from the elements prior to installation.

D. Store the panels laying flat.

E. Do not drop panels.

F. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.06 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. Insulation Under Concrete Slabs: Extruded polystyrene (XPS) board.

B. Insulation at Perimeter of Foundation: Expanded polystyrene (EPS) board.

C. Insulation Inside Masonry Cavity Walls: Extruded polystyrene (XPS) board.

D. Insulation Over Metal Stud Framed Wall Sheathing, Continuous: Extruded polystyrene (XPS) board.

2.02 FOAM BOARD INSULATION MATERIALS

A. Expanded Polystyrene (EPS) Board Insulation: Comply with ASTM C578.
   1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
   2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
   3. Complies with fire resistance requirements indicated on drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
   4. Board Size: 48 inch by 96 inch.

5. Board Thickness: 3 inch.
6. Board Edges: Square.
7. Type and Thermal Resistance, R-value: Type XI, 3.1 (0.55), minimum, per 1 inch thickness at 75 degrees F mean temperature.
8. Products:
   a. Atlas Molded Products, a Division of Atlas Roofing Corporation; ThermalStar EPS Wall Insulation Board: www.atlasmoldedproducts.com/#sle.
   b. Atlas Molded Products, a Division of Atlas Roofing Corporation; ThermalStar EPS Laminated Wall Insulation (LWI): www.atlasmoldedproducts.com/#sle.
   c. InsulFoam LLC; R-Tech Fanfold (FF) Insulation: www.insulfoam.com/#sle.
   d. InsulFoam LLC; InsulFoam Below Grade Insulation _____: www.insulfoam.com/#sle.
   e. Substitutions: See Section 01 6000 - Product Requirements.

B. Extruded Polystyrene (XPS) Cavity Wall Insulation Board at Continuous Inuslation behind wall cladding): Comply with ASTM C578, and manufactured using carbon black technology.
1. Product: Basis-of-Design: Dupont, Styrofoam Brand Cavitymate Extrude Polystyrene Foam Insulation
2. Type and Compressive Resistance: Type X, 15 psi, minimum.
3. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
4. Type and Thermal Resistance, R-value: Type X, 5.0, minimum, per 1 inch thickness at 75 degrees F mean temperature.
5. Board Size: 15-3/4 inch by 96 inch.
6. Board Thickness: 3 inch.
7. Board Edges: Square.
8. Type and Water Absorption: Type X , 0.3 percent by volume, maximum, by total immersion.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER

A. Adhere a 6 inches wide strip of polyethylene sheet over construction, control, and expansion joints with double beads of adhesive each side of joint.
1. Tape seal joints.
2. Extend sheet full height of joint.

B. Apply adhesive to back of boards:
1. Three continuous beads per board length.

C. Install boards horizontally on foundation perimeter.
1. Place boards to maximize adhesive contact.
2. Install in running bond pattern.
3. Butt edges and ends tightly to adjacent boards and to protrusions.

D. Extend boards over expansion joints, unbonded to foundation on one side of joint.

E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

F. Immediately following application of board insulation, place protective boards over exposed insulation surfaces.
1. Apply adhesive in five continuous beads per board length.
2. Install boards horizontally from base of foundation to top of insulation.
3. Butt boards tightly, with joints staggered from insulation joints.

3.03 BOARD INSTALLATION AT EXTERIOR WALLS

A. Install boards horizontally on walls.
1. Install in running bond pattern.
2. Butt edges and ends tightly to adjacent boards and protrusions.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.04 BOARD INSTALLATION AT CAVITY WALLS

A. Install boards to fit snugly between wall ties.

B. Install boards horizontally on walls.
   1. Place boards to maximize adhesive contact.
   2. Install in running bond pattern.
   3. Butt edges and ends tightly to adjacent boards and protrusions.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.05 BOARD INSTALLATION UNDER CONCRETE SLABS

A. Place insulation under slabs on grade after base for slab has been compacted.

B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.06 BOARD INSTALLATION OVER LOW SLOPE ROOF DECK

A. Board Installation Over Roof Deck, General:
   1. See applicable roofing specification section for specific board installation requirements.
   2. Fasten insulation to deck in accordance with roofing manufacturer's written instructions and applicable Factory Mutual requirements.
   3. Do not apply more insulation than can be covered with roofing on the same day.

3.07 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

B. Touch-up, repair or replace damaged concrete faced panels.

This page intentionally left blank

SECTION 07 2500 WEATHER BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water-resistive barriers.

1.02 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on material characteristics.

C. Shop Drawings: Provide drawings of special joint conditions.

D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.03 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Locate where directed.

C. Mock-up may remain as part of work.

1.04 FIELD CONDITIONS

A. Maintain temperature and humidity recommended by materials manufacturers before, during, and after installation.

PART 2 PRODUCTS

2.01 WATER-RESISTIVE BARRIERS

2.02 ACCESSORIES

A. Seal and Perimeter Tapes: As recommended by water-resistive barrier manufacturer.

B. Flashings and Sealants: As recommended by water-resistive barrier manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions comply with requirements of this section.

3.02 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Install continuous water-resistive barriers where indicated on drawings, with sheets lapped to shed water.

C. Mechanically Fastened Sheets:
   1. Install sheets in shingle fashion to shed water; align horizontally.
   2. Overlap seams as recommended by manufacturer, 6 inches, minimum.
   3. Overlap at outside and inside corners as recommended by manufacturer, 12 inches, minimum.
   4. Install water-resistive barrier over jamb flashings.
   5. Install head flashings under water-resistive barrier.
   6. At framed openings with frames having nailing flanges, extend sheet into opening and over flanges; at head of opening, seal sheet over flange and flashing.

D. Self-Adhered Sheets:
   1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.
   2. Lap sheets shingle-fashion to shed water and seal laps airtight.
   3. Upon placement of sheets, firmly press onto substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
   4. Use same material, or other material approved by sheet manufacturer, to seal sheets to adjacent substrates, and as flashing.
   5. At expansion joints, provide transition to joint assemblies approved by sheet manufacturer.

E. Openings and Penetrations in Exterior Water-Resistive Barriers:
   1. Install flashing over sills, covering entire sill framing member, and extend at least 5 inches onto water-resistive barrier and at least 6 inches up jambs; mechanically fasten stretched edges.

2. At openings filled with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
3. At openings filled with nonflanged frames, seal water-resistive barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
4. At head of openings, install flashing under water-resistive barrier extending at least 2 inches beyond face of jambs; seal water-resistive barrier to flashing.
5. At interior face of openings, seal gaps between window and door frames and rough framing using appropriate joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating items and seal to surface of water-resistive barrier.

3.03 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

SECTION 07 2700 AIR BARRIERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air barriers.

1.02 RELATED REQUIREMENTS

A. Section 09 2116 - Gypsum Board Assemblies: Air barrier under exterior cladding.

1.03 REFERENCE STANDARDS

A. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection; 2025.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

C. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

D. ASTM E2178 - Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials; 2021a.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on material characteristics, performance criteria, and limitations.

C. Shop Drawings: Provide drawings of special joint conditions.

D. Manufacturer's Installation Instructions: Indicate preparation, installation methods, and storage and handling criteria.

1.05 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Locate where directed.

C. Mock-up may remain as part of work.

PART 2 PRODUCTS

2.01 AIR BARRIER MATERIALS (AIR IMPERMEABLE AND WATER VAPOR PERMEABLE)

A. Air Barrier Sheet, Mechanically Fastened:
   1. Application: Exterior above grade over sheathing or over continuous insulation.
   2. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
   3. Water Vapor Permeance: 20 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F.
   4. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 180 days of weather exposure.
   5. Surface Burning Characteristics: Flame spread index of 25 or less, and smoke developed index of 50 or less, Class A, when tested in accordance with ASTM E84.
   6. Seam and Perimeter Tape: Polyethylene self-adhering type, mesh reinforced, 2-1/2 inches wide, compatible with sheet material; unless otherwise indicated.
   7. Products:
      a. DuPont de Nemours, Inc; Tyvek CommercialWrap D with Tyvek Fluid Applied Flashing and Joint Compound, FlexWrap NF, StraightFlash, StraightFlash VF, Tyvek Wrap Caps, and Tyvek Tape: building.dupont.com/#sle.
      b. VaproShield, LLC; WrapShield IT - Integrated Tape: www.vaproshield.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Air Barrier Sheet, Self-Adhered:
   1. Application: Exterior above grade precast concrete, cast-in-place concrete, concrete masonry units, exterior gypsum board, and plywood.
   2. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
   3. Water Vapor Permeance: 29 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure A - Desiccant Method, at 73.4 degrees F.
   4. Water Penetration Resistance Around Nails: Pass, when tested in accordance with ASTM D1970/D1970M (modified).
   5. Ultraviolet (UV) and Weathering Resistance: Approved by manufacturer for up to 90 days of weather exposure.

6. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A when tested in accordance with ASTM E84.
7. Seam and Perimeter Tape: As recommended by sheet manufacturer.
8. Products:
   a. Dorken Systems Inc; DELTA-VENT SA: www.dorken.com/#sle.
   b. Henry Company; Blueskin VP160: www.henry.com/#sle.
   c. VaproShield, LLC; WrapShield SA - Self-Adhered: www.vaproshield.com/#sle.
   d. W. R. Meadows, Inc; Air-Shield SMP: www.wrmeadows.com/#sle.
   e. Substitutions: See Section 01 6000 - Product Requirements.

C. Air Barrier, Fluid Applied: Vapor permeable, elastomeric waterproofing.
1. Application: Exterior above grade walls applied to exterior sheathing panels, concrete masonry units, poured concrete or wood substrates.
2. Air Barrier Coating:
   a. Air Permeance: 0.004 cfm/sq ft, maximum, when tested in accordance with ASTM E2178.
   b. Water Vapor Permeance: 11 perms, minimum, when tested in accordance with ASTM E96/E96M using Procedure B - Water Method, at 73.4 degrees F.
   c. Products:
      1) DuPont de Nemours, Inc; Tyvek Fluid Applied WB+ with Tyvek Fluid Applied Flashing and Joint Compound, Sealant for Tyvek Fluid Applied System, and StraightFlash: building.dupont.com/#sle.
      2) GCP Applied Technologies; Perm-A-Barrier VPL 50RS UV Stable: www.gcpat.com/#sle.
      3) Henry Company; Air-Bloc All Weather STPE: www.henry.com/#sle.
      4) Master Builders Solutions; MasterSeal AWB 660: www.master-builders-solutions/en-us/#sle.
      5) Momentive Performance Materials, Inc/GE Silicones; GE Elemax 2600 AWB: www.siliconeforbuilding.com/#sle.
      6) Sto Corp; Sto Gold Coat: www.stocorp.com/#sle.
      7) Tremco; ExoAir 220: www.tremcosealants.com.
      8) W. R. Meadows, Inc; Air-Shield TMP: www.wrmeadows.com/#sle.
      9) Substitutions: See Section 01 6000 - Product Requirements.

2.02 ACCESSORIES

A. Sealants, Tapes, and Accessories for Sealing Air Barrier and Adjacent Substrates: As indicated or in compliance with air barrier manufacturer's installation instructions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces and conditions are ready for work of this section.

B. Where existing conditions are responsibility of another installer, notify Architect of unsatisfactory conditions.

C. Do not proceed with this work until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install materials in accordance with manufacturer's installation instructions.

B. Air Barriers: Install continuous airtight barrier over surfaces indicated, with sealed seams and with sealed joints to adjacent surfaces.

C. Apply sealants and adhesives within recommended temperature range in accordance with manufacturer's installation instructions.

D. Self-Adhered Sheets:
1. Prepare substrate in accordance with sheet manufacturer's installation instructions; fill and tape joints in substrate and between dissimilar materials.
2. Lap sheets shingle fashion to shed water and seal laps airtight.
3. Once sheets are in place, press firmly into substrate with resilient hand roller; ensure that laps are firmly adhered with no gaps or fishmouths.
4. Use same material, or other material approved by sheet manufacturer, to seal to adjacent substrates, and as flashing.

5. At wide joints, provide extra flexible membrane allowing joint movement.

E. Fluid-Applied Coatings or Membranes:
1. Prepare substrate in accordance with manufacturer's installation instructions; treat joints in substrate and between dissimilar materials as indicated.
2. Use flashing to seal to adjacent construction and to bridge joints in coating substrate.

F. Openings and Penetrations in Exterior Air Barriers:
1. Install flashing over sills, covering entire sill frame member, extending at least 5 inches onto air barrier and at least 6 inches up jambs; mechanically fasten stretched edges.
2. At openings with frames having nailing flanges, seal head and jamb flanges using a continuous bead of sealant compressed by flange and cover flanges with sealing tape at least 4 inches wide; do not seal sill flange.
3. At openings with nonflanged frames, seal air barrier to each side of framing at opening using flashing at least 9 inches wide, and covering entire depth of framing.
4. At head of openings, install flashing under air barrier extending at least 2 inches beyond face of jambs; seal air barrier to flashing.
5. At interior face of openings, seal gap between window/door frame and rough framing, using joint sealant over backer rod.
6. Service and Other Penetrations: Form flashing around penetrating item and seal to air barrier surface.

3.03 PROTECTION

A. Do not leave materials exposed to weather longer than recommended by manufacturer.

END OF SECTION

This page intentionally left blank

SECTION 07 4213.23 METAL COMPOSITE MATERIAL WALL PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior cladding consisting of formed metal composite material (MCM) sheet, secondary supports, and anchors to structure, attached to solid backup.

B. Matching flashing and trim.

1.02 RELATED REQUIREMENTS

A. Section 04 2000 - Unit Masonry: Installation of anchors.

B. Section 05 4000 - Cold-Formed Metal Framing: Panel support framing.

C. Section 07 6200 - Sheet Metal Flashing and Trim: Metal flashing components integrated with this wall system.

D. Section 07 9200 - Joint Sealants: Sealing joints between siding and adjacent construction and fixtures.

1.03 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.

B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

E. ASTM A276/A276M - Standard Specification for Stainless Steel Bars and Shapes; 2025.

F. ASTM A480/A480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip; 2025b.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

H. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

I. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010 (Reapproved 2015).

J. ASTM D1781 - Standard Test Method for Climbing Drum Peel for Adhesives; 1998 (Reapproved 2021).

K. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics; 2023.

L. ASTM D4145 - Standard Test Method for Coating Flexibility of Prepainted Sheet; 2010 (Reapproved 2022).

M. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

N. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

O. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Pre-Installation Meeting: Convene one week before starting work of this section to verify project requirements, coordinate with installers of other work, establish condition and completeness of building substrate, and review manufacturers' installation instructions and warranty requirements.

1. Require attendance by the installer and relevant sub-contractors.
2. Include MCM sheet manufacturer’s representative and wall system manufacturer’s representative to review storage and handling procedures.

3. Review in detail truck transportation, parking, vertical transportation, schedule, personnel, installation of adjacent materials and substrate.
4. Review procedures for protection of work and other construction.
5. Review safety precautions.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data - MCM Sheets: Manufacturer's data sheets on each product to be used, including thickness, physical characteristics, and finish, and:
1. Finish manufacturer's data sheet showing physical and performance characteristics.
2. Storage and handling requirements and recommendations.
3. Fabrication instructions and recommendations.
4. Specimen warranty for finish, as specified herein.

C. Product Data - Wall System: Manufacturer's data sheets on each product to be used, including:
1. Physical characteristics of components shown on shop drawings.
2. Storage and handling requirements and recommendations.
3. Installation instructions and recommendations.
4. Specimen warranty for wall system, as specified herein.

D. Shop Drawings: Show layout and elevations, dimensions and thickness of panels, connections, details and location of joints, sealants and gaskets, method of anchorage, support clips, exposed fasteners, number of anchors, supports, reinforcement, trim, flashings, and accessories.
1. Indicate panel numbering system.
2. Differentiate between shop and field fabrication.
3. Indicate substrates and adjacent work with which the wall system must be coordinated.
4. Include large-scale details of anchorages and connecting elements.
5. Include large-scale details or schematic, exploded or isometric diagrams to fully explain flashing at a scale of not less than 1-1/2 inches per 12 inches.

E. Verification Samples: For each finish product specified, submit at least three samples, minimum size 12 inch square, and representing actual product in color and texture.

F. Test Report: Submit report of full-size mock-up tests for air infiltration, water penetration, and wind performance.

G. Manufacturer's Field Reports: Provide within 48 hours of field review. State what was observed and what changes, if any, were requested or required.

H. Installer's qualification statement.

I. Testing agency's qualification statement.

J. Maintenance Data: Care of finishes and warranty requirements.

1.06 QUALITY ASSURANCE

A. Field Measurements: Verify actual dimensions by field measurement before fabrication; show recorded measurements on shop drawings.

B. Manufacturer Qualifications: Company specializing in manufacturing wall panel systems specified in this section.
1. With not less than three years of documented experience.
2. Approved by MCM sheet manufacturer.

C. Installer Qualifications: Company specializing in performing work of type specified in this section.
1. With minimum three years of documented experience.
2. Approved by wall panel system manufacturer.

D. Testing Agency Qualifications: Independent agency experienced in testing assemblies of the type required for this project and having the necessary facilities for full-size mock-up testing of the type specified.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in manufacturer's original, unopened, undamaged containers with identification labels intact.

1. Protect finishes by applying heavy-duty removable plastic film during production.
2. Package for protection against transportation damage.
3. Provide markings to identify components consistently with drawings.
4. Exercise care in unloading, storing, and installing panels to prevent bending, warping, twisting, and surface damage.

B. Store products protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
1. Store in well-ventilated space out of direct sunlight.
2. Protect from moisture and condensation with tarpaulins or other suitable weathertight covering installed to provide ventilation.
3. Store at a slope to ensure positive drainage of accumulated water.
4. Do not store in enclosed space where ambient temperature can exceed 120 degrees F.
5. Avoid contact with other materials that might cause staining, denting, or other surface damage.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Special Warranty: Provide 2-year warranty covering water tightness and integrity of seals of wall panels. Complete forms in Owner's name and register with warrantor.

C. Finish Warranty: Provide 20-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Composite Material (MCM) Sheet Manufacturers:
1. ALUCOBOND by 3A Composites USA; ALUCOBOND PLUS: www.alucobondusa.com/#sle.
2. Alfrex, LLC; Alfrex fr: www.alfrexusa.com/#sle.
3. ALPOLIC Materials; ALPOLIC/fr (Fire Retardant core): www.alpolic-americas.com/#sle.
4. Arconic Architectural Products LLC; Reynobond: www.arconic.com
5. Citadel Architectural Products, Inc; Envelope 2000: www.citadelap.com/#sle.
6. Substitutions: See Section 01 6000 - Product Requirements.

B. Wall Panel System Manufacturers:
1. Citadel Architectural Products, Inc; Envelope 2000 Rainscreen (RS) System: www.citadelap.com/#sle.
2. Elevate; Series 1200: www.holcimelevate.com/#sle.
3. Petersen Aluminum Corporation; PAC-3000 RS: www.pac-clad.com/#sle.
4. SAF Metal Fabrication, a division of Southern Aluminum Finishing Company, Inc; C4000: www.saf.com/#sle.
5. Shaffner-Heaney Associates Inc.; RLS 9000.
6. Sobotec Ltd.; SL-2000: www.sobotec.com
7. Riverside Group; R4-300: www.abp-michigan.com
8. Substitutions: See Section 01 6000 - Product Requirements.

2.02 WALL PANEL SYSTEM AND SOFFITS

A. Wall Panel System: Metal panels, fasteners, and anchors designed to be supported by framing or other substrate provided by others; provide installed panel system capable of maintaining specified performance without defects, damage, or failure.
1. Provide panel jointing and weatherseal using reveal joints and gaskets but no sealant.
2. Anchor panels to supporting framing without exposed fasteners.

B. PERFORMANCE REQUIREMENTS
1. Thermal Movement: Provide for free and noiseless vertical and horizontal thermal movement due to expansion and contraction under material temperature range of minus 20 degrees F to 180 degrees F without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.

2. Wind Performance: Provide system tested in accordance with ASTM E330/E330M without permanent deformation or failures of structural members under the following conditions:
   a. Maximum deflection of perimeter framing member of L/175 normal to plane of the wall; maximum deflection of individual panels of L/60.
   b. Maximum anchor deflection in any direction of 1/16 inch at connection points of framing members to anchors.
3. Water Penetration: No water penetration under static pressure when tested in accordance with ASTM E331 at a differential of 10 percent of inward acting design load, 6.27 psf minimum, after 15 minutes.
   a. Water penetration is defined as the appearance of uncontrolled water on the interior face of the wall.
   b. Design to drain leakage and condensation to the exterior face of the wall.

C. Panels: 2-inch-nominal deep pans formed of metal composite material sheet by routing back edges of sheet, removing corners, and folding edges.
1. Reinforce corners with riveted aluminum angles.
2. Provide concealed attachment to supporting structure by adhering attachment members to back of panel; attachment members may also function as stiffeners.
3. Maintain maximum panel bow of 0.8 percent of panel dimension in width and length; provide stiffeners of sufficient size and strength to maintain panel flatness without showing local stresses or read-through on panel face.
4. Secure members to back face of panels using structural silicone sealant approved by MCM sheet manufacturer.
5. Metallic Finished Panels: Maintain consistent grain of MCM sheet; specifically, do not rotate sheet purely to avoid waste.
6. Fabricate panels under controlled shop conditions.
7. Where final dimensions cannot be established by field measurement before commencement of manufacturing, make allowance for field adjustments without requiring field fabrication of panels.
8. Fabricate as indicated on drawings and as recommended by MCM sheet manufacturer.
   a. Make panel lines, breaks, curves, and angles sharp and true.
   b. Keep plane surfaces free from warp or buckle.
   c. Keep panel surfaces free of scratches or marks caused during fabrication.
9. Provide joint details providing a watertight and structurally sound wall panel system that allows no uncontrolled water penetration on inside face of panel system.
10. For "dry" jointing, secure extrusions to returned pan edges with stainless steel rivets; provide means of concealed drainage with baffles and weeps for water that might accumulate in members of system.

2.03 MATERIALS

A. Metal Composite Material (MCM) Sheet: Two sheets of aluminum sandwiching a core of extruded thermoplastic material; no foamed insulation material content.
1. Overall Sheet Thickness: 0.118 inch, minimum.
2. Face Sheet Thickness: 0.019 inch, minimum.
3. Alloy: Manufacturer's standard, selected for best appearance and finish durability.
4. Bond and Peel Strength: No adhesive failure of the bond between the core and the skin nor cohesive failure of the core itself below 22.4 inch-pound/inch with no degradation in bond performance, when tested in accordance with ASTM D1781, simulating resistance to panel delamination, after 8 hours of submersion in boiling water and after 21 days of immersion in water at 70 degrees F.
5. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
6. Flammability: Self-ignition temperature of 650 degrees F or greater when tested in accordance with ASTM D1929.

B. Metal Framing Members: Include sub-girts, zee-clips, base and sill angles and channels, hat-shaped and rigid channels, and furring channels required for complete installation.
1. Provide material strength, dimensions, configuration as required to meet applied loads and in compliance with applicable building code.

2. Sheet Steel Components: ASTM A653/A653M galvanized to G90/Z275 or zinc-iron alloy-coated to A60/ZF180; or ASTM A792/A792M aluminum-zinc coated to AZ60/AZM180.
3. Panel Support Framing: See Section 05 4000.

2.04 FINISHES

A. Factory Finish: Two coat fluoropolymer resin coating, approved by coating manufacturer for length of warranty specified for project, and applied by coil manufacturing facility that specializes in coil applied finishes.
   1. Coating Flexibility: Pass ASTM D4145 minimum 1T Bend at time of manufacturing.
   2. Long-Term Performance: Not less than that specified under WARRANTY in PART 1.

B. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, with at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected by Architect from manufacturer's standard line.
   1. Products:
      a. PPG; Duranar: www.ppgmetalcoatings.com/#sle.
      b. Sherwin-Williams Company; Fluropon: www.coil.sherwin.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

C. Color/Texture: As selected by Architect from manufacturer's full range.

2.05 ACCESSORIES

A. Flashing: Sheet aluminum; 0.040 inch thick, minimum; finish and color to match MCM sheet; see Section 07 6200 for additional requirements.

B. Anchors, Clips, and Accessories: Use one of the following:
   1. Stainless steel complying with ASTM A276/A276M, ASTM A480/A480M, or ASTM A666/A666M.
   2. Steel complying with ASTM A36/A36M and hot-dip zinc coating to ASTM A153/A153M.
   3. Steel complying with ASTM A36/A36M and hot-dip galvanized to ASTM A123/A123M, with Coating Thickness Grade of 100.

C. Fasteners:
   1. Exposed Fasteners: Stainless steel; permitted only where absolutely unavoidable and subject to prior approval of the Architect.
   2. Screws: Self-drilling or self-tapping Type 410 stainless steel or zinc-alloy steel hex washer head, with EPDM or PVC washer under heads of fasteners bearing on weather side of metal wall panels.
   3. Bolts: Stainless steel.
   4. Fasteners for Flashing and Trim: Blind fasteners of high-strength aluminum or stainless steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine dimensions, tolerances, and interfaces with other work.

B. Examine substrate on-site to determine that conditions are acceptable for product installation in accordance with manufacturer's written instructions.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. Notify Architect in writing of conditions detrimental to proper and timely completion of work, and do not proceed with erection until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect adjacent work areas and finish surfaces from damage during installation.

3.03 INSTALLATION

A. Do not install products that are defective, including warped, bowed, dented, and broken members, and members with damaged finishes.

B. Comply with instructions and recommendations of MCM sheet manufacturer and wall system manufacturer, as well as with approved shop drawings.

C. Install wall system securely allowing for necessary thermal and structural movement; comply with wall system manufacturer's instructions for installation of concealed fasteners.

D. Do not handle or tool products during erection in manner that damages finish, decreases strength, or results in visual imperfection or failure in performance. Return component parts that require alteration to shop for refabrication, if possible, or for replacement with new parts.

E. Do not form panels in field unless required by wall system manufacturer and approved by the Architect; comply with MCM sheet manufacturer's instructions and recommendations for field forming.

F. Separate dissimilar metals; use gasket fasteners, isolation shims, or isolation tape where needed to eliminate possibility of electrolytic action between metals.

G. Install flashings as indicated on shop drawings. At flashing butt joints, provide a lap strap under flashing and seal lapped surfaces with a full bed of non-hardening sealant.

H. Install square, plumb, straight, and true, accurately fitted, with tight joints and intersections maintaining the following installation tolerances:
   1. Variation From Plane or Location: 1/2 inch in 30 feet of length and up to 3/4 inch in 300 feet, maximum.
   2. Deviation of Vertical Member From True Line: 0.1 inch in 25 feet run, maximum.
   3. Deviation of Horizontal Member From True Line: 0.1 inch in 25 feet run, maximum.
   4. Offset From True Alignment Between Two Adjacent Members Abutting End To End, In Line: 0.03 inch, maximum.

I. Replace damaged products.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Wall System Manufacturer's Field Services: Provide field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with instructions.

3.05 CLEANING

A. Ensure weep holes and drainage channels are unobstructed and free of dirt and sealants.

B. Remove protective film after installation of joint sealers, after cleaning of adjacent materials, and immediately prior to completion of work.

C. Remove temporary coverings and protection of adjacent work areas.

D. Clean installed products in accordance with manufacturer's instructions.

3.06 PROTECTION

A. Protect installed panel system from damage until Date of Substantial Completion.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Elastomeric roofing membrane application.

B. Insulation, flat and tapered.

C. Vapor retarder.

D. Cover boards.

E. Parapet sheathing.

F. Flashings.

G. Roofing stack boots and walkway pads.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood nailers and curbs.

B. Section 07 7100 - Roof Specialties: Manufactured roof specialties, including copings and fascias.

C. Section 22 1006 - Plumbing Piping Specialties: Roof drains.

1.03 REFERENCE STANDARDS

A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.

B. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2025.

C. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).

D. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers; 2000 (Reapproved 2020).

E. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane; 2015, with Editorial Revision (2022).

F. FM (AG) - FM Approval Guide; Current Edition.

G. FM DS 1-28 - Wind Design; 2015, with Editorial Revision (2024).

H. NRCA (RM) - The NRCA Roofing Manual; 2026.

I. NRCA (WM) - The NRCA Waterproofing Manual; 2021.

J. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of associated counterflashings installed under other sections.

B. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by all affected installers; review preparation and installation procedures and coordination and scheduling necessary for related work.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data indicating membrane materials, flashing materials, insulation, vapor retarder, surfacing, fasteners, and adhesives.

C. Shop Drawings: Indicate joint or termination detail conditions and conditions of interface with other materials.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Indicate membrane seaming precautions and perimeter conditions requiring special attention.

F. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.

G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience, and approved by manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.

B. Store materials in weather protected environment, clear of ground and moisture.

C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.

D. Protect foam insulation from direct exposure to sunlight.

1.08 FIELD CONDITIONS

A. Do not apply roofing membrane during unsuitable weather.

B. Do not apply roofing membrane when ambient temperature is below 40 degrees F or above 90 degrees F.

C. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

D. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

E. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two year period after Date of Substantial Completion.

C. Warranty: Manufacturer's 20 year Limited Warranty covering membrane, roof insulation, and membrane accessories.
   1. Limit of Liability: No dollar limitation.
   2. Scope of Coverage: Repair leaks in the roofing system caused by:
      a. Ordinary wear and tear of the elements.
      b. Manufacturing defect in roofing manufacturer brand materials.
      c. Defective workmanship used to install these materials.
      d. Damage due to winds up to 72 mph.
   3. Not Covered.
      a. Damage due to winds in excess of 72 mph.
      b. Damage due to hurricanes or tornadoes.
      c. Hail.
      d. Intentional damage.
      e. Unintentional damage due to normal rooftop inspections, maintenance or service.
   4. For repair and replacement include costs of both material and labor in warranty.

D. Metal Roof Edging Warranty: Full-system warranty for roof edge system, covering blow-off from winds up to 72 mph.

E. Metal Roof Edging with Exposed Decorative Fascia: Provide 20 year warranty for painted finish covering color fade, chalk, and film integrity.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. EPDM Membrane Materials:
   1. Carlisle SynTec Systems; Sure-Seal EPDM: www.carlisle-syntec.com/#sle.
   2. Firestone Building Products: www.firestonebpco.com/#sle.
   3. Johns Manville; JM EPDM: www.jm.com/#sle.
   4. Substitutions: Not permitted.

B. Insulation:
   1. Single souce approved by roof system manufacturer.

2.02 ROOFING - UNBALLASTED APPLICATIONS

A. Elastomeric Membrane Roofing: One ply membrane, fully adhered, over insulation.

B. Roofing Assembly Requirements:
   1. Roof Covering External Fire Resistance Classification: UL (DIR) certified Class A.
   2. Factory Mutual Classification: Class 1 and windstorm resistance of 1-90, in accordance with FM DS 1-28.
   3. Insulation Thermal Resistance (R-Value): 5.7 per inch, R 30 minimum; provide insulation of thickness required.

C. Acceptable Insulation Types - Constant Thickness Application: R-30 .
   1. Minimum 2 layers of polyisocyanurate board.
   2. Bottom layer of polyisocyanurate board covered with single layer of polyisocyanurate board.

D. Acceptable Insulation Types - Tapered Application: Including Saddles and Crickets.
   1. Tapered polyisocyanurate board over 2" base layer.
      a. See drawings for saddle locations and proportions. Use 1 to 1 lengrh to width ratio (45 degree angle), 2 to 1 length to width ratio (27 degree angle), and 3 to 1 length to width ratio (19 degree angle).
      b. Use 1:1 at all field of roof areas other than saddles/crickets.
      c. Utilize 4 foot x 4 foot Pre-cut tapered sumps at primary roof drains.

2.03 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Membrane: Ethylene-propylene-diene-monomer (EPDM); non-reinforced; complying with minimum properties of ASTM D4637/D4637M.
   1. Thickness: 60 mil, 0.060 inch.
   2. Sheet Width: 76 inches, maximum; factory fabricate into widest possible sheets.
   3. Color: Gray.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Vapor Retarder: Non-bituminous, foil and fibrous mesh laminate, complying with requirements of fire rating classification; compatible with roofing and insulation materials.
   1. Fire-retardant adhesive.

D. Flexible Flashing Material: Same material as membrane.
   1. Thickness: 0.055 mil.
   2. Elasticity: 50 percent with full recovery without set.
   3. Color: Black.

E. Water-Pervious Fabric: Woven polyethylene, UV-stabilized, open to moisture movement, black.

2.04 INSULATION

A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
   1. Classifications:
      a. Type II: Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
         1) Class 2 - Faced with coated glass fiber mat facers on both major surfaces of the core foam.
         2) Compressive Strength: Classes 1-2-3, Grade 2 - 20 psi (138 kPa), minimum.
         3) Thermal Resistance, R-value: At 1-1/2 inches thick; Class 2 - 8.0 (1.41) at 75 degrees F.
   2. Board Size: 48 by 96 inches.
   3. Tapered Board: Slope as indicated; minimum thickness .5 inch; fabricate of fewest layers possible.
   4. Board Edges: Square.

2.05 ACCESSORIES

A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.

B. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.

1. Length as required for thickness of insulation material and penetration of deck substrate, with metal washers.

C. Membrane Adhesive: As recommended by membrane manufacturer.

D. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.

E. Insulation Adhesive: As recommended by insulation manufacturer.

F. Roofing Nails: Galvanized, hot-dipped type, size and configuration as required to suit application.

G. Sealants: As recommended by membrane manufacturer.

H. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
1. Composition: Roofing membrane manufacturer's standard.
2. Size: 18 by 18 inches.
3. Surface Color: White

PART 3 EXECUTION

3.01 PROTECTION

A. Protective coverings to be installed at all paving, building walls, other finished surfaces and equipment adjacent to hoist and work access areas prior to starting the work. Maintain in place for the duration of the roofing work.

B. Hoist unloading areas, work runways over newly installed membrane, and existing roofs to be protected with material to prevent damage to membrane, underlayers of insulation, and structural deck.

C. Provide protection for landscaping, lawns, walks, curbs, roads and other site elements. Restore same to "like new" condition and/or replace if damaged by roofing work operations.

3.02 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.

B. Verify deck is supported and secure.

C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.

D. Verify deck surfaces are dry and free of snow or ice.

E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips, nailing strips, and reglets are in place.

3.03 INSTALLATION, GENERAL

A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.

B. Do not apply roofing membrane during cold or wet weather conditions.

C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.

D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.

E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.

3.04 INSTALLATION - INSULATION, UNDER MEMBRANE

A. Install vapor retarder to deck surface with adhesive in accordance with manufacturer's instructions.
1. Extend vapor retarder under cant strips and blocking to deck edge.
2. Install flexible flashing from vapor retarder to air seal material of wall construction, lap and seal to provide continuity of the air barrier plane.

B. Ensure vapor retarder is clean and dry, continuous, and ready for application of insulation.

C. Attachment of Insulation: Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.

D. Lay subsequent layers of insulation with joints staggered minimum 6 inches from joints of preceding layer.

E. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.

F. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.

G. At primary roof drains, use factory-tapered boards to slope down to roof drains over a distance of 24 inches.

H. Do not apply more insulation than can be covered with membrane in same day.

3.05 INSTALLATION - MEMBRANE

A. Install elastomeric membrane roofing system in accordance with manufacturer's recommendations and NRCA (RM) applicable requirements.

B. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.

C. Shingle joints on sloped substrate in direction of drainage.

D. Fully Adhered Application: Apply adhesive to substrate per manufacturers application guide. Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.

E. Overlap edges and ends and seal seams by contact adhesive, minimum 3 inches. Seal permanently waterproof. Apply uniform bead of sealant to joint edge.

F. At intersections with vertical surfaces:
   1. Extend membrane up a minimum of 4 inches onto vertical surfaces.
   2. Fully adhere flexible flashing over membrane and up to reglets.
   3. Insert flashing into reglets and secure.

G. At gravel stops or copings, extend membrane under gravel stop or coping and to the outside face of the wall.

H. Around roof penetrations, seal flanges and flashings with flexible flashing.

I. Coordinate installation of roof drains and sumps and related flashings.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Owner will provide testing services, and Contractor to provide temporary construction and materials for testing in accordance with requirements.

C. Provide periodic on-site attendance of roofing manufacturer's representative during installation of this work.
   1. Manufacturer to provide a minimum of three site visits; start, end and one per week of construction.

3.07 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.

C. Repair or replace defaced or damaged finishes caused by work of this section.

3.08 PROTECTION

A. Protect installed roofing and flashings from construction operations.

B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, and exterior penetrations.

B. Sealants for joints within sheet metal fabrications.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood nailers for sheet metal work.

B. Section 07 7100 - Roof Specialties: Roof Edge Fascias and Copings.

1.03 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

F. ASTM D4586/D4586M - Standard Specification for Asphalt Roof Cement; 2025.

G. CDA A4050 - Copper in Architecture - Handbook; current edition.

H. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Pre-Finished Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal, shop pre-coated with PVDF coating.
   1. Polyvinylidene Fluoride (PVDF) Coating: Superior performing organic powder coating, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
   2. Color: As selected by Architect from manufacturer's full colors.

B. Pre-Finished Aluminum: ASTM B209/B209M; 20 gauge, 0.032 inch thick; plain finish shop pre-coated with fluoropolymer coating.
   1. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
   2. Color: As selected by Architect from manufacturer's full colors.

C. Underlayment: DuPont Roofliner or equal meeting ICC-ES AC188.

2.02 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch; miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch long legs; seam for rigidity, seal with sealant.

F. Fabricate flashings to allow toe to extend 2 inches over roofing gravel. Return and brake edges.

2.03 FLASHING

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.04 ACCESSORIES

A. Fasteners: Galvanized steel, with soft neoprene washers.

B. Primer Type: Zinc chromate.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.

F. 2-Piece Counterflashing:
   1. Material: 24 gauge galvanized steel. Type to be as required by conditions or as indicated on drawings.
   2. Finish: PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system.
   3. Color: As selected by Architect from manufacturer's standard colors.
   4. Manufacturers:
      a. Metal Era; Counter Flashing: www.metalera.com
      b. Fry Reglet Corp.; Springlock Flashing Systems; www.fryreglet.com
      c. Atas International; www.atas.com
      d. Architectural Products Co.; www.archprod.com
      e. Substitutions: See Section 01 6000 - Product Requirements.
   5. Profile matching SMACNA (ASMM) detail 4-4D fabricated by custom metal fabricator is an approved alternate, providing material, gauge and finish are as indicated above.

2.05 FACTORY FINISHING

A. 70 Percent Kynar/Hylar Coating: Multiple coat, thermally cured, fluoropolymer system conforming to AAMA 2605..

B. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.

B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.

C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.

3.03 INSTALLATION

A. Comply with drawing details.
   1. Roof to high wall: SMACNA (ASMM), Detail 4-4D with button.

B. Insert flashings into receiver of counterflashing to form tight fit; secure in place.

C. Apply plastic cement compound between metal flashings and through wall flashings.

D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

E. Seal metal joints watertight.

F. End dam to prevent side flow of water at end conditions.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION

This page intentionally left blank

SECTION 07 7100 ROOF SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Manufactured roof specialties, including copings and fascias.

1.02 RELATED REQUIREMENTS

A. Section 07 5300 - Elastomeric Membrane Roofing.

1.03 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2017a.

B. ANSI/SPRI/FM 4435/ES-1 - Test Standard for Edge Systems Used with Low Slope Roofing Systems; 2022.

C. NRCA (RM) - The NRCA Roofing Manual; 2026.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.

C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.

D. Manufacturer's Installation Instructions: Indicate special procedures, fasteners, supporting members, and perimeter conditions requiring special attention.

PART 2 PRODUCTS

2.01 COMPONENTS

A. Roof Edge Flashings: Factory fabricated to sizes required; corners mitered; concealed fasteners.
   1. Configuration: Fascia, cant, and edge securement for roof membrane.
   2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test methods RE-1 and RE-2 to positive and negative design wind pressure as defined by applicable local building code.
   3. Exposed Face Height: As indicated on drawings.
   4. Material: Formed steel sheet, galvanized, 24 gauge, 0.024 inch thick, minimum.
   5. Finish: 70 percent polyvinylidene fluoride (PVDF).
   6. Products:
      a. Basis of Design - Metal-Era Inc; Product Anchor-Tite Standard Fascia: www.metalera.com.
      b. OMG Roofing Products; TerminEdge Fascia: www.omgroofing.com.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Copings: Factory fabricated to sizes required; corners mitered; concealed fasteners on outside face.
   1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness, and finish as cap; concealed stainless steel fasteners.
   2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 using test method RE-3 to positive and negative design wind pressure as defined by applicable local building code.
   3. Outside Face Height: As indicated on drawings.
   4. Inside Face Height: As indicated on drawings.
   5. Material: Formed steel sheet, galvanized, 24 gauge, 0.024 inch thick, minimum.
   6. Finish: 70 percent polyvinylidene fluoride.
   7. Color: As selected by Architect from manufacturer's standard range.
   8. Products:
      a. Basis of Design: Metal-Era Inc; Perma-Tite Coping used with sloped nailer: www.metalera.com/#sle.
      b. OMG Roofing Products; Formed Coping Plus: www.omgroofing.com.
      c. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FINISHES

A. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as selected from manufacturer's standard colors.

2.03 ACCESSORIES

A. Sealant for Joints in Linear Components: As recommended by component manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that deck, curbs, roof membrane, base flashing, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions and NRCA (RM) applicable requirements.

B. Coordinate installation of components of this section with installation of roofing membrane and base flashings.

C. Coordinate installation of sealants and roofing cement with work of this section to ensure water tightness.

END OF SECTION

SECTION 07 7123 MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pre-finished galvanized steel gutters and downspouts.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Comply with SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 in 5 years.

B. Comply with applicable code for size and method of rain water discharge.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on prefabricated components.

C. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.

D. Samples: Submit two samples, 10 inch long illustrating component design, finish, color, and configuration.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.

B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Gutters and Downspouts:
   1. Basis of Design: Hickman Edge Systems: www.hickmanedgesystems.com/#sle.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

A. Pre-Finished Galvanized Steel Sheet: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 0.02 inch (24 gauge) thick base metal.
   1. Finish: Shop pre-coated with PVDF (polyvinylidene fluoride) coating.
   2. Color: As selected by Architect from manufacturer's standard colors.

2.03 COMPONENTS

A. Gutters: Profile as indicated by basis of design.
   1. Back: 7 inches.
   2. Bottom: 6 inches.
   3. Front: 6 inches.

B. Downspouts: Box Downspout square profile.
   1. Front and back: 6 inches.
   2. Sides: 4 inches.
   3. Formed Lenghts: 12'-0"
   4. Seams: Double-Seam Lock

C. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Gutter Supports: Brackets.
   2. Downspout Supports: Straps.

D. Fasteners: Same material and finish as gutters and downspouts, with soft neoprene washers.

2.04 FABRICATION

A. Form gutters and downspouts of profiles and size indicated.

B. Fabricate with required connection pieces.

C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.

D. Hem exposed edges of metal.

E. Fabricate gutter and downspout accessories; seal watertight.

2.05 FINISHES

A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604, multiple coat, thermally cured fluoropolymer finish system; color as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that surfaces are ready to receive work.

3.02 INSTALLATION

A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.

B. Sheet Metal: Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.

C. Slope gutters 1/8 inch per foot, 1 percent minimum.

D. Connect downspouts to storm sewer system. Grout connection watertight.

END OF SECTION

SECTION 07 7200 ROOF HATCH OPENER

A. PART 1 GENERAL

I. SECTION INCLUDES

1. Work included: Furnishing and installing factory fabricated roof hatch remote operators (referred to hereinafter as “the device”).
2. Related Work: Roof hatch and access ladder installation.

II. REFERENCE STANDARDS

1. American Society for Testing and Materials (ASTM), 100 Bar Harbor Drive, West Conshocken, PA 19428-2959; (610) 832-9585, fax (610) 832-9555
    a. ASTM A 36-93a: Standard Specification for Structural Steel

III. SUBMITTALS

1. See Section 01 3000 - Administrative Requirements for submittal procedures.
2. Product Data: Provide manufacturer’s product data for all materials in this specification.
3. Shop Drawings: Show profiles, accessories, location, and dimensions.
4. Samples: Manufacturer to provide upon request; sized to represent material adequately.
5. Provide roof access safety system manufacturer’s standard Warranty.

IV. DELIVERY, STORAGE, AND HANDLING

1. All materials shall be delivered in manufacturer’s original packaging.
2. Store materials in a dry, protected, well-vented area. The contractor shall thoroughly inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier’s freight bill of lading.
3. Remove all protective wrapping immediately before installation.

V. JOB CONDITIONS

1. Verify that other trades with related work are complete before installing device.
2. Mounting surfaces shall be straight and secure; substrates shall be of proper width.
3. Refer to the construction documents, shop drawings, and manufacturer’s installation instructions.
4. Observe all appropriate OSHA safety guidelines for this work.

VI. WARRANTY

1. Manufacturer’s standard warranty: Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge. Electrical motors, special finishes, and other special equipment (if applicable) shall be warranted separately by the manufacturers of those products.

B. PART 2 PRODUCTS

I. ROOF HATCH REMOTE OPERATOR

1. Manufacturers (or approved equal):

Belmont Safety Products, LLC
2735 Commerce Drive, Columbia, SC 29260
1-803-297-2449, Web: www.belmontsafetyproducts.com

2. Furnish and install where indicated on plans one device, as specified.
3. Basis of device design: The device is intended to be attached to a standard OSHA compliant fixed vertical ladder and to open and close, lock and unlock a nominal 30” x 36” standard manufactured roof access hatch.
4. Finishes: Factory finish shall be black or yellow powder coat, varying by component. The upper lifting tube of the device shall have a textured grip surface on the top 18” minimum.
5. Substitutions: See Section 01 6000-Product Requirements.

C. PART 3 EXECUTION

I. INSPECTION

1. Verify that the device installation will not disrupt other trades. Verify that the roof hatch and access ladder have been properly installed and ready for addition of the device. Report and correct defects prior to any installation.

II. INSTALLATION

1. Submit product design drawings for review and approval to the architect or specifier before fabrication.
2. The installer shall check as-built conditions and verify the manufacturer’s roof hatch details for accuracy to fit the application prior to fabrication. The installer shall comply with the device’s Manufacturer's installation instructions.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping systems.

B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED REQUIREMENTS

A. Section 07 0553 - Fire and Smoke Assembly Identification.

1.03 REFERENCE STANDARDS

A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2026.

B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems; 2024.

D. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2023a, with Editorial Revision (2024).

E. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

F. FM (AG) - FM Approval Guide; Current Edition.

G. FM 4991 - Approval Standard of Firestop Contractors; 2013.

H. ITS (DIR) - Directory of Listed Products; Current Edition.

I. UL (DIR) - Online Certifications Directory; Current Edition.

J. UL (FRD) - Fire Resistance Directory; Current Edition.

K. UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

L. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.

C. Product Data: Provide data on product characteristics, performance ratings, and limitations.

D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.

B. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Trained by manufacturer.
   2. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
   3. Verification of minimum three years documented experience installing work of this type.
   4. Verification of at least five satisfactorily completed projects of comparable size and type.
   5. Licensed by local authorities having jurisdiction (AHJ).

1.06 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Firestopping Manufacturers:
   1. 3M Fire Protection Products: www.3m.com/firestop/#sle.
   2. A/D Fire Protection Systems Inc: www.adfire.com/#sle.
   3. Hilti, Inc: www.us.hilti.com/#sle.
   4. Specified Technologies Inc: www.stifirestop.com/#sle.
   5. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

B. Firestopping manufactures listed in specific paragraphs below is for Basis of Design purposes only. Equivelent products meeting design standard from preceding list of manufacturers are acceptable.

2.02 MATERIALS

A. Firestopping Materials: Any materials meeting requirements.

B. Mold and Mildew Resistance: Provide firestopping materials with mold and mildew resistance rating of zero(0) in accordance with ASTM G21.

C. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

D. Fire Ratings: Refer to drawings for required systems and ratings.

2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS

A. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.

B. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
   1. Movement: Provide systems that have been tested to show movement capability as indicated.
   2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
   3. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

C. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
   1. Temperature Rise: Provide systems that have been tested to show T Rating as indicated.
   2. Air Leakage: Provide systems that have been tested to show L Rating as indicated.
   3. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

2.04 FIRESTOPPING SYSTEMS

A. Firestopping: Any material meeting requirements.
   1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.

B. Remove incompatible materials that could adversely affect bond.

C. Install damming materials to prevent liquid material from leakage.

3.03 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.

B. Do not cover installed firestopping until inspected by authorities having jurisdiction.

3.04 CLEANING

A. Clean adjacent surfaces of firestopping materials.

3.05 PROTECTION

A. Protect adjacent surfaces from damage by material installation.

END OF SECTION

This page intentionally left blank

SECTION 07 9100 PREFORMED JOINT SEALS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precompressed foam seals.

B. Preformed strip seals.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Liquid and mastic joint sealants and their backing materials.

1.03 REFERENCE STANDARDS

A. ASTM D1056 - Standard Specification for Flexible Cellular Materials—Sponge or Expanded Rubber; 2020.

B. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

C. ASTM D2628 - Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements; 2025.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

E. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's technical data sheets for each product, including chemical composition, movement capability, color availability, limitations on application, and installation instructions.

C. Color Cards: For color selection.

D. Installer's Qualification Statement.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealers that fail to achieve watertight seal or exhibit loss of adhesion or cohesion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Precompressed Foam Seals:
   1. Balco, Inc: www.balcousa.com/#sle.
   2. Sika Emseal: www.emseal.com/#sle.
   3. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   4. Willseal LLC: www.willseal.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Preformed Strip Seals:
   1. Sika Corporation: www.usa-sika.com/#sle.
   2. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
   3. Willseal LLC: www.willseal.com/#sle.

2.02 PRECOMPRESSED FOAM SEALS

A. Type ___ - Precompressed Foam Seal: Comprised of urethane, modified-acrylic impregnated, open-cell polyurethane, or closed-cell neoprene foam impregnated with water-repellent, and with self-adhesive faces protected prior to installation by release paper.
   1. Color: Black.
   2. Size as required to provide weathertight seal when installed.
   3. Calculate size according to manufacturer's recommendations.
   4. Measure size of existing joints before selecting seal width.
   5. Fire-Rating: As indicated on drawings, comply with UL 2079.
   6. Applications:
      a. Joints between existing and new construction.

7. Products:
    a. Sika Emseal; DSM System: www.emseal.com/#sle.
    b. Watson Bowman Acme Corporation; Wabo InverSeal (IV): www.watsonbowmanacme.com/#sle.
    c. Willseal LLC; Willseal 250: www.willseal.com/#sle.
    d. Substitutions: See Section 01 6000 - Product Requirements.

2.03 PREFORMED STRIP SEALS

A. Type ____ - Preformed Strip Seal: Factory formed profile for adhered application to face of joint substrate.
    1. Measure size of existing joints before selecting seal width.
    2. Provide compatible materials for application as recommended by manufacturer.
    3. Products:
        a. Dow; DOWSIL 123 Silicone Seal: www.dow.com/#sle.
        b. Sika Emseal: www.emseal.com/#sle.
        c. Pecora Corporation; Sil-Span Preformed Silicone Profiles: www.pecora.com/#sle.
        d. Sika Corporation; Sika Silbridge-300: www.usa-sika.com/#sle.
        e. Tremco Commercial Sealants & Waterproofing; Spectrem Restoration Overlay: www.tremcosealants.com/#sle.
        f. Willseal LLC; Willseal 600: www.willseal.com/#sle.
        g. Substitutions: See Section 01 6000 - Product Requirements.

2.04 ACCESSORIES

A. Adhesive: As recommended by seal manufacturer.

B. Masking Tape: Self-adhesive, nonabsorbent, non-staining, removable without adhesive residue, and compatible with surfaces adjacent to joints and strip seal.

C. Substrate Cleaner: Non-corrosive, non-staining type recommended by seal manufacturer; compatible with joint forming materials.

D. Primer: Type recommended by seal manufacturer to suit application; non-staining.

E. Backing Tape: Self-adhesive polyethylene tape with surface that seal will not adhere to.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive this work.

B. Measure joint dimensions and verify that seal products are of the correct size to properly seal the joints.

3.02 PREPARATION

A. Properly prepare construction components adjacent to the work of this section to prevent damage and disfigurement due to this work.

3.03 INSTALLATION

A. Install in accordance with manufacturer's written instructions.

B. Precompressed Foam Seals:
    1. Install only when ambient temperature is within recommended application temperature range of adhesive. Consult manufacturer when installing outside this temperature range.
    2. Prepare joints and install seals in accordance with manufacturer's written recommendations.
    3. Remove loose materials and foreign matter that could impair adhesion of sealant.
    4. Do not stretch precompressed seal; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

C. Preformed Strip Seals:
    1. Install when ambient temperature is within recommended application temperature range of adhesive, and consult with manufacturer before installing outside this temperature range.
    2. Prepare joints and install seals in accordance with manufacturer's written recommendations.
    3. Remove loose materials and foreign matter that could impair adhesion.

4. When installing over existing non-functioning sealant, remove portions of existing installation that protrude beyond surface; install backing tape on surface of existing sealant installation to prevent adhesion of strip seal.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION

A. Protect joints from damage until adhesives have properly cured.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nonsag gunnable joint sealants.

B. Self-leveling pourable joint sealants.

C. Joint backings and accessories.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer; 2015 (Reapproved 2022).

B. ASTM C834 - Standard Specification for Latex Sealants; 2017 (Reapproved 2023).

C. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications; 2024.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018 (Reapproved 2024).

E. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants; 2022.

G. ASTM C1311 - Standard Specification for Solvent Release Sealants; 2022.

H. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data for Sealants: Where Basis of Design is indicated and another approved manufacturer is submitted, provide cross reference for comparison of characteristics and quality including product specified identifier, i.e. Type NS-1 or SL-1. Submit manufacturer's technical data sheets for each product to be used, that includes the following:
   1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
   2. List of backing materials approved for use with the specific product.
   3. Backing material recommended by sealant manufacturer.
   4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
   5. Substrates the product should not be used on.
   6. Substrates for which use of primer is required.

C. Installation information.
   1. Sealant installation location.
   2. Sealant proposed.
   3. Sealant ASTM standard being meet.
   4. Joint configuration.
   5. Sealant color or indication for architect to fill in color.

D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

F. Executed warranty.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

C. Extended Correction Period: Correct defective work within 2-year period commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Nonsag Sealants:
1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
2. Bostik Inc: www.bostik-us.com/#sle.
3. Dow: www.dow.com/#sle.
4. Momentive Performance Materials, Inc (formerly GE Silicones): www.momentive.com/#sle.
5. Pecora Corporation: www.pecora.com/#sle.
6. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
7. Sika Corporation: www.usa.sika.com/#sle.
8. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
9. W. R. Meadows, Inc: www.wrmeadows.com/#sle.
10. Substitutions: See Section 01 6000 - Product Requirements.

B. Self-Leveling Sealants: Pourable or self-leveling sealant that has sufficient flow to form a smooth, level surface when applied in a horizontal joint.
1. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
2. Bostik Inc: www.bostik-us.com/#sle.
3. Dayton Superior Corporation: www.daytonsuperior.com/#sle.
4. Dow: www.dow.com/#sle.
5. Master Builders Solutions: www.master-builders-solutions.com/en-us/#sle.
6. Pecora Corporation: www.pecora.com/#sle.
7. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
8. Sika Corporation: www.usa.sika.com/#sle.
9. Tremco Commercial Sealants & Waterproofing: www.tremcosealants.com/#sle.
10. Substitutions: See Section 01 6000 - Product Requirements.

2.02 JOINT SEALANT APPLICATIONS

A. Scope:
1. Exterior Joints:
   a. Seal the following joints:
      1) Wall expansion and control joints.
      2) Joints between doors, windows, and other frames or adjacent construction.
      3) Joints between different exposed materials.
      4) Openings below ledge angles in masonry.
2. Interior Joints:
   a. Seal the following joints:
      1) Joints between door frames, window frames, and other frames and adjacent construction.
      2) In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, piping penetrations, and other openings.
      3) In sound-rated wall and ceiling assemblies, seal joints between wall assemblies and ceiling assemblies; between wall assemblies and other construction; between ceiling assemblies and other construction.
3. Do Not Seal:
   a. Intentional weep holes in masonry or bottom of curtainwall.
   b. Joints indicated to be covered with expansion joint cover assemblies or other sealing devices.
   c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
   d. Joints where sealant installation is specified in other sections.
   e. Joints between suspended ceilings and walls.

2.03 NONSAG JOINT SEALANTS

A. Type NS-1 - Nonstaining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Application: Joint filler for all exterior applications, unless noted otherwise.
2. Movement Capability: Plus and minus 25 percent, minimum.

3. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
4. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
5. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
6. Color: To be selected by Architect from manufacturer's standard range.
7. Cure Type: Single-component, neutral moisture curing.
8. Service Temperature Range: Minus 20 to 180 degrees F.
9. Manufacturers:
   a. Dow; DOWSIL 756 SMS Building Sealant: www.dow.com/#sle.
   b. Pecora Corporation; Pecora 890 NST (Non-Staining Technology): www.pecora.com/#sle.
   c. Sika Corporation; Sikasil WS-290: usa.sika.com/#sle.
   d. Tremco Commercial Sealants & Waterproofing; Spectrem 3: www.tremcosealants.com/#sle.

B. Type NS-2 - Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
   1. Application: Joint filler between fixtures in wet areas and floors, walls and ceilings. Used for tub, tile, kitchen or bath.
   2. Color: White at porcelain. Clear at backsplashes.
   3. Products:
      a. Sika Corporation; Sikasil GP: usa.sika.com/#sle.

C. Type NS-3 - Tamper-Resistant, Silyl-Terminated Polyurethane (STPU) Sealant: ASTM C920, Grade NS, Uses M and A; single component; not expected to withstand continuous water immersion or traffic.
   1. Application: Joint filler for wall, ceiling, and floor joints where tamper-resistance is required, including exterior joints at ground level.
   2. Movement Capability: Plus and minus 12-1/2 percent, minimum
   3. Hardness Range: 50 to 60, Shore A, when tested in accordance with ASTM C661.
   4. Color: To be selected by Architect from manufacturer's standard range.
   5. Service Temperature Range: Minus 40 to 180 degrees F.
   6. Products:
      a. Basis of Design: Pecora Corporation; DynaFlex SC (Security Sealant): www.pecora.com/#sle.

D. Type NS-4 - Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
   1. Application: Joint filler at interior wall and ceiling joints in wet areas.
   2. Movement Capability: Plus and minus 25 percent, minimum.
   3. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   4. Color: To be selected by Architect from manufacturer's standard range.
   5. Service Temperature Range: Minus 40 to 180 degrees F.
   6. Products:
      a. Tremco Commercial Sealants & Waterproofing; Dymonic 100: www.tremcosealants.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

E. Type NS-5 - Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface .
   1. Application: Joint filler for continuous immersion in potable water. Control and expansion joints in concrete paving not concerned with wheeled traffic, i.e. forklift, and floor joints in wet areas.
   2. Movement Capability: Plus and minus 35 percent, minimum.
   3. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
   4. Color: To be selected by Architect from manufacturer's standard range.
   5. Service Temperature Range: Minus 40 to 180 degrees F.
   6. Products:
      a. Sika Corporation; Sikaflex-1A: usa.sika.com/#sle.

b. Substitutions: See Section 01 6000 - Product Requirements.

F. Type NS-6 - Epoxy Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
1. Application: Joint filler for narrow control joints in interior concrete slabs.
2. Hardness Range: 65 to 75, Shore D, when tested in accordance with ASTM C661.
3. Color: To be selected by Architect from manufacturer's standard range.
4. Service Temperature Range: 40 to 120 degrees F.

G. Type NS-7 - Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use. Can be painted.
1. Application: Joint filler for wall and ceiling joints, smoke partitions and sound rated walls.
2. Color: To be selected by Architect from manufacturer's standard range.
3. Grade: ASTM C834; Grade 0 Degrees F (Minus 18 Degrees C).
4. Products:

H. Type NS-8 - Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, non-sag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.
1. Application: Joint filler for manufactured metal panels, sheet metal fabrications, and under door thresholds. Can also be used for smoke partitions: Sealing gypsum board top and bottom edges to adjacent construction and behind electrical boxes.

2.04 SELF-LEVELING JOINT SEALANTS

A. Type SL-1 - Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single component; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
1. Application: Joint filler for exterior continuous water immersion. Also for sidewalk joints and joints between sidewalk and building face.
2. Color: To be selected by Architect from manufacturer's standard range.
3. Service Temperature Range: Minus 40 to 180 degrees F.
4. Products:
a. Sika Corporation; Sikaflex-1c SL: usa.sika.com/#sle.

B. Type SL-2 - Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
1. Application: Joint filler for concrete slab saw-cuts and narrow cracks, both interior and exterior.
2. Composition: Multicomponent, 100 percent solids by weight.
3. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
4. Color: To be selected by Architect from manufacturer's standard colors.
5. Joint Width, Minimum: 1/8 inch.
6. Joint Width, Maximum: 1/4 inch.
7. Joint Depth: Provide product suitable for joints from 1/8 inch to 2 inches in depth including space for backer rod.
8. Products:
a. Basis of Design: Euclid Chemical Company; EUCO 700: www.euclidchemical.com/#sle.

C. Type SL-3 - Semi-Rigid Self-Leveling Polyurea Joint Filler: Two-component, 100 percent solids; Intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
1. Application: Joint filler for concrete slab saw-cuts and narrow cracks both interior and exterior.
2. Durometer Hardness, Type A: 75, minimum, after seven days when tested in accordance with ASTM D2240.
3. Color: To be selected by Architect from manufacturer's standard colors.
4. Joint Width, Minimum: 1/8 inch.
5. Joint Width, Maximum: 3/4 inch.

6. Joint Depth: Provide product suitable for joints from 1/8 inch to 1 inch in depth excluding space for backer rod.
7. Products:
   a. Basis of Design: Euclid Chemical Company; EUCO QWIKjoint UVR: www.euclidchemical.com/#sle.

2.05 ACCESSORIES

A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.

B. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.

C. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.

D. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.

E. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joints are ready to receive work.

B. Verify that backing materials are compatible with sealants.

3.02 PREPARATION

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

3.03 INSTALLATION

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Provide joint sealant installations complying with ASTM C1193.

C. Install acoustical sealant application work in accordance with ASTM C919.

D. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, except where specific dimensions are indicated.

E. Install bond breaker backing tape where backer rod cannot be used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.

I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.

C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

END OF SECTION

SECTION 08 1113 HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal doors and frames.

B. Hollow metal frames for wood doors.

C. Fire-rated hollow metal doors and frames.

D. Hollow metal borrowed lites glazing frames.

E. Accessories, including glazing, louvers, and matching panels.

1.02 RELATED REQUIREMENTS

A. Section 08 1213 - Hollow Metal Frames w/ Applied Casings

B. Section 08 1416 - Flush Wood Doors

C. Section 08 7100 - Door Hardware.

D. Section 08 8000 - Glazing: Glass for doors and borrowed lites.

E. Section 09 9123 - Interior Painting: Field painting.

1.03 ABBREVIATIONS AND ACRONYMS

A. ANSI: American National Standards Institute.

B. HMMA: Hollow Metal Manufacturers Association.

1.04 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors; 2026.

C. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

D. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames; 2025.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2026.

G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

H. ASTM C143/C143M - Standard Test Method for Slump of Concrete; 2026a.

I. ASTM C476 - Standard Specification for Grout for Masonry; 2023.

J. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

L. ITS (DIR) - Directory of Listed Products; Current Edition.

M. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

N. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2024.

O. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.

P. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

Q. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025, with Amendment (2024).

R. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2025.

S. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

T. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.

U. UL (DIR) - Online Certifications Directory; Current Edition.

V. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

W. UL 1784 - Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives; Current Edition, Including All Revisions.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide hollow metal doors and frames from SDI Certified manufacturer: https://steeldoor.org/sdi-certified/#sle.

B. Maintain at project site copies of reference standards relating to installation of products specified.

1.07 WARRANTY

A. Hollow metal work to be warranted from defects in workmanship and quality for a period of 3 years from date of Substantial Completion.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Doors and Frames:
1. Ceco Door, an Assa Abloy Group company: www.assaabloydss.com.
2. Curries, an Assa Abloy Group company: www.assaabloydss.com.
3. Republic Doors, an Allegion brand: www.republicdoor.com/#sle.
4. Steelcraft, an Allegion brand: www.allegion.com/us.
5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Requirements for Hollow Metal Doors and Frames:
1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with ICC A117.1 and ADA Standards.
3. Door Edge Profile: Manufacturers standard for application indicated.
4. Typical Door Face Sheets: Flush.
5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturer's standard.
6. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
7. Zinc Coating for Typical Interior Wet Areas and/or Exterior Locations: Provide metal components zinc-coated (galvanized) and/or zinc-iron alloy-coated (galvannealed) by the hot-dip process in accordance with ASTM A653/A653M, with manufacturer's standard coating thickness, unless noted otherwise for specific hollow metal doors and frames.
   a. Based on SDI Standards: Provide at least A40/ZF120 (galvannealed) when necessary, coating not required for typical interior door applications, and at least A60/ZF180 (galvannealed) for corrosive locations.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 HOLLOW METAL DOORS

A. Interior Doors, Non-Fire Rated:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 2 - Heavy-duty.
      b. Physical Performance Level B 500 000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
   3. Door Thickness: 1-3/4 inches, nominal.
   4. Door Finish: Factory primed and field finished.

B. Fire-Rated Doors:
   1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
      a. Level 2 - Heavy-duty.
      b. Physical Performance Level B 500 000 cycles; in accordance with ANSI/SDI A250.4.
      c. Model 1 - Full Flush.
      d. Door Face Metal Thickness: 20 gauge, 0.032 inch, minimum.
   2. Fire Rating: As indicated on Door Schedule, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
      a. Temperature-Rise Rating (TRR) Across Door Thickness: In accordance with local building code and authorities having jurisdiction.
      b. Provide units listed and labeled by UL (DIR) or ITS (DIR).
      c. Attach fire rating label to each fire rated unit.
      d. Smoke and Draft Control Doors (Indicated with letter "S" on Drawings and/or Door Schedule): Self-closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire-resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following;
         1) Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
         2) Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
         3) Label: Include the "S" label on fire-rating label of door.
   3. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
   4. Door Thickness: 1-3/4 inches, nominal.
   5. Door Finish: Factory primed and field finished.

2.04 HOLLOW METAL FRAMES

A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.

B. Frame Finish: Same as hollow metal door.

C. Interior Door Frames, Non-Fire Rated: Face welded type.
   1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.

D. Door Frames, Fire-Rated: Fully welded type.
   1. Fire Rating: Same as door, labeled.
   2. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.

E. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.

F. Mullions for Pairs of Doors: Removable type, with profile similar to jambs.

G. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

H. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.

I. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.

2.05 FINISHES

A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.

2.06 ACCESSORIES

A. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: As indicated on drawings.
   2. Frame Material: 18 gauge, 0.0478 inch, galvanized steel.
   3. Metal Finish: Gray polyester powder coating.
   4. Glazing: 1/4 inch thick, tempered glass, in compliance with requirements of authorities having jurisdiction.

B. Glazing: As specified in Section 08 8000, factory installed.

C. Removable Stops: Formed sheet steel, shape as indicated on drawings, mitered or butted corners; prepared for countersink style tamper proof screws.
   1. Apply stop opposite primary circulation side.

D. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.

E. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

F. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

G. Contractor to provide conduit / raceway for low voltage connections to electric hardware within door / frame assembly - Coordinate with owner vendor.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.

3.03 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Grout frames in masonry construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.

E. Install door hardware as specified in Section 08 7100.

F. Comply with glazing installation requirements of Section 08 8000.

G. Coordinate installation of electrical connections to electrical hardware items.

3.04 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.05 ADJUSTING

A. Adjust for smooth and balanced door movement.

3.06 SCHEDULE

A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION

This page intentionally left blank

SECTION 08 1116 ALUMINUM DOORS AND FRAMES - INSULATED CORE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush aluminum doors with aluminum face sheets.

B. Aluminum frames.

C. Flush door panels.

D. Glazing.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealing joints between door frames and adjacent construction.

B. Section 08 7100 - Door Hardware: Hardware for aluminum doors.

C. Section 08 8000 - Glazing: Glazing materials for aluminum doors and frames.

1.03 REFERENCE STANDARDS

A. AAMA 502 - Voluntary Specification for Field Testing of Newly Installed Fenestration Products; 2021.

B. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum; 2025.

C. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.

D. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022, with Errata (2023).

E. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

F. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

G. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

H. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

I. ASTM C1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus; 2024.

J. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).

K. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's descriptive literature for each type of door; include information on fabrication methods.

C. Shop Drawings: Include elevations of each opening type.
   1. Verify dimensions by field measurements before fabrication and indicate on shop drawings.

D. Verification Samples: Two actual pieces of products in each finish specified, not less than 6 inches square or 6 inches long for linear components. For finishes subject to color variation, include not less than two samples illustrating extreme range to be anticipated.

E. Field Quality Control Submittals: Report of field testing for water penetration and air leakage.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver aluminum components in manufacturer's standard protective packaging, palleted, crated, or banded together.

B. Inspect delivered components for damage and replace. Repaired components will not be accepted.

C. Store components in clean, dry, indoor area, under cover in manufacturer's packaging until installation.

D. Protect materials and finish from damage during handling and installation.

1.06 FIELD CONDITIONS

A. Do not begin installation of interior aluminum components until space has been enclosed and ambient thermal conditions are being maintained at levels consistent with final project requirements.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Manufacturer Warranty: Provide 10-year manufacturer warranty for defects in workmanship and materials. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Flush Aluminum Doors with Aluminum Face Sheets:
   1. Basis of Design: Special-Lite, Inc; Model: SL-16: www.special-lite.com/#sle.

2.02 DOORS AND FRAMES

A. Flush Aluminum Doors with Aluminum Face Sheets: Aluminum internal framing and faces; no steel components.
   1. Thickness: 1-3/4 inches, nominal.
   2. Facing: Seamless aluminum sheet, 0.040 inch thick, ribbed texture, laminated to 1/8 inch tempered hardboard.
   3. Finish: Class I - Natural anodized.
   4. Weatherstripping: Replaceable pile type; at jambs and head of exterior doors.

B. Aluminum Frames for Doors, Sidelights, or Transoms: Extruded aluminum, thermally broken hollow or C-shaped sections; no steel components.
   1. Frame Depth: 4 1/2 inches.
   2. Finish: Same as doors.
   3. Weatherstripping: Replaceable pile type; at jambs and head.

C. Dimensions and Shapes: As indicated on drawings; dimensions indicated are nominal.
   1. Provide vision lites as indicated on drawings.
   2. Provide the following clearances:
      a. Hinge and Lock Stiles: 1/8 inch.
      b. At Top Rail and Bottom Rail: 1/8 inch.

2.03 COMPONENTS

A. Flush Door Panels: Without visible seams on face sheet.
   1. Framing and Hardware Backup: Extruded aluminum tubing, 1/8 inch minimum thickness.
   2. Perimeter Edges: Extruded aluminum cap.
   3. Exterior Doors Thermal Transmittance: U-value of .37 max., nominal, when tested in accordance with ASTM C1363.

B. Frames: Extruded aluminum shapes, not less than 0.062 inch thick, reinforced at hinge and strike locations.

C. Door Window Frames: Door window frames with glazing securely fastened within door opening.
   1. Size: As indicated on drawings.
   2. Frame Material: 18 gauge, 0.0478 inch, galvanized steel, with finish to match door.
   3. Glazing: 1/4 inch thick, tempered glass, in compliance with requirements of authorities having jurisdiction.

D. Vision Lites: Extruded aluminum framed, gasket glazed.

2.04 MATERIALS

A. Aluminum Sheet: ASTM B209/B209M, alloy 5005, temper H14, stretcher leveled.

B. Extruded Aluminum: ASTM B221 (ASTM B221M), alloy 6063, temper T5, or alloy 6463, temper T5.

2.05 FINISHES

A. Class I Natural Anodized Finish: Clear anodic coating; AAMA 611 AA-M12C22A41, minimum dry film thickness (DFT) of 0.7 mils, 0.0007 inch.

B. Color: Clear.

2.06 ACCESSORIES

A. Fasteners: Aluminum, non-magnetic stainless steel, or other material warranted by manufacturer as non-corrosive and compatible with aluminum components.

B. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible, otherwise, non-magnetic stainless steel or steel hot-dip galvanized in compliance with ASTM A123/A123M.

C. Bituminous Coating: Cold-applied asphaltic mastic, compounded for 30-mil thickness per coat.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall surfaces and openings are ready to receive frames and are within tolerances specified in manufacturer's instructions.

3.02 INSTALLATION

A. Install doors and frames in accordance with manufacturer's instructions and approved shop drawings.

B. Set frames plumb, square, level, and aligned to receive doors. Anchor frames to adjacent construction in strict accordance with manufacturer's recommendations and within specified tolerances.

C. Where aluminum surfaces contact metals other than stainless steel, zinc, or small areas of white bronze, protect from direct contact by painting dissimilar metal with heavy coating of bituminous paint.

D. Hang doors and adjust hardware to achieve specified clearances and proper door operation.

E. Install door hardware. See Section 08 7100.

F. Install glazing; set glazing stops and glazing gaskets flush with face of door or frame.

G. Comply with glazing installation requirements. See Section 08 8000.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.

B. Provide field testing of installed aluminum doors by independent laboratory in accordance with AAMA 502 and AAMA/WDMA/CSA 101/I.S.2/A440 during construction process and before installation of interior finishes.

1. Field test for water penetration in accordance with ASTM E1105 using Procedure B - cyclic static air pressure difference; test pressure shall not be less than 1.9 psf.
2. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 6.27 psf.

C. Repair or replace fenestration components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.04 CLEANING

A. Upon completion of installation, thoroughly clean door and frame surfaces in accordance with AAMA 609 & 610.

B. Do not use abrasive, caustic, or acid cleaning agents.

3.05 PROTECTION

A. Protect products of this section from damage caused by subsequent construction until Date of Substantial Completion.

B. Replace damaged or defective components that cannot be repaired to a condition indistinguishable from undamaged components.

END OF SECTION

This page intentionally left blank

SECTION 08 1213 HOLLOW METAL DOOR FRAMES WITH APPLIED CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated hollow metal frames for non-hollow metal doors.

B. Fire-rated hollow metal frames for non-hollow metal doors.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting: Field painting.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ANSI/ICC A117.1 - American National Standard for Accessible and Usable Buildings and Facilities; International Code Council; 2009.

C. ANSI/SDI A250.6 - Recommended Practice for Hardware Reinforcing on Standard Steel Doors and Frames; 2024.

D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100); 2023.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

F. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Required Hardness, Solution Hardened, and Bake Hardenable; 2026.

G. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

H. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

I. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

J. ITS (DIR) - Directory of Listed Products; Current Edition.

K. NAAMM HMMA 830 - Hardware Selection for Hollow Metal Doors and Frames; 2002.

L. NAAMM HMMA 831 - Hardware Locations for Hollow Metal Doors and Frames; 2024.

M. NAAMM HMMA 840 - Guide Specifications for Receipt, Storage and Installation of Hollow Metal Doors and Frames; 2024.

N. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames; 2014.

O. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025, with Amendment (2024).

P. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.

Q. SDI 117 - Manufacturing Tolerances for Standard Steel Doors and Frames; 2023.

R. UL (DIR) - Online Certifications Directory; Current Edition.

S. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

T. UL 1784 - Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced grade standard.

C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.

D. Samples: Submit one sample of frame metal, 2 by 2 inches, showing factory finishes, colors, and surface textures.

E. Installer's qualification statement.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in accordance with applicable requirements and in compliance with standards and/or custom guidelines as indicated.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hollow Metal Frames with Applied Casings, Prefinished:
   1. Dunbarton Corporation; RediFrame: www.dunbarton.com/#sle.
   2. IDP - International Door Products Corp; F Series Standard Steel Door Frame: www.idpframes.com/#sle.
   3. Timely Industries, Inc; C-Series: www.timelyframes.com/#sle.
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Door Frame Type: Provide hollow metal door frames with applied casings.
   1. Interior Doors: Use frames with applied casings.

B. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.

C. Accessibility: Comply with ICC A117.1 and ADA Standards.

D. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior frame that is also indicated as being sound-rated must comply with the requirements specified for exterior frames and for sound-rated frames; where two requirements conflict, comply with the most stringent.

E. Hardware Preparations, Selections and Locations: Comply with BHMA A156.115, NAAMM HMMA 830, NAAMM HMMA 831 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.

2.03 HOLLOW METAL DOOR FRAMES WITH APPLIED CASINGS

A. Frame Type: Knockdown, slip-on drywall frames; separate jambs and head with separate snap-on casings both sides; factory-applied finish on exposed surfaces.
   1. Frame Material: Cold-rolled steel complying with ASTM A1008/A1008M.
   2. Casing Material: Formed steel.
   3. Casing Profile: As indicated.

B. Interior Door Frames, Non-Fire-Rated:
   1. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.

C. Interior Door Frames, Fire-Rated: Provide smoke gaskets.
   1. Frame Metal Thickness: 18 gauge, 0.042 inch, minimum.
   2. Fire Rating: As indicated on Door and Frame Schedule, tested in accordance with UL 10C or NFPA 252 ("positive pressure fire tests").
      a. Provide units listed and labeled by testing agency acceptable to authorities having jurisdiction, ITS (DIR), or UL (DIR).
      b. Attach fire rating label to each fire rated unit.
   3. Smoke and Draft Control Doors (Indicated with Letter "S" on Drawings and/or Door Schedule): In addition to required fire rating, provide door assemblies tested in accordance with UL 1784 with maximum air leakage of 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure at both ambient and elevated temperatures; with "S" label; if necessary, provide additional gasketing or edge sealing.

2.04 ACCESSORIES

A. Silencers: Resilient rubber, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Verify that finished walls are in plane to ensure proper door alignment.

3.02 INSTALLATION

A. Install frames in accordance with manufacturer's instructions and related requirements of specified frame standards or custom guidelines indicated.

B. Install fire rated units in accordance with NFPA 80.

C. Coordinate frame anchor placement with wall construction.

D. Install door hardware as specified in Section 08 7100.
   1. Comply with recommended practice for hardware placement of doors and frames in accordance with ANSI/SDI A250.6 or NAAMM HMMA 861.

E. Touch up damaged factory finishes.

3.03 TOLERANCES

A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

3.04 SCHEDULE

END OF SECTION

This page intentionally left blank

SECTION 08 1416 FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush and flush glazed configuration; fire-rated and non-rated.

1.02 RELATED REQUIREMENTS

A. Section 06 2000 - Finish Carpentry: Wood door frames.

B. Section 08 1113 - Hollow Metal Doors and Frames.

C. Section 08 7100 - Door Hardware.

D. Section 08 8000 - Glazing.

E. Section 09 9300 - Staining and Transparent Finishing: Field finishing of doors.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

C. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025, with Amendment (2024).

D. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

E. WDMA I.S. 1A - Interior Architectural Wood Flush Doors; 2021, with Errata (2022).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.

C. Samples: Submit two samples of door veneer, 12 by 12 inch in size illustrating wood grain, stain color, and sheen.

D. Warranty, executed in Owner's name.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging, and inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic; do not store in damp or wet areas or areas where sunlight might bleach veneer; seal top and bottom edges with tinted sealer if stored more than one week, and break seal on site to permit ventilation.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide manufacturer's warranty on interior doors for the life of the installation. Complete forms in Owner's name and register with manufacturer.

1. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:

1. Forte Opening Solutions; Aspiro Select Wood Veneer Doors: www.forteopenings.com/#sle.
    a. Algoma.
    b. Graham-Maiman.
    c. Marshfield.
    d. Masonite.
    e. Mohawk.
2. VT Industries, Inc: www.vtindustries.com/#sle.
    a. Eggers.
    b. VT Industries.
3. Oshkosh Architectural Door Company: www.oshkoshdoor.com.

4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS

A. Doors: See drawings for locations and additional requirements.
   1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with AWI/AWMAC/WI (AWS), unless noted otherwise.
   2. Wood Veneer Faced Doors: 5-ply or 7-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
   1. Provide solid core doors at each location.
   2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with UL 10C - Positive Pressure; Underwriters Laboratories Inc (UL) or Intertek/Warnock Hersey (WHI) labeled without any visible seals when door is open.
   3. Smoke and Draft Control Doors: In addition to required fire rating, provide flush wood door assemblies in compliance with WDMA I.S. 1A requirements for "S" label; no additional gasketing or edge sealing allowed.
   4. Wood veneer facing for field transparent finish as indicated on drawings.

2.03 DOOR AND PANEL CORES

A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated.

B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.

2.04 DOOR FACINGS

A. Veneer Facing for Transparent Finish: Species as specified above, veneer grade in accordance with quality standard indicated, plain sliced (flat cut), with book match between leaves of veneer, running match of spliced veneer leaves assembled on door or panel face.
   1. Vertical Edges: Same species as face veneer.

2.05 DOOR CONSTRUCTION

A. Fabricate doors in accordance with door quality standard specified.

B. Cores Constructed with stiles and rails:
   1. Provide solid blocks at lock edge for hardware reinforcement.

C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.

D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.

E. Provide edge clearances in accordance with the quality standard specified.

2.06 FINISHES - WOOD VENEER DOORS

A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
   1. Transparent:
      a. System - 11 Polyurethane Catalyzed.
      b. Stain: As selected by Architect. Color to match Architects sample or color indicated on drawings.
      c. Sheen: Satin.

B. Factory finish doors in accordance with approved sample.

C. Seal door top edge with color sealer to match door facing.

2.07 ACCESSORIES

A. Wood Door Frames: See Section 06 2000.

B. Hollow Metal Door Frames: See Section 08 1113.

C. Glazing Stops: Wood, of same species as door facing, butted corners; prepared for countersink style tamper proof screws.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and specified quality standard.
   1. Install fire-rated doors in accordance with NFPA 80 requirements.

B. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.

C. Use machine tools to cut or drill for hardware.

D. Coordinate installation of doors with installation of frames and hardware.

E. Coordinate installation of glazing.

3.03 TOLERANCES

A. Comply with specified quality standard for fit and clearance tolerances.

B. Comply with specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

B. Adjust closers for full closure.

3.05 SCHEDULE - SEE DRAWINGS

END OF SECTION

This page intentionally left blank

SECTION 08 3100 ACCESS DOORS AND PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall-mounted access units.

B. Ceiling-mounted access units.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting: Field paint finish.

1.03 REFERENCE STANDARDS

A. ITS (DIR) - Directory of Listed Products; Current Edition.

B. UL (FRD) - Fire Resistance Directory; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

C. Shop Drawings: Indicate exact position of each access door and/or panel unit.

D. Manufacturer's Installation Instructions: Indicate installation requirements.

PART 2 PRODUCTS

2.01 ACCESS DOORS AND PANELS ASSEMBLIES

A. Wall-Mounted Units:
   1. Location: As indicated on drawings. or in locations approved by architect.
   2. Panel Material: Aluminum extrusions with gypsum board inlay.
   3. Size: 12 by 12 inches. unless otherwise indicated on drawings.
   4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

B. Ceiling-Mounted Units:
   1. Location: As indicated on drawings.
   2. Panel Material: Aluminum extrusion with gypsum board inlay.
   3. Size : 24"x24" inch, unless otherwise indicated.
   4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.

2.02 WALL- AND CEILING-MOUNTED ACCESS UNITS

A. Manufacturers:
   1. ACUDOR Products Inc: www.acudor.com/#sle.
   2. Babcock-Davis: www.babcockdavis.com.
   3. Cendrex, Inc: www.cendrex.com/#sle.
   4. Karp Associates, Inc: www.karpinc.com.
   5. Milcor, Inc: www.milcorinc.com.
   6. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings are correctly sized and located.

B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Install frames plumb and level in openings, and secure units rigidly in place.

C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

This page intentionally left blank

SECTION 08 4313 ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.

B. Aluminum doors.

C. Weatherstripping.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealing joints between frames and adjacent construction.

B. Section 08 1116 - Aluminum Doors and Frames: Insulated Aluminum (Flush) Panel Exterior Doors.

C. Section 08 7100 - Door Hardware: Hardware items other than specified in this section.

D. Section 08 8000 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.

B. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2026.

C. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

D. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

E. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

F. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2026.

G. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).

H. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate with installation of other components that comprise the exterior enclosure.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details [<>].

C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.

D. Samples: Submit two samples 8 x 8 inches in size illustrating finished aluminum surface, glass, glazing materials.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

1.06 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.

B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.

B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a 2 year period after Date of Substantial Completion.

C. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum-Framed Storefronts:
   1. EFCO Corporation; 403 (T): www.efcocorp.com.
   2. Kawneer North America; Trifab VG 451T: www.kawneer.com/#sle.
   3. Oldcastle Building Envelope; Series 3000 Thermal Multiplane: www.oldcastlebe.com/#sle.
   4. Tubelite, Inc; T14000: www.tubeliteinc.com/#sle.
   5. YKK AP America, Inc; YES 45 FT: www.ykkap.com/commercial/#sle.
   6. Substitutions: Not permitted.

2.02 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
   1. Glazing Rabbet: For 1 inch insulating glazing.
   2. Glazing Position: Front-set.
   3. Mullion Dimensions: 2 inches wide by 4-1/2 inches deep.
   4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
   5. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
   6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
   7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
   8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
   9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.

B. Performance Requirements
   1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
      a. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
   2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
   3. Air Leakage: 0.06 cfm/sq ft maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf pressure difference.

2.03 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
   1. Tubular framing members at all head, jamb and sill conditions. Thermally broken (PVC) closure at back of open jamb and open head members are acceptable for required open back framing conditions.
   2. Framing members for interior applications need not be thermally broken.
   3. Glazing Stops: Flush.
   4. Extruded, thermally broken, sill flashing with end dam.

B. Glazing: See Section 08 8000.

C. Swing Doors: Glazed aluminum.
   1. Thickness: 1-3/4 inches.
   2. Top Rail: 6 inches wide.
   3. Vertical Stiles: 5 1/2 inches wide.
   4. Bottom Rail: 12 inches wide.
   5. Glazing Stops: Square.
   6. Finish: Same as storefront.

D. Sills with Sill Clips: 1/8 inch thick, extruded aluminum; sloped for positive wash; fit under framing extrusion to 1/2 inch beyond wall face; full width of opening jamb angles to terminate sill end.
   1. Color to match aluminum storefront.

2.04 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).

B. Sheet Aluminum: ASTM B209/B209M.

C. Fasteners: Stainless steel.

D. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.

E. Concealed Flashings: Sheet aluminum, 26 gauge, 0.017 inch minimum thickness.

F. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.

G. Sealant for Setting Thresholds: Non-curing butyl type.

H. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.

2.05 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

B. Color: Clear.

2.06 HARDWARE

A. Door Hardware: All finish hardware for aluminum doors of this system to be furnished by the hardware supplier as specified and scheduled in Section 08 7100. Ship to the frame supplier before doors and frames are fabricated. All hardware installed by the frame supplier.

B. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.

C. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.

B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

C. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.

H. Coordinate attachment and seal of perimeter air and vapor barrier materials.

I. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

J. Set thresholds in bed of sealant and secure.

K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.

B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.04 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.05 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.

B. Remove excess sealant by method acceptable to sealant manufacturer.

3.06 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 08 6200 UNIT SKYLIGHTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Skylights with integral frame.

B. Integral insulated curb.

1.02 REFERENCE STANDARDS

A. AAMA/WDMA/CSA 101/I.S.2/A440 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights; 2022, with Errata (2023).

B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

D. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

E. ASTM E2112 - Standard Practice for Installation of Exterior Windows, Doors and Skylights; 2023.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Include structural, thermal, and daylighting performance values.

C. Shop Drawings: Indicate configurations, dimensions, locations, fastening methods, and installation details.

D. Manufacturer's Installation Instructions: Indicate special procedures.

1.04 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide five-year manufacturer warranty including coverage for leakage due to defective skylight materials or construction. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Unit Skylights:
   1. Kingspan Light + Air, LLC: www.kingspanlightand air.us/
   2. Wasco Skylights - Part of the VELUX Group: www.wascoskylights.com/
   3. Plasteco: www.plasteco.com.
   4. Artistic Skylight: www.artisticskylight.com
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SKYLIGHTS

A. Skylights: Factory-assembled glazing in aluminum frame, free of visual distortion, and weathertight.
   1. Shape: Square dome.
   2. Glazing: Double.
   3. Operation: None; fixed.
   4. Nominal Size: As indicated on drawings.

2.03 PERFORMANCE REQUIREMENTS

A. Provide unit skylights that comply with the following:
   1. Grade: AAMA/WDMA/CSA 101/I.S.2/A440 requirements for specific skylight type:
      a. Performance Grade (PG): Equivalent to or greater than specified design pressure.
   2. Allow for expansion and contraction within system components caused by a cycling surface temperature range of 170 degrees F without causing detrimental effects to system or components.

2.04 COMPONENTS

A. Double Glazing: Acrylic plastic; factory sealed.
   1. Outer Glazing: Bronze tinted transparent.
   2. Inner Glazing: Clear transparent.

B. Frames: ASTM B221 AA DAF-45Extruded aluminum thermally broken, reinforced and welded corner joints, integral curb frame mounting flange and counterflashing to receive roofing flashing system, with integral condensation collection gutter, glazing retainer; Kynar paint finish.

C. Support Curbs: Sheet aluminum ASTM B209/B209M, sandwich construction; 1 inch wide, 12 inches high; rigid foam insulation; with integral flange for anchorage to roof deck.

2.05 ACCESSORIES

A. Anchorage Devices: Type recommended by manufacturer, concealed.

B. Counterflashings: Same metal type and finish as skylight frame.

C. Skylight Protection System: OSHA-compliant; nonpenetrating fall protection.

D. Protective Back Coating: Zinc molybdate alkyd.

E. Sealant: Elastomeric, silicone or polyurethane, compatible with material being sealed .

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that openings and substrate conditions are ready to receive work of this section.

C. Verify that curbs installed under other sections are complete.

3.02 PREPARATION

A. Apply protective back coating on aluminum surfaces of skylight units that will be in contact with cementitious materials or dissimilar metals.

3.03 INSTALLATION

A. Install unit skylights in accordance with manufacturer's instructions and ASTM E2112.

B. Install aluminum curb assembly, fastening securely to roof decking; flash curb assembly into roofing system.

C. Install skylight units and mount securely to curb assembly; install counterflashing as required.

D. Apply sealant to achieve watertight assembly.

3.04 CLEANING

A. Remove protective material from prefinished aluminum surfaces.

B. Wash down exposed surfaces; wipe surfaces clean.

C. Remove excess sealant.

END OF SECTION

SECTION 08 7100 DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for wood, aluminum, and hollow metal doors.

B. Electrically operated and controlled hardware.

C. Thresholds.

D. Weatherstripping and gasketing.

E. Field verification, preparation, and modification of existing doors and frames to receive new door hardware.

1.02 RELATED REQUIREMENTS

A. Section 08 1113 - Hollow Metal Doors and Frames.

B. Section 08 1416 - Flush Wood Doors.

C. Section 08 4313 - Aluminum-Framed Storefronts: Door hardware, except as noted in section.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. BHMA (CPD) - Certified Products Directory; Current Edition.

C. BHMA A156.1 - Standard for Butts and Hinges; 2025.

D. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.

E. BHMA A156.3 - Exit Devices; 2025.

F. BHMA A156.4 - Door Closers and Pivots; 2024.

G. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.

H. BHMA A156.6 - Standard for Architectural Door Trim; 2021.

I. BHMA A156.7 - Template Hinge Dimensions; 2022.

J. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.

K. BHMA A156.12 - Interconnected Locks; 2022.

L. BHMA A156.13 - Mortise Locks and Latches; 2022.

M. BHMA A156.14 - Sliding and Folding Door Hardware; 2024.

N. BHMA A156.15 - Release Devices - Closer Holder, Electromagnetic and Electromechanical; 2021.

O. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.

P. BHMA A156.17 - Self Closing Hinges & Pivots; 2025.

Q. BHMA A156.21 - Thresholds; 2025.

R. BHMA A156.22 - Standard for Gasketing; 2021.

S. BHMA A156.23 - Electromagnetic Locks; 2022.

T. BHMA A156.24 - Delayed Egress Locking Systems; 2022.

U. BHMA A156.25 - Electrified Locking Devices; 2023.

V. BHMA A156.26 - Standard for Continuous Hinges; 2025.

W. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems; 2023.

X. BHMA A156.31 - Electric Strikes and Frame Mounted Actuators; 2024.

Y. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.

Z. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

AA. DHI (H&S) - Sequence and Format for the Hardware Schedule; 2019.

BB. DHI (KSN) - Keying Systems and Nomenclature; 2019.

CC. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; 2004.

DD. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; 1993; also in WDHS-1/WDHS-5 Series, 1996.

EE. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

FF. ITS (DIR) - Directory of Listed Products; Current Edition.

GG. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

HH. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025, with Amendment (2024).

II. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

JJ. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2025.

KK. UL (DIR) - Online Certifications Directory; Current Edition.

LL. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.

MM. UL 1784 - Standard for Air Leakage Tests of Door Assemblies and Other Opening Protectives; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:
   1. Architect.
   2. Installer's Architectural Hardware Consultant (AHC).
   3. Hardware Installer.
   4. Owner's Security Consultant.

D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

C. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
   2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
   3. List groups and suffixes in proper sequence.
   4. Provide complete description for each door listed.
   5. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
   6. Include account of abbreviations and symbols used in schedule.

D. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).

2. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
3. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.

E. Manufacturer's Installation Instructions: Indicate special procedures.

F. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

G. Installer's qualification statement.

H. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

I. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Lock Cylinders: One for each master keyed group.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Manufacturer's Warranty: Provide warranty against defects in material and workmanship for period indicated. Complete forms in Owner's name and register with manufacturer.
1. Closers: Ten years, minimum.
2. Exit Devices: Three years, minimum.
3. Locksets and Cylinders: Three years, minimum.
4. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
2. Accessibility: ADA Standards and ICC A117.1.
3. Applicable provisions of NFPA 101.
4. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
5. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
   a. Air Leakage Rate: Tested in accordance with UL 1784, with air leakage rate not to exceed 3.0 cfm/sf of door opening at 0.10 inch of water for both ambient and elevated temperature tests.
6. Listed and certified compliant with specified standards by BHMA (CPD).
7. Auxiliary Hardware: BHMA A156.16.
8. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
9. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
10. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
   1. See Section 28 1000 for additional access control system requirements.

E. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. Refer to Door Hardware Schedule.

F. Fasteners:
   1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
      a. Aluminum fasteners are not permitted.
      b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
   2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
      a. Self-drilling (Tek) type screws are not permitted.
   3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
   4. Provide wall grip inserts for hollow wall construction.
   5. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.
   6. Fire-Rated Applications: Comply with NFPA 80.
      a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
      b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.
   7. Concealed Fasteners: Do not use through or sex bolt type fasteners on door panel sides indicated as concealed fastener locations, unless otherwise indicated.

2.02 HINGES

A. Manufacturers:
   1. Ives, an Allegion brand; www.allegion.com/us.
   2. McKinney; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   3. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   4. Hager Companies: www.hagerco.com/#sle.
   5. Stanley, dormakaba Group: www.stanleyhardwarefordoors.com/#sle.
   6. Substitutions: Not permitted.

B. Hinges: Comply with BHMA A156.1, Grade 1.
   1. Self Closing Hinges: Comply with BHMA A156.17.
   2. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
      a. Provide hinge width required to clear surrounding trim.
   3. Continuous Hinges: Comply with BHMA A156.26.
   4. Provide hinges on every swinging door.
   5. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
   6. Provide ball-bearing hinges at each door with closer.
   7. Provide non-removable pins on exterior outswinging doors.
   8. Provide non-removable pins on interior outswinging doors at locations as indicated in Door Hardware Schedule.
   9. Provide power transfer hinges where electrified hardware is mounted in door leaf locations as indicated in Door Hardware Schedule.
   10. Provide following quantity of butt hinges for each door:
      a. Doors up to 60 inches High: Two hinges.
      b. Doors From 60 inches High up to 90 inches High: Three hinges.
      c. Doors 90 inches High up to 120 inches High: Four hinges.
      d. Doors over 120 inches High: One additional hinge per each additional 30 inches in height.
      e. Dutch Doors: Two hinges each leaf.

2.03 PIVOTS

A. Manufacturers:
   1. Rixson; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. dormakaba: www.dormakaba.com/#sle.
   3. Ives, an Allegion brand: www.allegion.com/us/#sle.
   4. Substitutions: Not permitted.

B. Center-Hung and Offset Pivots: Comply with BHMA A156.4.

2.04 FLOOR CLOSERS

A. Manufacturers:
   1. Rixson; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. DORMA USA, Inc: www.dorma.com/#sle.
   3. Substitutions: Not permitted.

B. Floor Closers: Comply with BHMA A156.4, Grade 1.

C. Type: Standard-duty, with 2 inch shallow depth floor preparation, and having 250 pounds carrying weight.

D. Type: Heavy-duty, with 4 inch nominal depth floor preparation, and having 450 pounds carrying weight.

2.05 TRACK AND HANGERS

A. Manufacturers:
   1. BRIO, an Allegion brand; www.allegion.com/us.
   2. Hager Companies: www.hagerco.com/#sle.
   3. Johnson Hardware: www.johnsonhardware.com/#sle.
   4. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   5. Substitutions: Not permitted.

B. Pocket Doors: Provide pocket door kit, including header assembly, split studs, hangers, door hanger plates, bumper, guides, floor plate, and end bracket.

C. Sliding and Bifolding Door Hardware: Comply with BHMA A156.14.
   1. Provide track, hanger fasteners, guides, and pulls; size track and hangers in accordance with manufacturer's recommendations for weight of doors.
   2. Provide one pull for each pair of panels hinged together.

D. Face-Mounted Barn Door Hardware:
   1. Provide stainless steel, round track rail, track fasteners, guides, latches and pulls; size rail and hangers in accordance with manufacturer's recommendations for weight of doors.
   2. Track Finish: As selected by Architect.

E. Door Weight: Verify with Door Manufacturer.

2.06 FLUSH BOLTS

A. Manufacturers:
   1. Rockwood, an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Hager Companies: www.hagerco.com/#sle.
   3. Ives, an Allegion brand: www.allegion.com/us/#sle.
   4. Trimco: www.trimcohardware.com/#sle.
   5. Substitutions: Not permitted.

B. Flush Bolts: Comply with BHMA A156.16, Grade 1.
   1. Flush Bolt Throw: 3/4 inch, minimum.
   2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.
      a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.
   3. Provide dustproof floor strike for bolt into floor, except at metal thresholds.
   4. Manual Flush Bolts: Provide lever extensions for top bolt at over-sized doors.
   5. Self-Latching Flush Bolts: Automatically latch upon closing of door; manually retracted; located on inactive leaf of pair of doors.

6. Automatic Flush Bolts: Automatically latch upon closing of door; automatic retraction of bolts when active leaf is opened; located on inactive leaf of pair of doors.

2.07 EXIT DEVICES

A. Manufacturers:
   1. Sargent; an Assa Abloy Group company; 80 series: www.assaabloydss.com/#sle.
   2. Precision, dormakaba Group; Apex 2000 series: www.precisionhardware.com/#sle.
   3. Von Duprin, an Allegion brand; 98/99 series: www.allegion.com/us/#sle.
   4. Substitutions: Not permitted.

B. Manufacturers:
   1. Corbin Russwin; an Assa Abloy Group company; ED5000/ED4000 Series: www.assaabloydss.com/#sle.
   2. DORMA USA, Inc; 9000 Series: www.dorma.com/#sle.
   3. Falcon, an Allegion brand; 24/25 series; www.allegion.com/us.
   4. Substitutions: Not permitted.

C. Exit Devices: Comply with BHMA A156.3, Grade 1.
   1. Lever design to match lockset trim.
   2. Provide cylinder with cylinder dogging or locking trim.
   3. Provide exit devices properly sized for door width and height.
   4. Provide strike as recommended by manufacturer for application indicated.
   5. Provide less bottom rod (LBR) at scheduled locations to eliminate use of floor mounted strikes.
   6. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.
   7. For electrical options, provide quick connect plug-in pre-wired connectors.
   8. Voltage for electric latch retraction option: 24 VDC, and provide power supplies by same manufacturer.

2.08 ELECTRIC STRIKES

A. Manufacturers:
   1. HES; an Assa Abloy Group company; 1006 series: www.assaabloydss.com/#sle.
   2. Von Duprin, an Allegion brand; 6000 series; www.allegion.com/us.
   3. Substitutions: Not permitted.

B. Electric Strikes: Comply with BHMA A156.31, Grade 1.
   1. Provide UL (DIR) listed burglary-resistant electric strike; style to suit locks.
   2. Provide non-handed 12 VDC / 24 VDC electric strike suitable for door frame material and scheduled lock configuration.
   3. Provide field selectable Fail Safe/Fail Secure modes.
   4. Provide transformer and rectifier as necessary for complete installation.
   5. Connect electric strikes into fire alarm where non-rated doors are scheduled to release with fire or sprinkler alarm condition.

2.09 ELECTROMAGNETIC LOCKS

A. Manufacturers:
   1. Securitron; an Assa Abloy Group company; M series: www.assaabloydss.com/#sle.
   2. Schlage Electronics, an Allegion brand M400 series: www.allegion.com/us/#sle.
   3. Security Door Controls, 1500 series: www.sdcsecurity.com.
   4. Substitutions: Not permitted.

B. Electromagnetic Locks: Comply with BHMA A156.23, Grade 1.
   1. Holding Force: 600 lbs, minimum.
   2. Voltage: 12 VDC / 24 VDC, and provide power supplies by same manufacturer as locks.
   3. Provide electromagnetic locks for fire-rated doors in compliance with UL 10C.
   4. Mounting: Surface mounted to door and frame on secure side, with fasteners, brackets, and spacer bars as required for application.
   5. Provide concealed sensing device within device that monitors magnetic holding force to ensure appropriate door lock.

6. Where magnetic locks are scheduled, provide complete assemblies of controls, switches, power supplies, relays, and parts/materials recommended and approved by manufacturer of magnetic locks for each individual leaf. Switches control both doors simultaneously at pairs. Locate controls as directed by Architect.

2.10 DELAYED-EGRESS ELECTROMAGNETIC LOCKS

A. Manufacturers:
   1. Securitron; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Schlage Electronics, an Allegion brand[<>]: www.allegion.com/us/#sle.
   3. Security Door Controls,[<>]: www.sdcsecurity.com.
   4. Substitutions: Not permitted.

B. Delayed-Egress Electromagnetic Locks: Comply with BHMA A156.24, Grade 1.
   1. Delayed-Egress Timer: Upon depressing push bar provide 15 seconds delay before door egress permitted, in compliance with NFPA 101.
   2. Holding Force: 500 lbs, minimum.
   3. Voltage: 12 VDC / 24 VDC, and provide power supplies by same manufacturer as locks.
   4. Provide electromagnetic locks for fire-rated doors in compliance with UL 10C.
   5. Mounting: Surface mounted to door and frame on secure side, with fasteners, brackets, and spacer bars as required for application.
   6. Provide concealed sensing device that monitors magnetic holding force to ensure appropriate door lock.

2.11 LOCK CYLINDERS

A. Manufacturers:
   1. Basis of Design: Existing Facilities - Match owners key system.

B. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
   1. Provide standard, conventional, full size interchangeable core (FSIC), and small format interchangeable core (SFIC) type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.5 at locations indicated.
   2. Provide cylinders from same manufacturer as locking device.
   3. Provide cams and/or tailpieces as required for locking devices.
   4. Within specific Door Sections, when provisions for lock cylinder are being referenced to this Section, provide specified lock cylinder and keyed to building keying system, unless otherwise indicated.

2.12 CYLINDRICAL LOCKS

A. Manufacturers:
   1. Sargent; an Assa Abloy Group company; 10 Line series: www.assaabloydss.com/#sle.
   2. Corbin Russwin; an Assa Abloy Group company; CL3100 series: www.assaabloydss.com/#sle.
   3. Best, dormakaba Group; 9K3 series: www.bestaccess.com/#sle.
   4. Schlage, an Allegion brand; ND series: www.allegion.com/us/#sle.
   5. Substitutions: Not permitted.

B. Manufacturers:
   1. Yale; an Assa Abloy Group company; 5400LN series: www.assaabloydss.com/#sle.
   2. DORMA USA, Inc; C800 Series: www.dorma.com/#sle.
   3. Falcon, an Allegion brand; T Series: www.allegion.com/us/#sle.
   4. Substitutions: Not permitted.

C. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
   1. Bored Hole: 2-1/8 inch diameter.
   2. Latchbolt Throw: 1/2 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Finish: To match lock or latch.
      b. Flat-Lip Strikes: Provide for locks with three piece antifriction latchbolts as recommended by manufacturer.

c. Extra-Long-Lip Strikes: Provide for locks used on frames with applied wood casing trim.
d. Aluminum-Frame Strike Box: Provide strike box fabricated for use with aluminum framing by framing manufacturer.
e. Rabbet Front and Strike: Provide on locksets for use with rabbeted meeting rails.

5. Provide a lock for each door, unless otherwise indicated that lock is not required.
6. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.
7. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide switches, and sensors integrated into the locks and latches.

2.13 MORTISE LOCKS

A. Manufacturers:
1. Sargent; an Assa Abloy Group company; 8200 series: www.assaabloydss.com/#sle.
2. Best, dormakaba Group; 45H series: www.bestaccess.com/#sle.
3. Corbin Russwin; an Assa Abloy Group company; ML2000 series: www.assaabloydss.com/#sle.
4. Schlage, an Allegion brand; L series: www.allegion.com/us/#sle.
5. Substitutions: Not permitted.

B. Manufacturers:
1. Yale; an Assa Abloy Group company; 8800 series: www.assaabloydss.com/#sle.
2. DORMA USA, Inc; M9000 Series: www.dorma.com/#sle.
3. Falcon, an Allegion brand; MA series: www.allegion.com/us/#sle.
4. Substitutions: Not permitted.

C. Mortise Locks: Comply with BHMA A156.13, Grade 1, Security, 1000 Series.
1. Latchbolt Throw: 3/4 inch, minimum.
2. Deadbolt Throw: 1 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
a. Flat-Lip Strikes: Provide for locks with three piece antifriction latchbolts as recommended by manufacturer.
b. Extra-Long-Lip Strikes: Provide for locks used on frames with applied wood casing trim.
c. Aluminum-Frame Strike Box: Provide strike box fabricated for use with aluminum framing by framing manufacturer.
d. Rabbet Front and Strike: Provide on locksets for use with rabbeted meeting rails.
e. Finish: To match lock or latch.
5. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide switches, and sensors integrated into the locks and latches.

2.14 INTERCONNECTED LOCKS

A. Manufacturers:
1. Yale; an Assa Abloy Group company; 4800LN series: www.assaabloydss.com/#sle.
2. DORMA USA, Inc; J300 series: www.dorma.com/#sle.
3. Schlage, an Allegion brand; CS210 series: www.allegion.com/us/#sle.
4. Substitutions: Not permitted.

B. Interconnected Locks: Comply with BHMA A156.12, Grade 1, 5000 Series.

2.15 AUXILIARY LOCKS

A. Manufacturers: Deadlocks
1. Sargent; an Assa Abloy Group company; 4870 series: www.assaabloydss.com/#sle.
2. Best, dormakaba Group; 38H series: www.bestaccess.com/#sle.
3. Corbin Russwin; an Assa Abloy Group company; DL4100 series: www.assaabloydss.com/#sle.
4. Schlage, an Allegion brand; L400 series: www.allegion.com/us/#sle.
5. Substitutions: Not permitted.

B. Manufacturers: Deadbolts
1. Sargent; an Assa Abloy Group company; 480/470 series: www.assaabloydss.com/#sle.

2. Best, dormakaba Group; 83T/73T series: www.bestaccess.com/#sle.
3. Corbin Russwin; an Assa Abloy Group company; DL2200/DL3200 Series: www.assaabloydss.com/#sle.
4. Schlage, an Allegion brand; B600/B500 series: www.allegion.com/us/#sle.
5. Substitutions: Not permitted.

C. Manufacturers: Deadbolts
1. Yale; an Assa Abloy Group company; D100/D200 series: www.assaabloydss.com/#sle.
2. DORMA USA, Inc; D800 Series and DB600 Series: www.dorma.com/#sle.
3. Falcon, an Allegion brand; D100/D200 series: www.allegion.com/us/#sle.
4. Substitutions: Not permitted.

D. Auxiliary Locks: Comply with BHMA A156.36, Grade 1 and Grade 2 as listed in sets.
1. Backset: 2-3/4 inch, unless otherwise indicated.
2. Bolt Throw: 1 inch, with latch made of hardened steel.
3. Provide strike that matches frame.

2.16 DOOR PULLS AND PUSH PLATES

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Hager Companies: www.hagerco.com/#sle.
3. Ives, an Allegion brand: www.allegion.com/us/#sle.
4. Trimco: www.trimcohardware.com/#sle.
5. Substitutions: Not permitted.

B. Door Pulls and Push Plates: Comply with BHMA A156.6.
1. Pull Type: Straight, unless otherwise indicated.
2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
a. Edges: Beveled, unless otherwise indicated.
3. Material: Aluminum, unless otherwise indicated.
4. Provide door pulls and push plates on doors without a lockset, latchset, exit device, or auxiliary lock unless otherwise indicated.
5. On solid doors, provide matching door pull and push plate on opposite faces.

2.17 DOOR PULLS AND PUSH BARS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Hager Companies: www.hagerco.com/#sle.
3. Ives, an Allegion brand: www.allegion.com/us/#sle.
4. Trimco: www.trimcohardware.com/#sle.
5. Substitutions: Not permitted.

B. Door Pulls and Push Bars: Comply with BHMA A156.6.
1. Bar Type: Bar set, unless otherwise indicated.
2. Material: Stainless steel, unless otherwise indicated.

2.18 COORDINATORS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Trimco: www.trimcohardware.com/#sle.
4. Substitutions: Not permitted.

B. Coordinators: Provide on doors having closers and self-latching or automatic flush bolts to ensure that inactive door leaf closes before active door leaf.
1. Type: Bar, unless otherwise indicated.
2. Material: Aluminum, unless otherwise indicated.
3. Ensure that coordination of other door hardware affected by placement of coordinators and carry bar is applied properly for completely operable installation.

2.19 CARRY BAR

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.

2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Trimco: www.trimcohardware.com/#sle.
4. Substitutions: Not permitted.

B. Carry Bar: Provides a push on active door when inactive door is opened first to allow coordinator to be engaged for proper door leaf closing sequence.
1. Material: Brass with nylon rollers, unless otherwise indicated.

2.20 CLOSERS

A. Manufacturers; Surface Mounted Cast-Iron Closer:
1. Sargent; an Assa Abloy Group company; 281 series: www.assaabloydss.com/#sle.
2. Corbin Russwin; an Assa Abloy Group company; DC8000 series: www.assaabloydss.com/#sle.
3. LCN, an Allegion brand; 4000 series: www.allegion.com/us/#sle.
4. Norton; an Assa Abloy Group company; 9500 series: www.assaabloydss.com/#sle.
5. Substitutions: Not permitted.

B. Manufacturers; Surface Mounted Aluminum Closer:
1. Sargent; an Assa Abloy Group company; 351/1431 series: www.assaabloydss.com/#sle.
2. LCN, an Allegion brand; 4050/1450 series: www.allegion.com/us/#sle.
3. Falcon, an Allegion brand; SC71A/SC81A series: www.allegion.com/us/#sle.
4. Norton; an Assa Abloy Group company; 7500/8000 series: www.assaabloydss.com/#sle.
5. Yale; an Assa Abloy Group company; 4400/3000 series: www.assaabloydss.com/#sle.
6. Substitutions: Not permitted.

C. Manufacturers; Concealed - Overhead:
1. LCN, an Allegion brand; 2030 series: www.allegion.com/us/#sle.
2. DORMA USA, Inc; RTS88: www.dorma.com/#sle.
3. Norton; an Assa Abloy Group company; 7900 Series: www.assaabloydss.com/#sle.
4. Rixson ; an Assa Abloy Group company: www.assaabloydss.com/#sle.
5. Substitutions: Not permitted.

D. Manufacturers; Low Energy for ADA Applications:
1. LCN, an Allegion brand; 4600 series: www.allegion.com/us/#sle.
2. Norton; an Assa Abloy Group company; 6000 series: www.assaabloydss.com/#sle.
3. Besam; an Assa Abloy Group company; Power Swing series: www.assaabloydss.com/#sle.
4. Substitutions: Not permitted.

E. Closers: Comply with BHMA A156.4, Grade 1.
1. Type: Surface mounted to door.
2. Provide series as listed in the sets.
3. Provide door closer on each exterior door.
4. Provide door closer on each fire-rated and smoke-rated door.
5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
6. At corridor entry doors, mount closer on room side of door.
7. At outswinging exterior doors, mount closer on interior side of door.

2.21 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:
1. Rixson; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Glynn-Johnson, an Allegion brand: www.allegion.com/us/#sle.
3. ABH; an Architectural Builders Hardware company: www.abhmfg.com.
4. Substitutions: Not permitted.

B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
1. Provide stop for every swinging door, unless otherwise indicated.
2. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.

2.22 PROTECTION PLATES

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Hager Companies: www.hagerco.com/#sle.
   3. Ives, an Allegion brand: www.allegion.com/us/#sle.
   4. Trimco: www.trimcohardware.com/#sle.
   5. Substitutions: Not permitted.

B. Protection Plates: Comply with BHMA A156.6.

C. Metal Properties: Stainless steel.
   1. Metal, Standard Duty: Thickness 0.050 inch, minimum.

D. Edges: Beveled, on four sides unless otherwise indicated.

E. Fasteners: Countersunk screw fasteners.

F. Armor Plates: Provide on bottom half of push side of doors that require protection from objects moving through openings that may damage door surface.

G. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.

H. Mop Plates: Provide along bottom edge of pull side of doors to provide protection from cleaning liquids and equipment damage to door surface.

I. Stretcher Plates: Provide along middle of push side and pull side of doors to provide protection from stretcher hitting door and damaging door surface.

J. Door Edge Plates: Comply with BHMA A156.6.
   1. Provide along latching edge of door to protect from damage as objects are moved through door opening.
   2. Material: Stainless steel, at least 0.050 inch thick.

2.23 ELECTROMAGNETIC DOOR HOLDERS

A. Manufacturers:
   1. Rixson; an Assa Abloy Group company; 900 series: www.assaabloydss.com/#sle.
   2. LCN, an Allegion brand; SEM series: www.allegion.com/us/#sle.
   3. DORMA USA, Inc; EM Series: www.dorma.com/#sle.
   4. Substitutions: Not permitted.

B. Electromagnetic Door Holders: Comply with BHMA A156.15.
   1. Type: Wall mounted, single unit, standard duty, with strike plate attached to door.
   2. Holding Force, Standard Duty: 35 lbs-force, minimum.
   3. Voltage: 12 VDC / 24 VDC, and provide power supplies by same manufacturer as holders.
   4. Provide interface with fire detectors and fire-alarm system for fire-rated door assemblies.

2.24 FLOOR STOPS

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Hager Companies: www.hagerco.com/#sle.
   3. Ives, an Allegion brand: www.allegion.com/us/#sle.
   4. Trimco: www.trimcohardware.com/#sle.
   5. Substitutions: Not permitted.

B. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Provide floor stops when wall surface is not available; be cautious not to create a tripping hazard.
   2. Material: Stainless steel housing with rubber insert.

2.25 WALL STOPS

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Hager Companies: www.hagerco.com/#sle.

3. Ives, an Allegion brand: www.allegion.com/us/#sle.
4. Trimco: www.trimcohardware.com/#sle.
5. Substitutions: Not permitted.

B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Provide wall stops to prevent damage to wall surface upon opening door.
2. Material: Stainless steel housing with rubber insert.

2.26 ASTRAGALS

A. Manufacturers:
1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. National Guard Products, Inc: www.ngpinc.com/#sle.
3. Reese Enterprises, Inc: www.reeseusa.com/#sle.
4. Zero International, Inc: www.zerointernational.com/#sle.
5. Substitutions: Not permitted.

B. Astragals: Comply with BHMA A156.22.
1. Provide surface mounted astragal to cover or fill space for full door height between pair of doors or door and adjacent jamb.
2. Type: Split, two parts, and with sealing gasket.
3. Material: Aluminum, with neoprene weatherstripping.
4. Provide non-corroding fasteners at exterior locations.

2.27 THRESHOLDS

A. Manufacturers:
1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. National Guard Products, Inc: www.ngpinc.com/#sle.
3. Reese Enterprises, Inc: www.reeseusa.com/#sle.
4. Zero International, Inc: www.zerointernational.com/#sle.
5. Substitutions: Not permitted.

B. Thresholds: Comply with BHMA A156.21.
1. Provide threshold at interior doors for transition between two different floor types, and over building expansion joints, unless otherwise indicated.
2. Provide threshold at each exterior door, unless otherwise indicated.
3. Type: Flat surface.
4. Material: Aluminum.
5. Threshold Surface: Fluted horizontal grooves across full width.
6. Field cut threshold to profile of frame and width of door sill for tight fit.
7. Provide non-corroding fasteners at exterior locations.

2.28 WEATHERSTRIPPING AND GASKETING

A. Manufacturers:
1. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. National Guard Products, Inc: www.ngpinc.com/#sle.
3. Reese Enterprises, Inc: www.reeseusa.com/#sle.
4. Zero International, Inc: www.zerointernational.com/#sle.
5. Substitutions: Not permitted.

B. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Head and Jamb Type: Encased in retainer.
2. Door Sweep Type: Encased in retainer.
3. Material: Aluminum, with silicone weatherstripping.
4. Provide gasketing for smoke and draft control doors (Indicated as "S" on Drawings) that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
5. Provide frame-applied intumescent gasketing on wood doors that are labeled as smoke and draft control doors (Indicated as "S" on Drawings), unless otherwise indicated.
6. See Section 08 1416 when wood door to frame sealing system is applied by door manufacturer.
7. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.

8. Provide door bottom sweep on each exterior door, unless otherwise indicated.
9. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

2.29 COAT HOOKS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Hager Companies: www.hagerco.com/#sle.
3. Ives, an Allegion brand: www.allegion.com/us/#sle.
4. Trimco: www.trimcohardware.com/#sle.
5. Substitutions: Not permitted.

B. Coat Hooks: Provide on room side of door, screw fastened.

C. Material: Brass.

2.30 DOOR GUARD

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
3. Ives, an Allegion brand: www.allegion.com/us/#sle.
4. Trimco: www.trimcohardware.com/#sle.
5. Substitutions: Not permitted.

B. Door Guard: Provide as a secondary precaution, typically on dwelling or hotel room entrance doors, that allows a mechanical means to ensure privacy on inside of locked door.
1. Material: Aluminum.

2.31 KNOCKERS

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Trimco: www.trimcohardware.com/#sle.
4. Substitutions: Not permitted.

B. Knockers: Provide both a means of knocking on door without using your hand and an aesthetic appeal to door design.
1. Type: Ornate door knocker.
2. Material: Brass.

2.32 LATCH PROTECTOR

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Trimco: www.trimcohardware.com/#sle.
4. Substitutions: Not permitted.

B. Latch Protector: Provide on door to protect latch from being tampered with while in locked position.
1. Type: Standard latch protector.
2. Material: Stainless steel.

2.33 ROLLER LATCH

A. Manufacturers:
1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Trimco: www.trimcohardware.com/#sle.
4. Substitutions: Not permitted.

B. Roller Latch: Provide on doors that are not frequently used and need to latch, and on doors that must stay in closed position within the frame.
1. Location: Mount roller latch at top of door with strike plate fastened to head of door frame.
2. Material: Aluminum.

2.34 SILENCERS

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Ives, an Allegion brand: www.allegion.com/us/#sle.
   3. Trimco: www.trimcohardware.com/#sle.
   4. Substitutions: Not permitted.

B. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.
   1. Single Door: Provide three on strike jamb of frame.
   2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
   3. Material: Rubber, gray color.

2.35 VIEWER

A. Manufacturers:
   1. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Ives, an Allegion brand: www.allegion.com/us/#sle.
   3. Trimco: www.trimcohardware.com/#sle.
   4. Substitutions: Not permitted.

B. Viewer: Provide at inside of door at eye level to see who is on outside of door.
   1. Material: Brass.

2.36 WIRELESS ACCESS MANAGEMENT SYSTEMS

A. Manufacturers:
   1. Schlage ENGAGE, an Allegion brand: www.allegion.com/us/#sle.
   2. Best, dormakaba Group: www.bestaccess.com/#sle.
   3. Substitutions: Not permitted.

B. Wireless Access Management Systems: Comply with guidelines of BHMA A156.25, and including necessary hardware for fully functional system.
   1. Reader Formats: Provide magnetic stripe, proximity, dual validation, or key Fob to activate access system functionality.
   2. Door Locking Hardware: Provide applicable cylindrical locksets, panic hardware, or mortise locksets in compliance with project access control requirements.

2.37 KEY CONTROL SYSTEMS

A. Manufacturers:
   1. Sargent; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   2. Best, dormakaba Group: www.bestaccess.com/#sle.
   3. Schlage, an Allegion brand: www.allegion.com/us/#sle.
   4. Falcon, an Allegion brand: www.allegion.com/us/#sle.
   5. Yale; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   6. Substitutions: Not permitted.

B. Key Control Systems: Comply with guidelines of BHMA A156.28.
   1. Provide keying information in compliance with DHI (KSN) standards.
   2. Keying: Master keyed.
   3. Include construction keying and control keying with removable core cylinders.
   4. Key to existing keying system.
   5. Supply keys in following quantities:
      a. 6 each Master keys.
      b. 6 each Construction Master keys.
      c. 12 each Construction keys.
      d. 3 each Construction Control keys.
      e. 3 each Control keys if new system.
   6. Key Management System: For each keyed lock on project, provide one set of consecutively numbered duplicate key tags with hanging hole and snap catch.
   7. Security Key Tags: For each keyed lock on project, provide one set of matching key tags for permanent attachment to one key of each set.

8. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
9. Deliver keys with identifying tags to Owner by security shipment direct from hardware supplier.
10. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp permanent keys "Do Not Duplicate."
11. Owner or Owner's agent install permanent cores and return construction cores to hardware supplier. Construction cores and keys to remain property of hardware supplier.

2.38 KEY CABINET

A. Manufacturers:
1. Telkee:www.telkee.com.
2. Lund Equipment Company: www.lundkeycab.net.
3. MMF Industries; www.mmfind.com
4. Substitutions: Not permitted.

B. Key Cabinet: Sheet steel construction, piano hinged door with key lock; BHMA A156.28.
1. Mounting: Wall-mounted.
2. Capacity: Actual quantity of keys, plus 25 percent additional capacity.
3. Horizontal metal hook strips with replaceable labels covered with clear plastic.
4. Size key hooks to hold 6 keys each.
5. Finish: Baked enamel, manufacturer's standard color.
6. Key cabinet lock to building keying system.

2.39 FIRE DEPARTMENT LOCK BOX

A. Manufacturers:
1. Knox Company; Knox-Box Rapid Entry System, 3200 series: www.knoxbox.com/#sle.
2. Substitutions: Not permitted.

B. Fire Department Lock Box:
1. Heavy-duty, recessed, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers and tamper alarm.
2. Capacity: Holds 10 keys.
3. Finish: Manufacturer's standard dark bronze.

2.40 EXIT MOTION SENSOR

A. Manufacturers:
1. Securitron; an Assa Abloy Group company; XMS: www.assaabloydss.com/#sle.
2. Schlage Electronics, an Allegion brand; SCAN II: www.allegion.com/us/#sle.
3. Substitutions: Not permitted.

B. Exit Motion Sensor: Interior passive infrared detection device to initiate door release of exit door magnetic lock.
1. Power: 12 VDC / 24 VDC.
2. Provide adjustable detector face to allow for precise pattern configurations, and easy pattern adjustment.
3. Provide relay that operates before transistor to prevent false alarms.
4. Operating Temperature: 32 to 110 degrees F.

2.41 KEY PAD

A. Manufacturers:
1. Securitron; an Assa Abloy Group company; DK series: www.assaabloydss.com/#sle.
2. Schlage Electronics, an Allegion brand; KP series: www.allegion.com/us/#sle.
3. Substitutions: Not permitted.

B. Key Pad: Indoor or outdoor use, 12-key digital keypad with silicone rubber keys, and compatible with access control systems using standard Wiegand output.
1. Power: 12 VDC / 24VDC.
2. Mounts on narrow mullion, 1-1/2 inch wide by 7 inch high by 1 inch deep.
3. Operating Temperature: Minus 22 to 158 degrees F.
4. Finish: Black.

2.42 KEY SWITCH

A. Manufacturers:
   1. Securitron; an Assa Abloy Group company; MK series: www.assaabloydss.com/#sle.
   2. Schlage Electronics, an Allegion brand; 650 series: www.allegion.com/us/#sle.
   3. Substitutions: Not permitted.

B. Key Switch: Mortise key type, single gang, with bi-color LED.
   1. Power: 12 VDC / 24 VDC.
   2. Operating Temperature: 32 to 110 degrees F.

2.43 POWER SUPPLY

A. Manufacturers:
   1. Securitron; an Assa Abloy Group company; BPS series: www.assaabloydss.com/#sle.
   2. Von Duprin/Schlage Electronics, an Allegion brand; PS900 series: www.allegion.com/us/#sle.
   3. Precision, dormakaba Group; ELR series: www.precisionhardware.com/#sle.
   4. Substitutions: Not permitted.

B. Power Supply: Hard wired, with multiple zones providing eight (8) breakers for each output panel with individual control switches and LED's; UL (DIR) Class 2 listed.
   1. Power: 12 VDC / 24 VDC; with 120 VAC power supply.
   2. Operating Temperature: 32 to 110 degrees F.
   3. Provide with emergency release terminals that release devices upon activation of fire alarm system.

2.44 FINISHES

A. Finishes: Identified in Section 08 0671 - Door Hardware Schedule.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

B. Verify that electric power is available to power operated devices and of correct characteristics.

C. Field verify existing doors and frames receiving new hardware and existing conditions receiving new openings. Verify that new hardware is compatible with existing door and frame preparations and existing conditions.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

B. Install hardware for smoke and draft control doors in accordance with NFPA 105.

C. Use templates provided by hardware item manufacturer.

D. Do not install surface mounted items until application of finishes to substrate are fully completed.

E. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
   1. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
   2. For Steel Doors and Frames: See Section 08 1113.
   3. For Steel Door Frames: See Section 08 1213.
   4. For Aluminum-Framed Storefront Doors and Frames: See Section 08 4313.
   5. For Glazed Aluminum Curtain Wall: Refer to Section 08 4413.
   6. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
   7. Flush Wood Doors: See Section 08 1416.
   8. Stile and Rail Wood Doors: See Section 08 1433.
   9. Mounting heights in compliance with ADA Standards:
      a. Locksets: 40-5/16 inch.
      b. Push Plates/Pull Bars: 42 inch.
      c. Deadlocks (Deadbolts): 48 inch.

d. Exit Devices: 40-5/16 inch.
e. Door Viewer: 43 inch; standard height 60 inch.

F. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

G. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

H. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

I. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

J. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

K. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

L. Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 30 inches of door height greater than 90 inches.

M. Lock Cylinders: Install construction cores to secure building and areas during construction period.
1. Replace construction cores with permanent cores as indicated in keying section.

N. Lead Protection: Lead wrap hardware penetrating lead-lined doors. Levers and roses to be lead lined. Apply kick and armor plates on lead-lined doors with adhesive as recommended by manufacturer.

O. Wiring: Coordinate with Division 26, ELECTRICAL sections for:
1. Conduit, junction boxes and wire pulls.
2. Connections to and from power supplies to electrified hardware.
3. Connections to fire/smoke alarm system and smoke evacuation system.
4. Connection of wire to door position switches and wire runs to central room or area, as directed by Architect.
5. Testing and labeling wires with Architect's opening number.

P. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

Q. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

R. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

S. Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings or in equipment room, or alternate location as directed by Architect.

T. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

U. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

V. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

W. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

X. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 01 4000 - Quality Requirements.

B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

A. Adjust work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.

B. Clean adjacent surfaces soiled by hardware installation.

C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION

A. Protect finished Work under provisions of Section 01 7000 - Execution and Closeout Requirements.

B. Do not permit adjacent work to damage hardware or finish.

3.07 SCHEDULE - ATTACHED

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Glazing units.

C. Plastic films.

D. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 08 1416 - Flush Wood Doors: Glazed lites in doors.

B. Section 08 4313 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers; 2005 (Reapproved 2019).

D. ASTM C1036 - Standard Specification for Flat Glass; 2025.

E. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2025.

F. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass; 2024, with Editorial Revision (2025).

G. ASTM C1193 - Standard Guide for Use of Joint Sealants; 2025.

H. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass; 2021a.

I. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings; 2024.

J. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation; 2019.

K. GANA (GM) - GANA Glazing Manual; 2022.

L. GANA (SM) - GANA Sealant Manual; 2008.

M. NFRC 100 - Procedure for Determining Fenestration Product U-factors; 2023.

N. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence; 2023.

O. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems; 2026.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Samples: Submit two samples 12 by 12 inch in size of glass and plastic units, showing coloration.

E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM) for glazing installation methods.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience and approved by manufacturer.

1.06 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Float Glass Manufacturers:
1. Cardinal Glass Industries: www.cardinalcorp.com.
2. Guardian Industries Corp: www.sunguardglass.com.
3. Pilkington North America Inc: www.pilkington.com/na.
4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
1. Design Pressure: Calculated in accordance with applicable codes.
2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than L/175 of their lengths under specified design load.
4. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
1. In conjunction with weather barrier related materials described in other sections, as follows:

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
4. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.

2.04 INSULATING GLASS UNITS

A. Manufacturers:
1. Glass: Any of the manufacturers specified for float glass.

2. Basis of Design: Guardian Glass, LLC; SunGuard, SuperNeutral 62: www.guardianglass.com/#sle.
3. Basis of Design - Spandrel: Guardian Glass, LLC; SunGuard, SNX 62/27: www.guardianglass.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

B. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Warm-Edge Spacers: Warm-edge technology design.
4. Spacer Color: Black.
5. Edge Seal:
   a. Color: Black.
6. Purge interpane space with dry air, hermetically sealed.

C. Type IG-1 - Insulating Glass Units: Vision glass, double glazed.
1. Applications: Exterior glazing unless otherwise indicated.
2. Space between lites filled with argon.
3. Outboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
   b. Coating: Low-E (passive type), on #2 surface.
4. Inboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
5. Total Thickness: 1 inch.
6. Thermal Transmittance (U-Value), Winter - Center of Glass: 0.29, nominal.
7. Visible Light Transmittance (VLT): 62 percent, nominal.
8. Shading Coefficient: .36, nominal.
9. Solar Heat Gain Coefficient (SHGC): .31, nominal.
10. Visible Light Reflectance, Outside: 11 percent, nominal.
11. Glazing Method: Dry glazing method, gasket glazing.

D. Type IG-2 - Insulating Glass Units: Spandrel glazing.
1. Applications: Exterior spandrel glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
   a. Tint: Clear.
   b. Coating: Same as on vision units, on #2 surface.
4. Inboard Lite: Heat-strengthened float glass, 1/4 inch thick.
   a. Tint: Clear.
   b. Opacifier: Ceramic frit, on #4 surface.
   c. Opacifier Color: Warm Gray Frit 100 percent.
5. Total Thickness: 1 inch.
6. Thermal Transmittance (U-Value), Summer - Center of Glass: .29, nominal.

E. Insulating Glass Units: Safety glazing.
1. Applications:
   a. Glazed lites in exterior doors.
   b. Glazed sidelights and panels next to exterior doors.
   c. Other locations required by applicable federal, state, and local codes and regulations.
2. Space between lites filled with air.
3. Glass Type: Same as Type IG-1 except use fully tempered float glass for both outboard and inboard lites.

2.05 GLAZING UNITS

A. Type G-1 - Monolithic Interior Vision Glazing:
1. Applications: Interior glazing unless otherwise indicated.
2. Glass Type: Annealed float glass.
3. Tint: Clear.

4. Thickness: 1/4 inch, nominal.

B. Type G-2 - Monolithic Interior Vision Safety Glazing:
1. Applications:
a. Glazed lites in interior doors.
b. Glazed sidelights and panels next to interior doors.
c. Other locations required by applicable federal, state, and local codes and regulations.
2. Glass Type: Fully tempered float glass.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.

2.06 PLASTIC FILMS

A. Decorative Plastic Film: Vinyl type.
1. Application: Locations as indicated on drawings.
2. Series Type: Specialty.
3. Color: As indicated on drawings.

2.07 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Continuous by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Glazing Tape: Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect an air barrier and vapor retarder seal;

D. Glazing Splines: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

E. Glazing Clips: Manufacturer's standard type.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

C. Verify that sealing between joints of glass framing members has been completed effectively.

D. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 INSTALLATION - PLASTIC FILM

A. Install plastic film with adhesive, applied in accordance with film manufacturer's instructions.

B. Place without air bubbles, creases or visible distortion.

C. Install film tight to perimeter of glass and carefully trim film with razor sharp knife. Provide 1/16 inch to 1/8 inch gap at perimeter of glazed panel unless otherwise required. Do not score the glass.

3.06 FIELD QUALITY CONTROL

A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

B. Monitor and report installation procedures and unacceptable conditions.

3.07 CLEANING

A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

B. Remove nonpermanent labels immediately after glazing installation is complete.

C. Clean glass and adjacent surfaces after sealants are fully cured.

D. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.08 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Security glazing film.

1.02 REFERENCE STANDARDS

A. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

C. ASTM F1233 - Standard Test Method for Security Glazing Materials And Systems; 2021.

D. ASTM F3561 - Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack; 2025.

E. GSA TS01 - Standard Test Method for Glazing and Window Systems Subject to Dynamic Overpressure Loadings; General Services Administration; 2003.

F. UL 752 - Standard for Bullet-Resisting Equipment; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Physical and performance characteristics, including storage and installation methods.

C. Shop Drawings: Indicate locations of installation.

D. Samples: Two swatches, minimum 6 by 6 inches in size, showing actual thickness, color, and pattern.

E. Evaluation Service Reports: Show compliance with specified requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Clear Armor, LLC: www.clear-armor.com/#sle.

B. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SECURITY GLAZING FILM

A. Bullet-Resistant Film: Level 1 blast resistance when tested in accordance with GSA TS01; safety glazing material in accordance with ANSI Z97.1 and ASTM F1233.
   1. Thickness: .
   2. Break Strength: 1,500 psi minimum.
   3. Tensile Strength: 28,500 psi.
   4. Bullet Resistance: Level 1 in accordance with UL 752.
   5. Visible Light Transmission: 87 percent.
   6. UV Rejection: 99 percent.
   7. Surface Burning Characteristics: Comply with ASTM E84.
   8. Forced Entry Resistance: Comply with ASTM F3561.
   9. Chemically resistant.
   10. Color: Clear.
   11. Products: Clear Armor, LLC; BR Bullet Resistant.

2.03 ACCESSORIES

A. As recommended by security film manufacturer, including sealants and cleaners.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are according to manufacturer's recommendations for application and performance of film.

B. If substrate preparation is responsibility of another installer, notify Architect before proceeding.

3.02 PREPARATION

A. Clean glass of dust, dirt, paint, oil, grease, mildew, mold, and other contaminants that inhibit adhesion.

B. Protect adjacent surfaces.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, without air bubbles, wrinkles, streaks, bands, thin spots, pinholes, or gaps.

B. Accurately cut film with straight edges to required sizes allowing 1/16 inch maximum gap at perimeter of glazed panel.

C. Seam film to accommodate material sizes; form seams vertically without overlaps and gaps; do not install with horizontal seams.

3.04 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Clean glass and accessories following installation. Remove excess sealants and other glazing materials from adjacent finished surfaces.

3.05 PROTECTION

A. Protect installed films from subsequent construction operations.

END OF SECTION

SECTION 09 0561 COMMON WORK RESULTS FOR FLOORING PREPARATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section applies to floors identified in Contract Documents that are receiving the following types of floor coverings:
   1. Resilient tile and sheet.
   2. Carpet tile.

B. Preparation of new and existing concrete floor slabs for installation of floor coverings.

C. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
   1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.

D. Patching compound.

E. Remedial floor coatings.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2016a.

B. ASTM C472 - Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters, and Gypsum Concrete; 2020.

C. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

D. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride; 2023.

1.04 SUBMITTALS

A. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
   1. Moisture and alkalinity (pH) limits and test methods.
   2. Manufacturer's required bond/compatibility test procedure.

B. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
   1. Test reports indicating compliance with specified performance requirements, performed by nationally recognized independent testing agency.
   2. Specimen Warranty: Copy of warranty to be issued by coating manufacturer and certificate of underwriter's coverage of warranty.

C. Testing Agency's Report:
   1. Description of areas tested; include floor plans and photographs if helpful.
   2. Summary of conditions encountered.
   3. Moisture and alkalinity (pH) test reports.
   4. Copies of specified test methods.
   5. Recommendations for remediation of unsatisfactory surfaces.
   6. Submit report to Architect.
   7. Submit report not more than two business days after conclusion of testing.

D. Adhesive Bond and Compatibility Test Report.

1.05 QUALITY ASSURANCE

A. Moisture and alkalinity (pH) testing will be performed by an independent testing agency employed and paid by Owner.

B. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
   1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.

C. Contractor's Responsibility Relating to Independent Agency Testing:
   1. Provide access for and cooperate with testing agency.

2. Confirm date of start of testing at least 10 days prior to actual start.
3. Allow at least 4 business days on site for testing agency activities.
4. Achieve and maintain specified ambient conditions.
5. Notify Owner when specified ambient conditions have been achieved and when testing will start.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.

B. Deliver materials in manufacturer's packaging; include installation instructions.

C. Keep materials from freezing.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.

B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

1.08 WARRANTY

A. 10 Year Limited Product Warranty: Product to be free from manufacturing defects and will not break down or deteriorate under normal use for 10 years.

B. 25 Year System Limited Warranty: Using manufacturer's concrete moisture vapor barrier system in conjunction with specific surface preparation products and adhesives as identified in published warranty. Warrant to Owner that products:
   1. Reduce moisture vapor emissions of treated concrete substrate from a maximum of 25 pounds per 1000 square feet per 24 hours as determined by the Calcium Chloride Test Method ASTM F1869 (or 100 percent RH using Relative Humidity Method ASTM F2170) to no more than 3 pounds per 1000 square feet per 24 hours.
   2. If moisture vapor emissions comply with above, and products are used as a complete System, the System:
      a. will not fail due to a manufacturing defect.
      b. will prevent flooring damage and bond failure caused by vapor emissions from the concrete substrate.

PART 2 PRODUCTS

2.01 MATERIALS

A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
   1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
   2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
   3. Products:
      a. H.B. Fuller Construction Products, Inc; TEC Feather Edge Skim Coat: www.tecspecialty.com/#sle.
      b. USG Corporation; Durock Brand Advanced Skim Coat Floor Patch: www.usg.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.

C. Remedial Floor Coating: Single- or multi-layer coating or coating/overlay combination intended by its manufacturer to resist water vapor transmission to degree sufficient to meet flooring manufacturer's emission limits, resistant to the level of alkalinity (pH) found, and suitable for adhesion of flooring without further treatment.

1. Thickness: As required for application and in accordance with manufacturer's installation instructions.
2. Products:
   a. ARDEX Engineered Cements; ARDEX VB 100: www.ardexamericas.com/#sle.
   b. H.B. Fuller Construction Products, Inc; TEC LiquiDam or Liquidam EZ with TEC Level Set 500 HF: www.tecspecialty.com/#sle.
   c. UZIN UTZ NORTH AMERICA, INC; UZIN PE 460 with UZIN PE 280 and UZIN NC 170 LevelStar: https://us.uzin.com/#sle.
   d. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 CONCRETE SLAB PREPARATION

A. Perform following operations in the order indicated:
1. Preliminary cleaning.
2. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
3. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
4. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
5. Specified remediation, if required.
6. Patching, smoothing, and leveling, as required.
7. Other preparation specified.
8. Adhesive bond and compatibility test.
9. Protection.

3.02 MOISTURE VAPOR EMISSION TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.

C. Test in accordance with ASTM F1869 and as follows.

D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.

E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.

F. Report: Report the information required by the test method.

3.03 ALKALINITY TESTING

A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.

B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.

C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.

3.04 PREPARATION

A. See individual floor covering section(s) for additional requirements.

B. Comply with requirements and recommendations of floor covering manufacturer.

C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.

D. Do not fill expansion joints, isolation joints, or other moving joints.

3.05 ADHESIVE BOND AND COMPATIBILITY TESTING

A. Comply with requirements and recommendations of floor covering manufacturer.

3.06 APPLICATION OF REMEDIAL FLOOR COATING

A. Comply with requirements and recommendations of coating manufacturer.

3.07 PROTECTION

A. Cover prepared floors with building paper or other durable covering.

END OF SECTION

SECTION 09 2116 GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Metal stud wall framing.

C. Acoustic insulation.

D. Gypsum sheathing.

E. Cementitious backing board.

F. Gypsum wallboard.

G. Joint treatment and accessories.

H. Sound barrier mullion trim cap system.

1.02 RELATED REQUIREMENTS

A. Section 05 4000 - Cold-Formed Metal Framing: Structural steel stud framing.

B. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

C. Section 07 8400 - Firestopping: Top-of-wall assemblies at fire-resistance-rated walls.

D. Section 07 9200 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

A. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members; 2016, with Supplement (2020).

B. AISI S220 - North American Standard for Cold-Formed Steel Nonstructural Framing; 2020.

C. AISI S240 - North American Standard for Cold-Formed Steel Structural Framing; 2015, with Errata (2020).

D. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units; 2023.

E. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units; 2023.

F. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

H. ASTM A1003/A1003M - Standard Specification for Steel Sheet, Carbon, Metallic- and Nonmetallic-Coated for Cold-Formed Framing Members; 2015.

I. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board; 2017 (Reapproved 2022).

J. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board; 2004 (Reapproved 2020).

K. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing; 2003 (Reapproved 2026).

L. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members; 2018.

M. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products; 2020.

N. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2025.

O. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2022.

P. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; 2022.

Q. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base; 2019.

R. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing; 2024.

S. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing; 2025.

T. ASTM C1288 - Standard Specification for Fiber-Cement Interior Substrate Sheets; 2023.

U. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units; 2025.

V. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2024.

W. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber; 2021.

X. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2017.

Y. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements; 2023.

Z. ASTM E413 - Classification for Rating Sound Insulation; 2022.

AA. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

BB. GA-216 - Application and Finishing of Gypsum Panel Products; 2024.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate special details associated with acoustic seals and sound barrier wall end cap system.

C. Product Data: Provide data on metal framing, gypsum board, accessories, joint finishing system, and sound barrier wall end cap system.
   1. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

D. Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC of 50-54 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 METAL FRAMING MATERIALS

A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.

B. Manufacturers - Metal Framing, Connectors, and Accessories:
   1. ClarkDietrich: www.clarkdietrich.com/#sle.
   2. Jaimes Industries: www.jaimesind.com/#sle.
   3. Substitutions: See Section 01 6000 - Product Requirements.

C. Structural Steel Framing for Application of Gypsum Board: See Section 05 4000.

D. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
   1. Studs: C-shaped with knurled or embossed faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C-shaped.
   4. Furring Members: Hat-shaped sections, minimum depth of 7/8 inch.
   5. Resilient Furring Channels: Single or double leg configuration; 1/2 inch channel depth.

a. Products:
1) Same manufacturer as other framing materials.

E. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.
3. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.

F. Deflection and Firestop Track: Intumescent strip factory-applied to track flanges expands when exposed to heat or flames to provide a perimeter joint seal.

G. Preformed Top Track Firestop Seal:
1. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.

H. Non-structural Framing Accessories:
1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
2. Partial Height Wall Framing Support: Provides stud reinforcement and anchored connection to floor.
a. Materials: ASTM A36/A36M formed sheet steel support member with factory-welded ASTM A1003/A1003M steel plate base.
b. Height: 35-3/4 inches.
c. Products:
1) ClarkDietrich; Pony Wall (PW): www.clarkdietrich.com/#sle.
2) Substitutions: See Section 01 6000 - Product Requirements.

2.03 BOARD MATERIALS

A. Manufacturers - Gypsum-Based Board:
1. CertainTeed Corporation: www.certainteed.com/#sle.
2. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
3. National Gypsum Company: www.nationalgypsum.com/#sle.
4. USG Corporation: www.usg.com/#sle.
5. Substitutions: See Section 01 6000 - Product Requirements.

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
a. Mold resistant board is required at interior of exterior walls and where indicated on drawings.
3. Thickness:
a. Vertical Surfaces: 5/8 inch.
b. Ceilings: 5/8 inch.
c. Radiused: 1/4 inch.
d. Multi-Layer Assemblies: Thicknesses as indicated on drawings.

C. Abuse Resistant Wallboard:
1. Application: Lower four feet of corridor walls.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Paper-Faced Type: Gypsum wallboard, as defined in ASTM C1396/C1396M.
4. Type: Fire-resistance-rated Type X, UL or WH listed.
5. Thickness: 5/8 inch.
6. Edges: Tapered.
7. Paper-Faced Products:
a. CertainTeed Corporation; Extreme Abuse Resistant Drywall with M2Tech: www.certainteed.com/#sle.

b. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold Guard Abuse-Resistant: www.gpgypsum.com/#sle.
c. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond XP Hi-Abuse Gypsum Board: www.goldbondbuilding.com/#sle.
d. Substitutions: See Section 01 6000 - Product Requirements.

D. Impact Resistant Wallboard:
1. Application: Lower four feet on corridor walls.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Paper-Faced Type: Gypsum wallboard, as defined in ASTM C1396/C1396M.
4. Type: Fire-resistance-rated Type X, UL or WH listed.
5. Thickness: 5/8 inch.
6. Edges: Tapered.
7. Paper-Faced Products:
a. CertainTeed Corporation; Extreme Impact Resistant Drywall with M2Tech: www.certainteed.com/#sle.
b. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond XP Hi-Impact Gypsum Board: www.goldbondbuilding.com/#sle.
c. USG Corporation; USG Sheetrock Brand Mold Tough VHI Firecode X Panels: www.usg.com/#sle.
d. Substitutions: See Section 01 6000 - Product Requirements.

E. Backing Board For Wet Areas: One of the following products:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
a. Thickness: 1/2 inch.
4. ASTM Cement-Based Board: Non-gypsum-based, cementitious board complying with ASTM C1288.
a. Thickness: 1/2 inch.

F. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
1. Application: Vertical surfaces behind thinset tile, except in wet areas.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Type: Regular, in locations indicated.
4. Regular Board Thickness: 1/2 inch.
5. Edges: Tapered.
6. Products:

G. Acoustical Sound Dampening Wall and Ceiling Board: Two layers of heavy paper-faced, high-density gypsum board separated by a viscoelastic polymer layer and capable of achieving STC rating of 50 or more in typical stud wall assemblies as calculated in accordance with ASTM E413 and when tested in accordance with ASTM E90.
1. Thickness: 5/8 inch.
2. Long Edges: Tapered.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
4. Products:
a. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond SoundBreak XP Wall Board: www.goldbondbuilding.com/#sle.
b. Substitutions: See Section 01 6000 - Product Requirements.

H. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
4. Core Type: Regular.

5. Regular Board Thickness: 1/2 inch or as indicated on drawings.
6. Edges: Square.
7. Glass Mat Faced Products:
   a. CertainTeed Corporation; GlasRoc 1/2" Exterior Sheathing: www.certainteed.com/#sle.
   b. Georgia-Pacific Gypsum; DensGlass Sheathing: www.gpgypsum.com/#sle.
   c. Gold Bond Building Products, LLC provided by National Gypsum Company; Gold Bond eXP Fire-Shield Sheathing: www.goldbondbuilding.com/#sle.
   d. Substitutions: See Section 01 6000 - Product Requirements.

2.04 SOUND BARRIER MULLION TRIM CAP SYSTEM

A. Manufacturers
   1. Products: Subject to compliance with requirements, provide the following:
      a. MULL-it-OVER Products; www.mullitoverproducts.com
      b. Substitutions: Not permitted.

B. Performance Requirements
   1. Sound Transmission:
      a. Single Sided Installations: STC 50 or higher.
      b. Double-Sided Installations: STC 55 or higher.
   2. Mullion trim cap to be sized to accommodate thermal movement.

C. Profile: 55 Classic Mullion Trim Cap.

D. Components
   1. Aluminum Extrusions:
      a. Thickness: 0.125 inches.
   2. Sound Absorbing Foam:
      a. Resistant to smoke, flame, and microbial growth.
      b. Fire Rating: ASTM E84 Class 1.
      c. Fungi Resistance: Zero rating per ASTM G21.
   3. Compressible Foam: Between edge of extrusion and interior face of curtain wall glass.
      a. Thickness: Standard 1/2 inch.
      b. Color: Light gray.
   4. Fasteners:
      a. Self Tapping or appropriate threaded fastener.
      b. Stainless steel.
   5. Snap Cover: Snap-on fastener cover.
   6. Acoustical Sound Sealant: Acrylic latex.

E. Finish
   1. Aluminum - clear anodized:
      a. Clear anodized finish in accordance with AA-M10 C22 A41 Class I (0.7 to 1.0 thick anodic coating)

F. Warranty: Ten years limited warranty from date of Substantial Completion.

2.05 GYPSUM BOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 3-1/2 inch.

B. Finishing Accessories: ASTM C1047, galvanized steel sheet {\rs\#1} G90, unless noted otherwise.
   1. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
   2. Products:
      a. Phillips Manufacturing Co: www.phillipsmfg.com/#sle.
      b. Trim-tex, Inc: www.trim-tex.com/#sle.
      c. CertainTeed Corporation]: www.certainteed.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

C. Beads, Joint Accessories, and Other Trim: ASTM C1047, rigid plastic, galvanized steel, or rolled zinc, unless noted otherwise.

D. Expansion Joints:
   1. Type: V-shaped metal with factory-installed protective tape.

E. Decorative Metal Trim:
   1. Material: Extruded aluminum alloy 6063-T5 temper.
   2. Finish: Anodized, clear.
   3. Type: Profile as selected from manufacturer's standard range.
   4. Reveals and "L" Trims: See interior elevations for locations and types.
      a. Manufacture: Fry Reglet.
         1) Reveal Shape: # DRM-50-50
         2) L-Shape: # DRML-50
         3) F-Shape: # DRMF-50-50

F. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
   1. Paper Tape: 2 inch wide, creased paper tape for joints and corners, except as otherwise indicated.

G. Plaster repair and wall leveling for paint surface at areas of tile removal: USG, ASTM C475 Durabond 90.

H. Screws for Fastening of Gypsum Panel Products to Cold-Formed Steel Studs Less than 0.033 inches in Thickness and Wood Members: ASTM C1002; self-piercing tapping screws, corrosion-resistant.

I. Screws for Fastening of Gypsum Panel Products to Steel Members from 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws, corrosion-resistant.

J. Nails for Attachment to Wood Members: ASTM C514.

K. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

L. Adhesive for Attachment to Wood ASTM C557 and Wood ASTM C557:

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
   1. Level ceiling system to a tolerance of 1/1200.

B. Studs: Space studs at 16 inches on center or as indicated on drawings.
   1. Extend partition framing as indicated in Wall Legend on drawings..
   2. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

C. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

D. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.

E. Acoustic Furring: Install resilient channels at maximum 24 inches on center. Locate joints over framing members.

F. Blocking: Install blocking for support of:
   1. Framed openings.
   2. Wall-mounted cabinets.
   3. Plumbing fixtures.
   4. Toilet partitions.
   5. Toilet accessories.
   6. Wall-mounted door hardware.
   7. Monitors.

8. Cabinets and counters.
9. Lockers.

3.03 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place two beads continuously on substrate before installation of perimeter framing members.
   2. Place continuous bead at perimeter of each layer of gypsum board.
   3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

C. Sound Barrier Mullion Trim Cap Assembly: Install per manufacturer's recommendations.

3.04 BOARD INSTALLATION

A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

C. Double-Layer, Nonrated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.

D. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

E. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.

F. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

G. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.

H. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
   1. Single-Layer Applications: Adhesive application.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
   2. At exterior soffits, not more than 30 feet apart in both directions.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

D. Decorative Trim: Install at locations shown on drawings and in accordance with manufacturer's instructions.

3.06 INSTALLATION OF SOUND BARRIER WALL END CAP

A. Measure and cut sound barrier wall end cap to proper lengths.

B. Notch around horizontal mullions, sills, or other obstructions leaving appropriate gap for differential movement between sound barrier wall end cap and the obstruction.

C. Apply continuous bead of acoustical sealant to unexposed side of extruded aluminum surface in contact with gypsum board edge.

D. Place sound barrier wall end cap on vertical surface of gypsum board partition wall and loosely install fasteners in top and bottom slotted holes of wall end cap.

E. Plumb wall end cap leaving manufacturer recommended gap spacing between interior glass surface and wall end cap. Foam gasket to be in contact with glass.

F. Tighten top and bottom fasteners to secure end cap.

G. Install additional fasteners at 12 inches on center, minimum.

H. Install snap cover to conceal fasteners.

I. Apply color matched sealant at joints of dissimilar materials.

3.07 JOINT TREATMENT

A. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.

B. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
   2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   3. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
   4. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
   5. Level 0: Surfaces indicated to be finished in later stage of project.

C. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.
   2. Taping, filling, and sanding are not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

D. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

E. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.08 EXISTING WALL REPAIR AND FINISH

A. Finish existing wall to be repaired at locations of wall covering removal to finish level indicated for new work.

B. Walls with existing textured finish to be evened out and blended to create finish level indicated for new work.

3.09 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

$ PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for wall applications.

B. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

A. Section 07 9200 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

B. Section 09 2116 - Gypsum Board Assemblies: Tile backer board.

1.03 REFERENCE STANDARDS

A. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.

B. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation; 2019.

C. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2023.

D. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2025.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate tile layout, patterns, perimeter conditions, thresholds, ceramic accessories, and setting details.

C. Product Verification: Samples are not required. Confirm with digital image indicating product, style, size and color as indicated on drawings or as specified herein.

D. Installer's Qualification Statement:
   1. Submit documentation of National Tile Contractors Association (NTCA) or Tile Contractors' Association of America (TCAA) accreditation; www.tile-assn.com/#sle
   2. Submit documentation of completion of apprenticeship and certification programs.

E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Tile: 4 square feet of each size, color, and surface finish combination.

1.06 QUALITY ASSURANCE

A. Installer Qualifications:
   1. Company specializing in performing tile installation, with minimum of five years of documented experience.
      a. Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).
   2. Installer Certification:
      a. Ceramic Tile Education Foundation (CTEF): Certified Tile Installer (CTI).
      b. Apprenticeship Program: Installer has achieved Journeyworker status through an apprenticeship from the International Union of Bricklayers and Allied Craftworkers (IUBAC) or a U.S. Department of Labor (DOL)-recognized program.
      c. Advanced Certifications for Tile Installers (ACT): Certification in the installation of membranes, mortar bed (mud) floors, mortar (mud) walls, shower receptors, large format tile, gauged porcelain tile/panels/slabs, and grouts.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

1.09 WARRANTY

A. Tile Manufacturer's Warranty: Provide manufacturer's standard limited warranty.

B. Gauged Porcelain Tile/Panels Setting Limited Warranty: Provide system 15 year warranty which states the system will maintain the bond between the gauged porcelain tile/panels for interior walls and floors and approved substrate, under normal use provided the product was properly applied as a system.

PART 2 PRODUCTS

2.01 TILE

A. See Finish Schedule on interiors drawings for tile manufacturers, products and color selections.

2.02 TRIM AND ACCESSORIES

A. Non-Ceramic Trim: Brushed stainless steel, style and dimensions to suit application, for setting using tile mortar or adhesive.
   1. Applications:
      a. Open edges of wall tile.
   2. Products:
      a. Genesis APS International: www.genesis-aps.com/#sle.
      b. Schluter-Systems: www.schluter.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

2.03 SETTING MATERIALS

A. Provide setting and grout materials from same manufacturer.

B. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
   1. Applications: Use this type of bond coat where indicated, and where no other type of bond coat is indicated. For standard size tile (less than 15 inches on any one side) and Large Format Tile (and tile with greater than 15 inches one any one side)
   2. Products:
      a. ARDEX Engineered Cements; ARDEX N 23 MICROTEC: www.ardexamericas.com/#sle.
      b. Custom Building Products; ProLite Premium Rapid Setting Large Format Tile Mortar, with Multi-Surface Bonding Primer: www.custombuildingproducts.com/#sle.
      c. H.B. Fuller Construction Products, Inc; TEC TotalFlex 110 Universal Mortar: www.tecspecialty.com/#sle.
      d. LATICRETE International, Inc; TRI-LITE: www.laticrete.com/#sle.
      e. Mapei Corporation; Kerabond/Kerealastic System: www.mapei.com.
      f. Merkrete, by Parex USA, Inc; Merkrete 720 Marble Pro: www.merkrete.com/#sle.
      g. Substitutions: See Section 01 6000 - Product Requirements.

C. Improved Latex-Portland Cement Mortar Bond Coat: ANSI A118.15.
   1. Applications: Use this type of bond coat where indicated, and where no other type of bond coat is indicated. Used for Walls, Submerged applications, and Freeze/Thaw applications.
   2. Products:
      a. ARDEX Engineered Cements; S 28 (for interior use only): www.ardexamericas.com/#sle.
      b. Custom Building Products; Complete Contact-LFT Premium Rapid Setting Large Format Tile Mortar, with Multi-Surface Bonding Primer: www.custombuildingproducts.com/#sle.
      c. H.B. Fuller Construction Products, Inc; TEC TotalFlex 150 Universal Mortar: www.tecspecialty.com/#sle.
      d. LATICRETE International, Inc; LATICRETE 254 Platinum: www.laticrete.com/#sle.
      e. [Mapei Corporation; Planitop Basecoat System: www.mapei.com].
      f. Substitutions: See Section 01 6000 - Product Requirements.

2.04 GROUTS

A. Provide setting and grout materials from same manufacturer.

B. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
   1. Applications: Use this type of grout where indicated and where no other type of grout is indicated. Stain and crack resistant.
   2. Use sanded grout for joints 1/8 inch wide to 1/2 inch wide; use unsanded grout for joints less than 1/8 inch wide and for glass marble tile.
   3. Color(s): As indicated on drawings.
   4. Products:
      a. ARDEX Engineered Cements; ARDEX FL: www.ardexamericas.com/#sle.
      b. H.B. Fuller Construction Products, Inc; TEC AccuColor Plus Grout: www.tecspecialty.com/#sle.
      c. LATICRETE International, Inc; LATICRETE PERMACOLOR Select Grout: www.laticrete.com/#sle.
      d. Merkrete, by Parex USA, Inc; Merkrete Pro Grout: www.merkrete.com/#sle.
      e. Mapei Corporation; Ultracolor Plus FA; www.mapei.com.
      f. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Protect surrounding work from damage.

3.03 INSTALLATION - GENERAL

A. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
   1. If offset pattern is required for tiles of 18 inches or larger, use an offset pattern of no greater than 1/3.

B. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

C. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

D. Form internal angles square and external angles bullnosed.

E. Install non-ceramic trim in accordance with manufacturer's instructions.

F. Sound tile after setting. Replace hollow sounding units.

G. Keep control and expansion joints free of mortar, grout, and adhesive.

H. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

I. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

J. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

K. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - WALL TILE

A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms and kitchens.

3.05 CLEANING

A. Clean tile and grout surfaces.

3.06 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Acoustical units.

B. Suspension systems.

1.02 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2010, with 2013 Supplements and Errata.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

D. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

E. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2023, with Editorial Revision (2024).

F. ASTM C635/C635M - Standard Specification for Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings; 2022.

G. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels; 2019.

H. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2024.

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

J. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2026.

K. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions; 2022.

L. ASTM E795 - Standard Practices for Mounting Test Specimens during Sound Absorption Tests; 2023.

M. ASTM E1264 - Standard Classification for Acoustical Ceiling Products; 2023.

N. CHPS (HPPD) - High Performance Products Database; Current Edition.

O. FM (AG) - FM Approval Guide; Current Edition.

P. ISO 14644-1 - Cleanrooms and Associated Controlled Environments - Part 1: Classification of Air Cleanliness by Particle Concentration; 2015.

Q. ITS (DIR) - Directory of Listed Products; Current Edition.

R. UL (FRD) - Fire Resistance Directory; Current Edition.

S. UL (GGG) - GREENGUARD Gold Certified Products; Current Edition.

1.03 ADMINISTRATIVE REQUIREMENTS

A. Sequencing: Install acoustical ceilings after building is enclosed, sufficient heat is provided, dust-generating activities are terminated, and overhead work is completed, tested, and approved. Install acoustical units after interior wet work is dry.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate grid layout and related dimensioning.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Armstrong World Industries, Inc: www.armstrongceilings.com/#sle.

2.02 PERFORMANCE REQUIREMENTS

A. Fire-Resistance Rating: Tested in accordance with ASTM E119 and complying with the following:

B. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E84.

2.03 ACOUSTICAL UNITS

A. Acoustical Panels, Type As indcatd in drawings: With the following characteristics:
   1. Thickness: 3/4 inch.
   2. Panel Edge: As indicated in drawings.
   3. Color: White.

2.04 SUSPENSION SYSTEMS

A. Metal Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold-down clips, stabilizer bars, clips, and splices as required.
   1. Materials: As indicated in drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that layout of hangers does not interfere with other work.

3.02 PREPARATION

A. Install after major above-ceiling work is complete.

B. Coordinate location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEMS

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions, as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Where ducts or other equipment prevent regular spacing of hangers, reinforce nearest affected hangers and related carrying channels to span extra distance.

D. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

E. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.

F. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Lay directional patterned units with pattern parallel to longest room axis.

D. Fit border trim neatly against abutting surfaces.

E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.

F. Cutting Acoustical Units:
   1. Make field cut edges of same profile as factory edges.
   2. Double cut and field paint exposed reveal edges.

3.05 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.

B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

3.06 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Clean surfaces.

END OF SECTION

SECTION 09 6500 RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Resilient tile flooring.

B. Resilient base.

C. Resilient stair accessories.

D. Installation accessories.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied resilient flooring.

1.03 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate seaming plans and floor patterns.

C. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.

D. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.

E. Installer's Qualification Statement.

F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Flooring Material: 10 square feet of each type and color.
   3. Extra Wall Base: 25 linear feet of each type and color.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in installing specified flooring with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

1.07 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

PART 2 PRODUCTS

2.01 TILE FLOORING

A. Vinyl Tile (LVT):
   1. Manufacturer: As indicated on drawings.
   2. Color: As indicated on drawings.

2.02 RESILIENT BASE

A. Resilient Base: ASTM F1861, As indicated in drawings
   1. Manufacturer: As indicated on drawings.
   2. Manufacturers:
      a. Substitutions: See Section 01 6000 - Product Requirements.
   3. Height: As indicated in drawings .
   4. Thickness: 0.125 inch.
   5. Length: Roll.
   6. Color: As indicated on drawings.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Seam Sealer: Waterproof; types recommended by flooring manufacturer.

C. Adhesive for Vinyl Flooring:
   1. Manufacturers:
      a. H.B. Fuller Construction Products, Inc; TEC Trowel Fast Vinyl Flooring Adhesive: www.tecspecialty.com/#sle.
      b. Stauf USA, LLC; D737 High-Tack: www.staufusa.com/#sle.
      c. Substitutions: Section 01 6000 - Product Requirements.

D. Moldings, Transition and Edge Strips: same material and manufacturer as resilient base.

E. Stair nosing as indicated in drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.

B. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
   1. Test as Follows:
      a. Alkalinity (pH): ASTM F710.
   2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. A. Prepare floor substrates for installation of flooring in accordance with section 09 0561Install primer in accordence with manufacturers instructions.

B. Remove subfloor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve smooth, flat, hard surface.

C. Prohibit traffic until filler is fully cured.

D. Clean substrate.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install in accordance with manufacturer's written instructions.

C. Adhesive-Applied Installation:
   1. Place copper grounding strip in conductive adhesive and apply additional adhesive to top side of strip before installing static control flooring. Allow strip to extend beyond flooring in accordance with static control flooring manufacturer's instructions. Refer to Section 26 0526 for grounding and bonding to building grounding system.
   2. Fit joints and butt seams tightly.
   3. Set flooring in place, press with heavy roller to attain full adhesion.

D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
   1. Resilient Strips: Attach to substrate using adhesive.

F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

G. Install flooring in recessed floor access covers, maintaining floor pattern.

3.04 INSTALLATION - TILE FLOORING

A. Mix tile from container to ensure shade variations are consistent when tile is placed, unless otherwise indicated in manufacturer's installation instructions.

B. Lay flooring with joints and seams parallel to building lines to produce symmetrical pattern.

3.05 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

3.06 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

B. Clean in accordance with manufacturer's written instructions.

3.07 PROTECTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

This page intentionally left blank

SECTION 09 6813 TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

B. Removal of existing carpet tile.

1.02 RELATED REQUIREMENTS

A. Section 01 7419 - Construction Waste Management and Disposal: Reclamation/Recycling of new carpet tile scrap.

B. Section 03 3000 - Cast-in-Place Concrete: Restrictions on curing compounds for concrete slabs and floors to receive adhesive-applied flooring.

C. Section 09 0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

D. Section 09 6816 - Sheet Carpeting: Broadloom carpet.

1.03 REFERENCE STANDARDS

A. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2022.

B. CRI (GLP) - Green Label Plus Testing Program - Certified Products; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate direction of carpet pile.

C. Product Verification: Samples are not required. Confirm with digital image indicating product, style, size and color as indicated on drawings or as specified herein.

D. Operation and Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in installing carpet tile with minimum three years documented experience.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Tile Carpeting:
   1. As indicated in drawings

2.02 MATERIALS

A. See Finish Schedule on interiors drawings for tile carpet manufacturers, products and color selections.

2.03 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Stair Nosing: As specified in Section 09 6500.

C. Adhesives:
   1. Compatible with materials being adhered; maximum VOC content of 50 g/L; CRI (GLP) certified; in lieu of labeled product, independent test report showing compliance is acceptable.

D. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test as Follows:
      a. Alkalinity (pH): ASTM F710.
   2. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

B. Vacuum clean substrate.

3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet tile in accordance with manufacturer's instructions.

C. Blend carpet from different cartons to ensure minimal variation in color match.

D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.

E. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.

F. Trim carpet tile neatly at walls and around interruptions.

G. Complete installation of edge strips, concealing exposed edges.

3.04 INSTALLATION ON STAIRS

A. Use one piece of carpet for each tread and the riser below. Apply seam adhesive to all cut edges.

B. Lay carpet with pile direction in the length of the stair.

C. Adhere carpet tight to stair treads and risers.

3.05 CLEANING

A. Remove excess adhesive without damage, from floor, base, and wall surfaces.

B. Clean and vacuum carpet surfaces.

END OF SECTION

SECTION 09 6816 SHEET CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet, stretched-in with cushion underlay and direct-glued as needed.

B. Removal of existing carpet.

1.02 RELATED REQUIREMENTS

A. Section 01 7419 - Construction Waste Management and Disposal: Reclamation/Recycling of new carpet scrap, new cushion scrap, removed carpet, and removed carpet cushion.

B. Section 09 0561 - Common Work Results for Flooring Preparation: Independent agency testing of concrete slabs, removal of existing floor coverings, cleaning, and preparation.

C. Section 09 6813 - Tile Carpeting.

1.03 REFERENCE STANDARDS

A. CRI 104 - Standard for Installation of Commercial Carpet; 2018.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.

C. Shop Drawings: Indicate seaming plan, method of joining seams, direction of carpet pile and pattern, location of edge moldings and edge bindings, layout of flat wire system.

D. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet with minimum three years documented experience.

B. Installer Qualifications: Company specializing in installing carpet with minimum three years documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.06 FIELD CONDITIONS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

B. Maintain minimum 70 degrees F ambient temperature 24 hours prior to, during and 24 hours after installation.

C. Ventilate installation area during installation and for 72 hours after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Carpet:
   1. As indicated in drawings.
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 CARPET

A. As indicated in drawings

2.03 ACCESSORIES

A. Subfloor Filler: Type recommended by carpet manufacturer.

B. Tackless Strip: Carpet gripper, of type recommended by carpet manufacturer to suit application, with attachment devices.

C. Carpet Adhesive: Recommended by carpet manufacturer; releasable type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive carpet.

B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesives to subfloor surfaces.

C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
   1. Test in accordance with Section 09 0561.
   2. Test as Follows:
   3. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.

3.02 PREPARATION

A. Remove existing carpet and carpet cushion.

B. Prepare floor substrates for installation of flooring in accordance with Section 09 0561.

C. Prepare floor substrates as recommended by flooring and adhesive manufacturers.

D. Remove subfloor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with subfloor filler.

E. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

F. Clean substrate.

3.03 INSTALLATION - GENERAL

A. Starting installation constitutes acceptance of subfloor conditions.

B. Install carpet and cushion in accordance with manufacturer's instructions and CRI 104 (Commercial).

C. Verify carpet match before cutting to ensure minimal variation between dye lots.

D. Lay out carpet and locate seams in accordance with shop drawings.
   1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
   2. Do not locate seams perpendicular through door openings.
   3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
   4. Locate change of color or pattern between rooms under door centerline.
   5. Provide monolithic color, pattern, and texture match within any one area.

E. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.

3.04 DIRECT-GLUED CARPET

A. Double cut carpet seams, with accurate pattern match. Make cuts straight, true, and unfrayed. Apply seam adhesive to cut edges of woven carpet immediately.

B. Apply contact adhesive to floor uniformly at rate recommended by manufacturer. After sufficient open time, press carpet into adhesive.

C. Apply seam adhesive to the base of the edge glued down. Lay adjoining piece with seam straight, not overlapped or peaked, and free of gaps.

D. Roll with appropriate roller for complete contact of adhesive to carpet backing.

E. Trim carpet neatly at walls and around interruptions.

3.05 INSTALLATION ON STAIRS

A. Use one piece of carpet for each tread and the riser below. Apply seam adhesive to all cut edges.

B. Install carpet with pile direction in the length of the stair.

C. Adhere carpet tight to stair treads and risers.

3.06 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove excess adhesive from floor and wall surfaces without damage.

C. Clean and vacuum carpet surfaces.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
   5. Floors, unless specifically indicated.
   6. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting.

B. Section 09 9600 - High-Performance Coatings.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020 (Reapproved 2025).

C. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

D. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

E. SSPC-SP 13/NACE No.6 - Surface Preparation of Concrete; 2018.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.

1.05 MOCK-UPS

A. See Section 01 4000 - Quality Requirements, for general requirements for mock-up.

B. Provide panel, 6 feet long by 6 feet wide, illustrating paint color, texture, and finish.

C. Provide door and frame assembly illustrating paint color, texture, and finish.

D. Locate where directed by Architect.

E. Mock-up may remain as part of the work.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
   1. If a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

B. Paints:
   1. Behr Paint Company; : www.behr.com/#sle.
   2. PPG Paints: www.ppgpaints.com/#sle.
   3. Sherwin-Williams Company: www.sherwin-williams.com/#sle.
   4. Benjamin Moore: www,benjaminmoore.com.

C. Primer Sealers: Same manufacturer as top coats.

D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.
   1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
   2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
   3. Supply each paint material in quantity required to complete entire project's work from a single production run.
   4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
   1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
      a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
   2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

D. Colors: As indicated on drawings.

2.03 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, brick, fiber cement siding, primed wood, and primed metal.
   1. Two top coats and one coat primer.
   2. Application: Vertical and Overhead, standard use.

3. Top Coat(s): Exterior Latex.
   a. Products:
      1) PPG Paints Speedhide Exterior Latex Flat, 6-610XI Series.
      2) Sherwin-Williams A-100 Exterior Latex Flat.
      3) Substitutions: See Section 01 6000 - Product Requirements
4. Top Coat(s): Exterior Light Industrial Coating, Water Based.
   a. Application: Doors.
   b. Products:
      1) PPG Paints Pitt-Tech Plus EP DTM Industrial Enamel, 90-1610 Series, Semi-Gloss.
      2) Sherwin-Williams Pro Industrial Acrylic, Semi-gloss.
      3) Substitutions: See Section 01 6000 - Product Requirements
5. Top Coat(s): Exterior High Build Latex.
   a. Application: Exterior masonry, block, and concrete.
   b. Products:
      1) Pittsburgh Paints Perma-Crete Interior/Exterior Acrylic High Build, 4-22XI Series, Flat.
      2) Sherwin-Williams Conflex XL Smooth.
      3) Substitutions: See Section 01 6000 - Product Requirements
6. Top Coat(s): Exterior Pigmented Elastomeric, Water Based.
   a. Application: Exterior block or stucco.
   b. Products:
      1) PPG Paints: 4-110XI Series Perma-Crete Pitt-Flex Elastomeric Coating Flat.
      2) Sherwin-Williams Conflex XL Smooth.
      3) Substitutions: See Section 01 6000 - Product Requirements

B. Paint E-TR-C - Transparent Finish on Concrete Floors:
   1. 2 coats stain.
   2. Stain: Semi-Transparent Stain for Concrete Floors.
      a. Application: Horizontal concrete surfaces as a "stand alone" finish.
      b. Products:
         1) PPG Paints Perma-Crete Color Seal WB Interior/Exterior Acrylic Concrete Stain, 4-4210 Series.
         2) Sherwin-Williams H&C Semi Transparent stain.
         3) Substitutions: See Section 01 6000 - Product Requirements
   3. Stain: Solid Color Stain for Concrete.
      a. Application: Horizontal concrete surfaces as a "stand alone" finish.
      b. Products:
         1) Pittsburgh Paints Perma-Crete Color Seal WB Interior/Exterior Acrylic Concrete Stain, 4-4210XI Series, Satin.
         2) Sherwin-Willliams H&C Colortop Waterbased Solid Color Stain.
         3) Substitutions: See Section 01 6000 - Product Requirements
   4. Sealer: Water Based Sealer for Concrete Floors.
      a. Application: Horizontal concrete floors, decks and exposed aggregate driveways and walkways.
      b. Products:
         1) PPG Paints Perma-Crete Plex-Seal WB Interior/Exterior Clear Sealer, 4-6200.
         2) Sherwin-Williams H&C Clarishield Water-Based Wet-Look Concrete Sealer.
         3) Substitutions: See Section 01 6000 - Product Requirements

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
   1. Alkali Resistant Water Based Primer.
      a. Application: Above grade concrete, masonry, stucco, and plaster.
      b. Products:
         1) PPG Paints: 4-603XI Perma-Crete Interior/Exterior Alkali Resistant Primer.
         2) Sherwin-Williams Loxon Concrete and Masonry Primer Sealer, LX02W50.

3) Substitutions: See Section 01 6000 - Product Requirements

2. Exterior Latex Block Filler.
   a. Application: CMU
   b. Products:
      1) PPG Paints: 6-15XI Speedhide Masonry Hi Fill Latex Block Filler.
      2) Sherwin-Williams ConFlex Block Filler.
      3) Sherwin-Williams PreRite Block Filler.
      4) Substitutions: See Section 01 6000 - Product Requirements
3. Rust-Inhibitive Water Based Primer.
   a. Application: Metal (steel, galvanized, aluminum)
   b. Products:
      1) Pittsburgh Paints Pitt-Tech Plus EP DTM Industrial Primer, 90-1908. (MPI #107)
      2) Sherwin-Williams Pro Cryl Acrylic Primer.
      3) Substitutions: See Section 01 6000 - Product Requirements
4. Latex Primer for Exterior Wood.
   a. Application: Wood
   b. Products:
      1) PPG Paints Seal Grip Acrylic Primer, 17-921XI Series.
      2) Sherwin-Williams Exterior Latex Primer, B42W8041.
      3) Substitutions: See Section 01 6000 - Product Requirements
5. Alkyd/Oil Primer for Exterior Wood.
   a. Application: Wood knots and stains.
   b. Products:
      1) PPG Paints Seal Grip Interior/Exterior Alkyd Universal Primer Sealer, 17-941NF Series.
      2) Sherwin-Williams Extreme Block Stain Blocking Primer.
      3) Substitutions: Section 01 6000 - Product Requirements.
6. Bonding Primer, Water Based.
   a. Application: Plastic, glass, tile, slick surfaces.
   b. Products:
      1) PPG Paints Seal Grip Acrylic Primer, 17-921XI Series.
      2) Sherwin-Williams Extreme Bond Primer.
      3) Substitutions: See Section 01 6000 - Product Requirements
7. Acrylic Surface Conditioner.
   a. Application: Concrete and masonry before 30 day cure.
   b. Products:
      1) Pittsburgh Paints Perma-Crete Interior/Exterior Acrylic Masonry Sealer, 4-808/809 Series.
      2) Sherwin-Williams Loxon Conditioner.
      3) Substitutions: See Section 01 6000 - Product Requirements

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. Test shop-applied primer for compatibility with subsequent cover materials.

E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   2. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
   3. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Concrete:
   1. Prepare surface as recommended by top coat manufacturer and in accordance with SSPC-SP 13/NACE No.6.

G. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.

H. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

I. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

J. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

K. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

L. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

M. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.

B. Apply products in accordance with manufacturer's written instructions.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

This page intentionally left blank

SECTION 09 9123 INTERIOR PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated.
   1. Mechanical and Electrical:
      a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.

D. Do Not Paint or Finish the Following Items:
   1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
   2. Items indicated to receive other finishes.
   3. Items indicated to remain unfinished.
   4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
   5. Stainless steel, anodized aluminum, bronze, terne-coated stainless steel, and lead items.
   6. Marble, granite, slate, and other natural stones.
   7. Floors, unless specifically indicated.
   8. Ceramic and other tiles.
   9. Brick, architectural concrete, cast stone, integrally colored plaster, and stucco.
   10. Glass.
   11. Concealed pipes, ducts, and conduits.

1.02 RELATED REQUIREMENTS

A. Section 05 5000 - Metal Fabrications: Shop-primed items.

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D3359 - Standard Test Methods for Rating Adhesion by Tape Test; 2023.

C. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials; 2020 (Reapproved 2025).

D. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

E. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

F. SSPC-SP 13/NACE No.6 - Surface Preparation of Concrete; 2018.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g., "alkyd enamel").
   2. Cross-reference to specified paint system products to be used in project; include description of each system.

C. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
   1. Where sheen is specified, submit samples in only that sheen.
   2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens not required.
   3. Allow 30 days for approval process, after receipt of complete samples by Architect.

D. Test and Evaluation Reports: Adhesion Testing reports.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.

2. Extra Paint and Finish Materials: 1 gal of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum 5 years experience and approved by manufacturer.

B. Preconstruction Testing: Adhesion Testing.
1. At request of Architect conduct adhesion test at indicated areas. Architect will select a minimum of three surfaces to represent surfaces and conditions for adhesion testing.
2. Conduct testing in accordance with ASTM D3359 after minimum 7 day cure time of coating to be tested.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.07 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Minimum Application Temperatures for Paints: 50 degrees F for interiors unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
1. If a single manufacturer cannot provide specified products; minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.

B. Paints:
1. Sherwin-Williams Company: www.sherwin-williams.com/#sle.

C. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless intended to be a field-catalyzed paint.
1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
3. Supply each paint material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:

a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.

2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

D. Colors: As indicated on drawings.

1. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling under which they are mounted.

2.03 PAINT SYSTEMS - INTERIOR

A. Paint I-OP - Interior Surfaces to be Painted, Unless Otherwise Indicated.

1. Two top coats and one coat primer.
2. I-OP-C - Top Coat(s): Conventional Interior Latex.
   a. Application: Used for gypsum board, concrete, concrete masonry units, brick, plaster, and shop primed steel.
   b. Products:
      1) Sherwin-Williams Emerald Interior Acrylic Latex Paint, Flat
      2) Sherwin-Williams Emerald Interior Acrylic Latex Paint, Stain
      3) Substitutions: See Section 01 6000 - Product Requirements
3. Top Coat Sheen:
   a. Flat: Use this sheen for ceilings and other overhead surfaces.
   b. Satin: Use this sheen at all walls & faciae.

B. Paint I-OP-MD-DT - Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:

1. Medium duty applications include doors, door frames, railings, handrails, guardrails, and balustrades.
2. Two top coats and one coat primer.
3. Top Coat(s): Interior Epoxy-Modified Latex.
   a. Products:
      1) Sherwin-Williams Waterbased Catalyzed Epoxy, Semi-Gloss.
      2) Substitutions: See Section 01 6000 - Product Requirements
4. Top Coat(s): Interior Light Industrial Coating, Water Based.
   a. Application: Doors only. Do not use on handrails.
   b. Products:
      1) Sherwin-Williams Emerald Urethane Trim Paint, Semi-Gloss
      2) Substitutions: See Section 01 6000 - Product Requirements

C. Paint I-OP-MD-WC - Medium Duty Overhead: Including gypsum board, concrete, concrete masonry units, uncoated steel, shop primed steel, galvanized steel, and aluminum.

1. Two top coats and one coat primer.
2. Top Coat(s): Interior Epoxy-Modified Latex.
   a. Application: High Moisture areas, i.e. natatoriums and showers.
   b. Products:
      1) Sherwin-Williams Waterbased Catalyzed Epoxy, Semi-Gloss.
      2) Substitutions: See Section 01 6000 - Product Requirements

D. Paint I-TR-C - Transparent Finish on Concrete Floors.

1. 2 coats stain.
2. Sealer: Water Based Sealer for Concrete Floors.
   a. Products:
      1) PPG Paints Perma-Crete Plex-Seal WB Interior/Exterior Clear Sealer, 4-6200XI, Satin.
      2) Sherwin-Williams H&C Clarishield Water-Based Wet-Look Concrete Sealer.
      3) Substitutions: See Section 01 6000 - Product Requirements

2.04 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
   1. Alkali Resistant Water Based Primer.
      a. Application: Above grade concrete, masonry, stucco and plaster.
      b. Products:
         1) Sherwin-Williams Loxon Concrete and Masonry Primer Sealer, LX02W50.
         2) Substitutions: See Section 01 6000 - Product Requirements
   2. Interior Primer Sealer.
      a. Application: Gypsum board and plaster.
      b. Products:
         1) Sherwin-Williams ProMar 200 Zero VOC Interior Latex Primer.
         2) Substitutions: See Section 01 6000 - Product Requirements
   3. Interior/Exterior Latex Block Filler.
      a. Application: Concrete Masonry Units.
      b. Products:
         1) PPG Paints Speedhide Masonry Hi Fill Latex Block Filler, 6-15XI.
         2) Sherwin-Williams ConFlex Block Filler.
         3) Sherwin-Williams PrepRite Interior/Exterior Block Filler.
         4) Substitutions: See Section 01 6000 - Product Requirements
   4. Interior Rust-Inhibitive Water Based Primer.
      a. Application: Metal (steel, galvanized and aluminum).
      b. Products:
         1) PPG Paints Pitt-Tech Plus Interior/Exterior EP DTM Waterborne Acrylic Primer/Finish, 90-1908.
         2) Sherwin-Williams Pro Industrial Pro Cryl Universal Acrylic Primer.
         3) Substitutions: See Section 01 6000 - Product Requirements
   5. Latex Primer for Interior Wood.
      a. Application: Wood.
      b. Products:
         1) PPG Paints Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer, 17-921XI Series.
         2) Sherwin-Williams Premium Wall and Wood Primer.
         3) Substitutions: See Section 01 6000 - Product Requirements
   6. Bonding Primer, Water Based.
      a. Application: Used on glossy surfaces such as plastics, fiberglass, laminates, cured alkyd finishes, glass and tile.
      b. Products:
         1) PPG Paints Seal Grip Interior/Exterior Acrylic Universal Primer/Sealer, 17-921XI Series.
         2) Sherwin-Williams Extreme Bond Primer.
         3) Substitutions: See Section 01 6000 - Product Requirements

2.05 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been adequately prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

E. Test shop-applied primer for compatibility with subsequent cover materials.

F. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
   1. Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
   3. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
   4. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Concrete:
   1. Prepare surface as recommended by top coat manufacturer and in accordance with SSPC-SP 13/NACE No.6.

F. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content, alkalinity of surfaces, or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
   2. Prepare surface as recommended by top coat manufacturer.

G. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

H. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.

I. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

J. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

K. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Re-prime entire shop-primed item.
   3. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3. Protect from corrosion until coated.

L. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

M. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with tinted primer.

N. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION

A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.

B. Apply products in accordance with manufacturer's written instructions.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Sand wood and metal surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

SECTION 09 9300 STAINING AND TRANSPARENT FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Field application of stains.

B. Field application of transparent finishes.

1.02 RELATED REQUIREMENTS

A. Section 09 9113 - Exterior Painting: Stains and transparent finishes for concrete substrates.

B. Section 09 9123 - Interior Painting: Stains and transparent finishes for concrete substrates.

1.03 REFERENCE STANDARDS

A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer's name, product name and catalog number, and general product category.
2. Manufacturer's installation instructions.

C. Samples: Submit two samples, illustrating colors and sheens for each system. Submit on actual wood substrate to be finished, 4 by 6 inch in size.

D. Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention.

E. Maintenance Data: Submit coating maintenance manual including finish schedule showing where each product/color/finish was used, product technical data sheets, safety data sheets (SDS), care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of stain or transparent finish, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Stain and Transparent Finish Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by manufacturer of stains and transparent finishes.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply materials when relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point, or to damp or wet surfaces.

D. Minimum Application Temperature: 50 degrees F unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 fc measured mid-height at substrate surface.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide finishes from the same manufacturer to the greatest extent possible.

1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
2. Substitution of other products by the same manufacturer is preferred over substitution of products by a different manufacturer.

2.02 STAINS AND TRANSPARENT FINISHES - GENERAL

A. Finishes:

1. Provide finishes capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
2. Provide materials compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
3. Supply each finish material in quantity required to complete entire project's work from a single production run.
4. Do not reduce, thin, or dilute finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

C. Colors: To be selected from manufacturer's full range of available colors.
1. Selection to be made by Architect after award of contract.
2. Extend colors to surface edges; colors may change at any edge as directed by Architect.

2.03 INTERIOR STAIN AND TRANSPARENT FINISH SYSTEMS

A. Finish on Wood:
1. Stain: Semi-Transparent Stain for Wood, Solvent Based.
   a. Application: Wood trim, doors, paneling, glue laminated beams and dimension lumber to be top-coated with clear varnish.
   b. Products:
      1) PPG Paints Deft Interior Oil-Based Wood Stain, DFT400 Series.
      2) Sherwin Williams Minwax Performance Series Tintable Wood Stain.
      3) Substitutions: Section 01 6000 - Product Requirements.
2. Sealer: Alkyd, Sanding Sealer, Clear.
   a. Application: Interior wood surfaces that are to be top-coated with alkyd varnish. (Not for use with polyurethane varnish top coats.) Optional for smoother grain, either before or during staining process.
   b. Products:
      1) PPG Paints Deft Interior Oil-Based Sanding Sealer, DFT60.
      2) Sherwin-Williams Minwax Performance Series Fast Drying Sanding Sealer.
      3) Substitutions: Section 01 6000 - Product Requirements.
3. Top Coat: Polyurethane Varnish, Oil Modified.
   a. Application: Wood trim, doors, paneling, glue laminated beams and dimension lumber to be top-coated with clear varnish.
   b. Products:
      1) PPG Paints Deft Interior Polyurethane Oil-Based 350 VOC, DFT129, Satin.
      2) Sherwin-Williams Minwax Performance Fast Drying Polyurethane 350 VOC; Satin.
      3) Substitutions: Section 01 6000 - Product Requirements.
4. Top Coat: Clear Water-Based Varnish.
   a. Application: Wood trim, doors, paneling, glue laminated beams and dimension lumber to be top-coated with clear varnish.
   b. Products:
      1) PPG Paints Deft Interior/Exterior Water-Based Polyurethane, DFT259, Satin.
      2) Sherwin-Williams Minwax Waterbase Oil Modified Polyurethane Varnish, Satin.
      3) Substitutions: Section 01 6000 - Product Requirements.

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of finished surfaces.

B. Patching Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin application of stains and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.

D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or repair existing finishes that exhibit surface defects.

D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.

E. Seal surfaces that might cause bleed through or staining of topcoat.

F. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

G. Wood Surfaces to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

H. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

D. Sand wood surfaces lightly between coats to achieve required finish.

E. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

F. Wood to Receive Transparent Finishes: Tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

G. Reinstall items removed prior to finishing.

3.04 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. High performance coatings.

B. Surface preparation.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. 40 CFR 59, Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings; U.S. Environmental Protection Agency; Current Edition.

B. ASTM D3359 - Standard Test Methods for Rating Adhesion by Tape Test; 2023.

C. ASTM D4258 - Standard Practice for Surface Cleaning Concrete for Coating; 2023.

D. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

E. SSPC-SP 1 - Solvent Cleaning; 2015, with Editorial Revision (2016).

F. SSPC-SP 6/NACE No.3 - Commercial Blast Cleaning; 2006.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide complete list of all products to be used, with the following information for each:
   1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
   2. Cross-reference to specified coating system(s) product is to be used in; include description of each system.

C. Samples: Submit two samples 8 by 8 inch in size illustrating colors available for selection.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Test and Evaluation Reports: Adhesion Testing reports.

F. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

G. Maintenance Data: Include cleaning procedures and repair and patching techniques.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Extra Coating Materials: 1 gallon of each type and color.
   2. Label each container with manufacturer's name, product number, color number, and room names and numbers where used.

1.05 QUALITY ASSURANCE

A. Maintain one copy of each referenced document that applies to application on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

C. Applicator Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.

D. Preconstruction Testing: Adhesion Testing.
   1. At request of Architect conduct adhesion test at indicated areas. Architect will select a minimum of three surfaces to represent surfaces and conditions for adhesion testing.
   2. Conduct testing in accordance with ASTM D3359 after minimum 7 day cure time of coating to be tested.

1.06 MOCK-UPS

A. See Section 01 4000 - Quality Requirements for general requirements for mock-ups.

B. Provide mock-up , 2 feet long by 4 feet wide, illustrating coating, color, and surface sheen, for each specified coating.

C. Locate where directed.

D. Mock-up may remain as part of the work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of coating, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Coating Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.08 FIELD CONDITIONS

A. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the coating product manufacturer.

C. Do not install materials when temperature is below 55 degrees F or above 90 degrees F.

D. Maintain this temperature range, 24 hours before, during, and 72 hours after installation of coating.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

F. Restrict traffic from area where coating is being applied or is curing.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

C. Warranty: Include coverage for bond to substrate and degradation of chemical resistance.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Provide high performance coating products from the same manufacturer to the greatest extent possible.
   1. In the event that a single manufacturer cannot provide specified products, minor exceptions will be permitted provided approval by Architect is obtained using the specified procedures for substitutions.
   2. Substitution of other products by the same manufacturer is preferred over substitution of products by a different manufacturer.

B. High-Performance Coatings:
   1. PPG Paints: www.ppgpaints.com/#sle.
   2. Sherwin-Williams Company: www.protective.sherwin-williams.com/industries.
   3. Tnemec Company, Inc: www.tnemec.com/#sle.
   4. Substitutions: Section 01 6000 - Product Requirements.

2.02 TOP COAT MATERIALS

A. Coatings - General: Provide complete multi-coat systems formulated and recommended by manufacturer for the applications indicated, in the thicknesses indicated; number of coats specified does not include primer or filler coat.
   1. Lead Content: Not greater than 0.06 percent by weight of total nonvolatile content.
   2. Chromium Content, as Hexavalent Chromium, Zinc Chromate, or Strontium Chromate: None.
   3. Volatile Organic Compound (VOC) Content:
      a. Provide coatings that comply with the most stringent requirements specified in the following:
         1) 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
      b. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
   4. Colors: Selected from manufacturer's standard colors.

B. Latex Coatingfor interior use:

1. Application: Higher level of scrubbability, hiding power, stain removal and burnish resistance than conventional latex paints. For gypsum board, metal and concrete.
2. Number of Coats: Two.
3. Top Coat(s): Latex, Interior, High Performance Architectural.
   a. Sheen: Eggshell.
   b. Products:
      1) PPG Paints; Pitt-Glaze WB1 Epoxy, 16-1310 Series: www.ppgpaints.com/#sle
      2) Sherwin-Williams; Pro Industrial Pre-Catalyzed Waterbased Epoxy: www.protective.sherwin-williams.com/#sle.
      3) Substitutions: Section 01 6000 - Product Requirements.
4. Primer: As recommended by coating manufacturer for specific substrate.

C. Acrylic Coating for exterior use:
1. Application: Higher level of chemical, humidity, and corrosion resistance than conventional latex paints.
2. Number of Coats: Two.
3. Top Coat(s): Acrylic, Exterior, High Performance Architectural.
   a. Sheen: Semi Gloss.
   b. Products:
      1) PPG Paints; PITT-TECH Plus Interior/Exterior Semi-Gloss DTM Industrial Enamel: www.ppgpaints.com/#sle.
      2) Sherwin-Williams; Sher-Cryl High Performance Acrylic: industrial.sherwin-williams.com
      3) Substitutions: Section 01 6000 - Product Requirements.
   c. Primer: As recommended by coating manufacturer for specific substrate

D. Elastomeric Coatingfor exterior use:
1. Number of Coats: Two.
2. Top Coat(s): Exterior Pigmented Elastomeric, Water Based.
   a. Application: High build, highly flexible coating for exterior block or stucco with waterproofing properties and protects from wind driven rain.
   b. Sheen:
   c. Products:
      1) PPG Paints; Perma-Crete Pitt-Flex Elastomeric Coating, 4-110XI Series: www.ppgpaints.com/#sle.
      2) Tnemec Company, Inc; Series 156 Enviro-Crete: www.tnemec.com/#sle.
      3) Sherwin-Williams Conflex Sherlastic Elastomeric Coating.
      4) Sherwin-Williams Conflex XL Smooth.
      5) Substitutions: Section 01 6000 - Product Requirements.
3. Primer: As recommended by coating manufacturer for specific substrate.

E. Epoxy Coatingfor interior use or exterior use with top coat:
1. Number of coats: Two.
2. Top Coat(s): Polyamide Epoxy.
   a. Application: For heavy traffic commercial environments and industrial exposures for steel and concrete.
   b. Sheen:
   c. Products:
      1) PPG Paints; Amerlock 400 High Solids Epoxy Coating, AK-400 Series, Semi-Gloss: www.ppgpaints.com/#sle.
      2) Sherwin-Williams; Macropoxy 646 Fast Cure Epoxy: www.protective.sherwin-williams.com/#sle.
      3) Tnemec Company, Inc; Series 287 Enviro-Pox: www.tnemec.com/#sle.
      4) Substitutions: Section 01 6000 - Product Requirements.
3. Top Coat(s): Epoxy-Modified Latex.
   a. Application: For exposure to moderate abrasion, strong stains, and incidental chemical contact on gypsum board, metal and concrete.
   b. Sheen: Eggshell or Semi-Gloss.
   c. Products:

1) PPG Paints; Aquapon WB EP Two-Component Water-Borne Epoxy, 98E-1/98E-100 Series, Semi-Gloss: www.ppgpaints.com/#sle.
2) Sherwin-Williams; Pro Industrial Water Based Catalyzed Epoxy: www.protective.sherwin-williams.com/#sle.
3) Substitutions: Section 01 6000 - Product Requirements.

4. Top Coat(s): Inorganic Water Based Epoxy.
   a. Application: Corrosion protection for steel and concrete substrates.
   b. Sheen: Satin.
   c. Products:
      1) Tnemec Company, Inc; Typoxy Series 27 WB: www.tnemec.com/#sle.
      2) Sherwin-Williams; Macropoxy 646 Fast Cure Epoxy: www.protective.sherwin-williams.com/#sle..
      3) Substitutions: Section 01 6000 - Product Requirements.
5. Primer: As recommended by coating manufacturer for specific substrate.

F. High-Build Epoxy Coatingfor interior use or exterior use with top coat:
   1. Number of Coats: Two.
   2. Top Coat(s): Epoxy, High-Build.
      a. Application: Concrete surfaces where a chemical resistant film is required.
      b. Sheen:
      c. Products:
         1) PPG Paints; Amerlock 400 Epoxy, AK-400 Series, Semi-Gloss: www.ppgpaints.com/#sle.
         2) Sherwin-Williams; Macropoxy 646 Fast Cure Epoxy: www.protective.sherwin-williams.com/#sle.
         3) Substitutions: Section 01 6000 - Product Requirements.
   3. Primer: As recommended by coating manufacturer for specific substrate.

G. Urethane Coatingfor exterior use:
   1. Number of Coats: Two.
   2. Top Coat(s): Polyurethane, Two-Component.
      a. Application: For higher abrasion, weather, chemical and solvent resistance on metal, concrete gypsum board and wood. i.e. doors, handrails, metal columns,
      b. Sheen: Semi-Gloss.
      c. Products:
         1) Sherwin-Williams; Acrolon 218 HS: www.protective.sherwin-williams.com/#sle.
         2) Tnemec Company, Inc; Series 1095 Endura-Shield: www.tnemec.com/#sle.
         3) Substitutions: Section 01 6000 - Product Requirements.
   3. Top Coat(s): Polyurethane, Water Based, One or Two-Component.
      a. Application: For abrasion, weather, chemical and solvent resistance on metal, concrete, gypsum board and wood. i.e. doors, handrails, metal columns, sloped metal roofs (requires two component).
      b. Sheen: Gloss.
      c. Products:
         1) Sherwin-Williams Pro Industrial Waterbased Alkyd Urethane: www.industrial.sherwin-williams.com/#sle
         2) Sherwin-Williams Pro Industrial Waterbased Acrolon 100: industrial.sherwin-williams.com/#sle
         3) Tnemec Company, Inc; Series 297 Enviro-Glaze: www.tnemec.com/#sle.
         4) Substitutions: Section 01 6000 - Product Requirements.
   4. Top Coat(s): Polyurethane, Water Based, Anti-Graffiti.
      a. Application: Applied over existing coating or bare substrate.
      b. Sheen: Satin.
      c. Products:
         1) Sherwin-Williams; 2K Waterbased Urethane Anti Graffiti Coating, B65-195/B65V195 Satin: www.protective.sherwin-williams.com/#sle.
         2) Substitutions: Section 01 6000 - Product Requirements.

H. Fluoropolymer Coating:

1. Application: Substrates i.e. aluminum, ferrous metal, galvanized steel, previously coated metal, PVDF coated metal, steel, tightly adhered rust, weathered galvanized steel.
2. Number of Coats: Two.
3. Top Coat(s): Air Dry Fluoropolymer, Two Component.
   a. Finish: Metallic.
   b. Products:
      1) Arkema, Inc; Kynar Aquatec: www.arkema.com/#sle.
      2) Pittsburgh Paints; Coraflon ADS: www.ppgpaints.com/#sle.
      3) Tnemec Company, Inc; Series 1071V Fluoronar: www.tnemec.com/#sle.
      4) Sherwin-Williams Fluorokem HS: www.protective.sherwin-williams.com/#sle.
      5) Substitutions: Section 01 6000 - Product Requirements.
4. Primer: As recommended by coating manufacturer for specific substrate.
5. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of areas with excessive fading, chalking, or flaking.

I. Acrylic Insulation Coating:
1. Application: Steel and non-ferrous metal going from interior to exterior conditions, to be top coated.
2. Number of Coats: Two.
3. Product Characteristics:
   a. Dry film thickness, per coat, 100, minimum.
4. Intermediate Coat(s): Acrylic insulation coating, one-component.
   a. Application: Steel and non-ferrous metal going from interior to exterior conditions, to be top coated.
   b. Sheen: Flat.
   c. Products:
      1) PPG Paints; Hi-Temp 808: www.ppgpaints.com/#sle.
      2) Sherwin-Williams Heat-Flex 3500 Thermal Insulative Coating: www.protective.sherwinwilliams.com.
      3) Tnemec Company, Inc; Series 971 Aerolon: www.tnemec.com/#sle.
      4) Substitutions: Section 01 6000 - Product Requirements.
5. Primer: As recommended by coating manufacturer for specific substrate.

2.03 PRIMERS

A. Primers: Provide the following unless other primer is required or recommended by coating manufacturer.
1. Primer Sealer, Latex, Interior.
   a. Application: Gypsum board and plaster.
   b. Products:
      1) Pittsburgh Paints; Speedhide zero VOC Interior Latex Sealer, 6-4900XI: www.ppgpaints.com/#sle. (MPI #50)
      2) Sherwin-Williams; ProMar 200 Zero VOC Interior Latex Primer: www.protective.sherwin-williams.com/#sle.
      3) Substitutions: Section 01 6000 - Product Requirements.
2. Block Filler, Epoxy.
   a. Application: CMU, high moisture areas, i.e. natatorium.
   b. Products:
      1) PPG Paints; Amerlock 400 Epoxy Block Filler, 400BF: www.ppgpaints.com/#sle.
      2) Sherwin-Williams Kem Cati-Coat HS Epoxy Filler/Sealer .
      3) Substitutions: Section 01 6000 - Product Requirements.
3. Block Filler, Latex.
   a. Application: CMU, typical use.
   b. Products:
      1) PPG Paints; Speedhide Masonry Hi Fill Latex Block Filler, 6-15XI: www.ppgpaints.com/#sle.
      2) Sherwin-Williams; Heavy Duty Block Filler: www.protective.sherwin-williams.com/#sle.

3) Substitutions: Section 01 6000 - Product Requirements.

4. Block Filler, Latex.
   a. Application: CMU and Concrete, with anti-gaffiti coating.
   b. Products:
      1) PPG Paints; 95-217 Cementitious Waterproofing Block Filler www.ppgpaints.com/#sle.
      2) Sherwin-Williams; Cement-Plex 875 Acrylic Block Filler www.industrial.sherwin-williams.com/#sle.
      3) Substitutions: Section 01 6000 - Product Requirements.
5. Anti-Corrosive for Metal, Alkyd.
   a. Application: Metal (steel). Provides higher corrosion resistance.
   b. Products:
      1) PPG Paints; Speedhide Interior/Exterior Rust Inhibitive Steel Primer, 6-212 Series: www.ppgpaints.com/#sle.
      2) Sherwin-Williams; Kem Bond HS: www.protective.sherwin-williams.com/#sle.
      3) Substitutions: Section 01 6000 - Product Requirements.
6. Anti-Corrosive for Metal, Epoxy.
   a. Application: Metal (steel, galvanized, aluminum) typically used on marginally prepared surfaces.
   b. Products:
      1) PPG Paints; Amerlock 400 Epoxy, Semi-Gloss, AK-400 Series: www.ppgpaints.com/#sle.
      2) Sherwin-Williams Macropoxy 646; www.protective.sherwinwilliams.com.
      3) Substitutions: Section 01 6000 - Product Requirements.
7. Rust-Inhibitive, Water Based.
   a. Application: Metal (steel, galvanized, aluminum) typically used on properly prepared surfaces.
   b. Products:
      1) PPG Paints; Pitt-Tech Plus Interior/Exterior Waterborne Acrylic Primer Finish EP DTM Industrial Enamel, 90-1908: www.ppgpaints.com/#sle.
      2) Sherwin-Williams; Pro Industrial Pro-Cryl Universal Primer: www.protective.sherwin-williams.com/#sle.
      3) Tnemec Company, Inc; Series 115 Uni-Bond DF: www.tnemec.com/#sle.
      4) Substitutions: Section 01 6000 - Product Requirements.
8. Alkali Resistant, Water Based.
   a. Application: Above grade concrete, masonry, stucco and plaster.
   b. Products:
      1) PPG Paints; Perma-Crete Interior/Exterior Alkali Resistant Primer, 4-603XI: www.ppgpaints.com/#sle.
      2) Sherwin-Williams; Loxon Concrete and Masonry Primer/Sealer: www.protective.sherwin-williams.com/#sle.
      3) Substitutions: Section 01 6000 - Product Requirements.
9. Zinc Rich, Epoxy.
   a. Application: Metal (steel) and structural steel.
   b. Products:
      1) PPG Paints; Amercoat Zinc Rich Epoxy, 68HS Series: www.ppgpaints.com/#sle.
      2) Sherwin-Williams; Zinc Clad III HS 100: www.protective.sherwin-williams.com/#sle.
      3) Substitutions: Section 01 6000 - Product Requirements.

2.04 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of coated surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Do not begin application of coatings until substrates have been properly prepared.

C. Verify that substrate surfaces are ready to receive work as instructed by the coating manufacturer. Obtain and follow manufacturer's instructions for examination and testing of substrates.

D. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

F. Test shop-applied primer for compatibility with subsequent cover materials.

G. Masonry: Verify masonry joints are struck flush.

H. Proceed with coating application only after unacceptable conditions have been corrected.
   1. Commencing coating application constitutes Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

A. Clean surfaces of loose foreign matter.

B. Remove substances that would bleed through finished coatings. If unremovable, seal surface with shellac.

C. Remove finish hardware, fixture covers, and accessories and store.

D. Existing Painted and Sealed Surfaces:
   1. Remove loose, flaking, and peeling paint. Feather edge and sand smooth edges of chipped paint.
   2. Clean with mixture of trisodium phosphate and water to remove surface grease and foreign matter.

E. Concrete:
   1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.

F. Masonry:
   1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.

G. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

H. Galvanized Surfaces:
   1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.

I. Ferrous Metal:
   1. Solvent clean according to SSPC-SP 1.
   2. Remove rust, loose mill scale, and other foreign substances using methods recommended in writing by paint manufacturer and blast cleaning in accordance with SSPC-SP 6/NACE No.3, and protect from corrosion until coated.

3.03 PRIMING

A. Apply primer to all surfaces, unless specifically not required by coating manufacturer. Apply in accordance with coating manufacturer's instructions.

3.04 COATING APPLICATION

A. Apply coatings in accordance with manufacturer's written instructions, to thicknesses specified.

B. Apply in uniform thickness coats, without runs, drips, pinholes, brush marks, or variations in color, texture, or finish. Finish edges, crevices, corners, and other changes in dimension with full coating thickness.

3.05 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

B. Clean surfaces immediately of overspray, splatter, and excess material.

C. After coating has cured, clean and replace finish hardware, fixtures, and fittings previously removed.

3.06 PROTECTION

A. Protect finished work from damage.

END OF SECTION

SECTION 10 2600 WALL AND CORNER PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Corner guards.

B. Protective wall covering.

1.02 RELATED REQUIREMENTS

A. Section 09 2116 - Gypsum Board Assemblies: Placement of supports in stud wall construction.

1.03 REFERENCE STANDARDS

A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2024.

B. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies; 2023.

C. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Include plans, elevation, sections, and attachment details.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.

B. Protect work from UV light damage.

C. Do not deliver products to project site until areas for storage and installation are fully enclosed, and interior temperature and humidity are in compliance with manufacturer's recommendations for each type of item.

D. Store products in either horizontal or vertical position, in compliance with manufacturer's instructions.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Protective Wall Panels:

1. As indicated in drawings
2. Inpro[<>]: www.inprocorp.com/#sle. As indicated in drawings.
3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE CRITERIA

A. Impact Strength: Unless otherwise noted, provide protection products and assemblies that have been successfully tested for compliance with applicable provisions of ASTM D256 and/or ASTM F476.

B. Fungal Resistance: Unless otherwise noted, provide protection products and assemblies which pass ASTM G21 testing.

2.03 PRODUCT TYPES

A. Corner Guards - Surface Mounted: As indicated in drawings

2.04 FABRICATION

A. Fabricate components with tight joints, corners and seams.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.

B. Verify that field measurements are as indicated on drawings.

C. Start of installation constitutes acceptance of project conditions.

3.02 INSTALLATION

A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to supporting construction.

B. Position corner guard 4 inches above finished floor to height indicated on drawings.

3.03 TOLERANCES

A. Maximum Variation From Required Height: 1/8 inch.

B. Maximum Variation From Level or Plane For Visible Length: 1/8" inch.

3.04 CLEANING

A. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

B. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

END OF SECTION

SECTION 10 2800 TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Concealed supports for accessories, including in wall framing and plates.

1.03 REFERENCE STANDARDS

A. ANSI A117.1 - Accessable and Usable Buildings and Facilities; latest edition.

B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service; 2025.

C. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

D. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Samples: Submit two samples of each accessory, illustrating color and finish.

D. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Commercial Toilet, and Bath Accessories:
   1. Basis of Design: Bobrick Washroom Equipment, Inc: www.bobrick.com
      a. As indicated in drawings
   2. Substitutions: Section 01 6000 - Product Requirements.

B. Provide products of each category type by single manufacturer.

2.02 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.

B. Keys: Provide 2 keys for each accessory to Owner; master key lockable accessories.

C. Stainless Steel Sheet: ASTM A666/A666M, Type 304.

D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

E. Adhesive: Two component epoxy type, waterproof.

F. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.

G. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Back paint components where contact is made with building finishes to prevent electrolysis.

2.04 TOILET ROOM ACCESSORIES

A. See drawings for toilet room accessory schedule.

B. Grab Bars: Stainless steel, textured surface.
   1. Standard Duty Grab Bars:
      a. Push/Pull Point Load: 250 pound-force, minimum.

b. Dimensions: 1-1/4 inch outside diameter, minimum 0.05 inch wall thickness, exposed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
c. Length and Configuration: As indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.

D. Verify that field measurements are as indicated on drawings.

E. See Section 06 1000 for installation of blocking, reinforcing plates, and concealed anchors in walls.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated on drawings.

3.04 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers.

B. Fire extinguisher cabinets.

1.02 RELATED REQUIREMENTS

1.03 REFERENCE STANDARDS

A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

B. FM (AG) - FM Approval Guide; Current Edition.

C. NFPA 10 - Standard for Portable Fire Extinguishers; 2026.

D. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate locations of cabinets and cabinet physical dimensions.

C. Manufacturer's Instructions: Indicate special criteria and wall opening coordination requirements.

D. Operation and Maintenance Data: Include test, refill, or recharge schedules and recertification requirements.

1.05 FIELD CONDITIONS

A. Do not install extinguishers when ambient temperature causes freezing of extinguisher ingredients.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fire Extinguishers:
   1. Basis of Design: Activar Construction Products Group, Inc. - JL Industries; Cosmic Extinguisher - Multipurpose Chemical: www.activarcpg.com/#sle.
   2. Ansul, a Tyco Business: www.ansul.com/#sle.
   3. Kidde, a unit of United Technologies Corp: www.kidde.com.
   4. Pyro-Chem, a Tyco Business: www.pyrochem.com.
   5. Amerex Corporation. www.amerex-fire.com
   6. Substitutions: See Section 01 6000 - Product Requirements.

B. Fire Extinguishers, Cabinets and Accessories:
   1. Basis of Design: Activar Construction Products Group, Inc. - JL Industries; Ambassador Series: www.activarcpg.com/#sle.
   2. Kidde, a unit of United Technologies Corp: www.kidde.com/#sle.
   3. Larsen's Manufacturing Co: www.larsensmfg.com.
   4. Potter-Roemer: www.potterroemer.com.
   5. Strike First Corporation of America: www.strikefirstusa.com.
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FIRE EXTINGUISHERS

A. General Requirements: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
   1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated on drawings.

B. Multipurpose Dry-Chemical-Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
   1. Cartridge Operated: Spun shell.
   2. Class: A:B:C type.
   3. Size: 5 lb.
   4. Size as scheduled at end of section.
   5. Finish: Baked polyester powder coat, red color.
   6. Temperature range: Minus 65 degrees F to 120 degrees F.

2.03 FIRE EXTINGUISHER CABINETS

A. Fire Rating: Listed and labeled in accordance with ASTM E814 requirements for fire-resistance rating of walls where cabinet installed.

B. Cabinet Construction: Non-fire rated.
   1. Formed primed steel sheet; 20-gauge, 0.036-inch thick base metal.

C. Fire Rated Cabinet Construction: fire resistance rating of walls where being installed..
   1. Steel; double wall with 5/8 inch thick fire barrier material.

D. Cabinet Configuration: Semi-recessed type.
   1. Size to accommodate accessories.
   2. Projected Trim: Rolled return to wall surface, with 2 1/2 inch projection, 1 1/4 inch wide face.
   3. Provide cabinet enclosure with right-angle inside corners and seams and with formed perimeter trim and door stiles.

E. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.

F. Door Glazing: Glass, clear, 1/8 inch thick tempered. Set in resilient channel gasket glazing.

G. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape, and set in resilient channel glazing gasket.

H. Cabinet Mounting Hardware: Appropriate to cabinet, with predrilled holes for placement of anchors.

I. Fabrication: Weld, fill, and grind components smooth.

J. Finish of Cabinet Exterior Trim and Door: Baked enamel, White color.

K. Finish of Cabinet Interior: White colored enamel.

2.04 ACCESSORIES

A. Extinguisher Brackets: Formed steel, galvanized and enamel finished.

B. Cabinet Signage: Fire Extinguisher.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and interfaces with other work.

B. Verify substrate and site conditions for product installation are in accordance with manufacturer's written instructions.

C. Verify rough openings for cabinet are sized and located in accordance with manufacturer's written instructions.

D. Notify Architect in writing of conditions detrimental to completion of work. Do not proceed with installation until detrimental conditions are corrected.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install cabinets plumb and level, 32 inches from finished floor to inside bottom of cabinet or as indicated on drawings.

C. Secure rigidly in place.

D. Fire Rated Cabinets: Follow manufacturers installation instructions to obtain the fire rating.

E. Place extinguishers and accessories in cabinets.

F. Position cabinet signage at Vertical on glass in door.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Kitchen appliances.

1.02 RELATED REQUIREMENTS

A. Section 22 1005 - Plumbing Piping: Plumbing connections for appliances.

B. Section 26 0583 - Wiring Connections: Electrical connections for appliances.

1.03 REFERENCE STANDARDS

A. ICC (IMC)-2021 - International Mechanical Code; 2021.

B. ICC (IRC)-2021 - International Residential Code for One- and Two-Family Dwellings; 2021.

C. UL (DIR) - Online Certifications Directory; Current Edition.

D. UL 2158A - Clothes Dryer Transition Duct; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.

C. Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Electric Appliances: Listed and labeled by UL (DIR) and complying with NEMA Standards (National Electrical Manufacturers Association).

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide five (5) year manufacturer warranty on refrigeration system of refrigerators.

C. Provide ten (10) year manufacturer warranty on magnetron tube of microwave ovens.

D. Provide ten (10) year manufacturer warranty on tub and door liner of dishwashers.

PART 2 PRODUCTS

2.01 KITCHEN APPLIANCES

A. Provide Equipment Eligible for Energy Star Rating: Energy Star Rated.

B. Refrigerator, GE GYE22GEN/ GMN/ GYN: Free-standing, side-by-side, and frost-free.
   1. Capacity: Total minimum storage of 22 cubic ft; minimum 15 percent freezer capacity.
   2. Energy Usage: Minimum 20 percent more energy efficient than energy efficiency standards set by U.S. Department of Energy (DOE).
   3. Features: Include glass shelves, automatic icemaker, light in freezer compartment, and in-door water and ice dispenser.
   4. Exterior Finish: Stainless steel.
   5. Manufacturers:
      a. GE Appliances: www.geappliances.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

C. Microwave, Type Whirlpool WMC30516H: Countertop.
   1. Capacity: 1.2 cubic ft.
   2. Power: 1000 watts.
   3. Features: Include built in timer.
   4. Exterior Finish: Black Stainless.
   5. Manufacturers:
      a. Amana.https://www.amana.com/

D. Dishwasher, BABA Compliant : Undercounter.
   1. Controls: Solid state electronic.
   2. Wash Levels: Three (3).
   3. Cycles: Five (5), including normal, rinse and hold, short, china/crystal, and pot and pan.

4. Features: Include rinse aid dispenser, optional no-heat dry, optional water temperature boost, adjustable upper rack, and adjustable lower rack.
5. Finish: Stainless steel .

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify utility rough-ins are provided and correctly located.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.03 ADJUSTING

A. Adjust equipment to provide efficient operation.

3.04 CLEANING

A. Remove packing materials from equipment and properly discard.

B. Wash and clean equipment.

END OF SECTION

SECTION 12 3600 COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

A. Section 06 4100 - Architectural Wood Casework: Base cabimets and ADA vanity brackets underneath countertops.

1.03 REFERENCE STANDARDS

A. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar; 2020.

B. ANSI A137.3 - American National Standard Specifications for Gauged Porcelain Tile and Gauged Porcelain Tile Panels/Slabs; 2021.

C. ANSI A208.1 - American National Standard for Particleboard; 2022.

D. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications; 2022.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

F. AWI (QCP) - Quality Certification Program; Current Edition.

G. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition; 2014, with Errata (2016).

H. AWMAC (GIS) - Guarantee and Inspection Services Program; Current Edition.

I. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards; 2021, with Errata.

J. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.

K. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Specimen warranty.

C. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.

D. Test Reports: Chemical resistance testing, showing compliance with specified requirements.

E. Installation Instructions: Manufacturer's installation instructions and recommendations.

F. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOPS

A. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.

1. Flat Sheet Thickness: 1/2 inch, minimum.
2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
   a. Manufacturers:
      1) As indicated in drawings
      2) Substitutions: See Section 01 6000 - Product Requirements.
   b. Surface Burning Characteristics: Flame spread index of 25, maximum; smoke developed index of 450, maximum; when tested in accordance with ASTM E84.
   c. NSF approved for food contact.
   d. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
3. Other Components Thickness: 1/2 inch, minimum.
4. Exposed Edge Treatment: Built up to minimum 1 1/2" inch thick; radiused edge.

2.02 MATERIALS

A. Particleboard for Supporting Substrate: ANSI A208.1 Grade 2-M-2, 45 pcf minimum density; minimum 3/4 inch thick; join lengths using metal splines.

B. Medium Density Fiberboard for Supporting Substrate: ANSI A208.2.

C. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

2.03 FABRICATION

A. Fabricate tops in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
   2. Fabricate to overhang fronts and ends of cabinets 1 inch except where top butts against cabinet or wall.
   3. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

A. Variation From Horizontal: 1/8 inch in 10 feet, maximum.

B. Offset From Wall, Countertops: 1/8 inch maximum; 1/16 inch minimum.

C. Field Joints: 1/8 inch wide, maximum.

3.05 CLEANING

3.06 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

PART 1 – GENERAL

1.01 REFERENCE STANDARDS

ASME A17.1 - SAFETY CODE FOR ELEVATORS AND ESCALATORS INCLUDES REQUIREMENTS FOR ELEVATORS, ESCALATORS, DUMBWAITERS, MOVING WALKS, MATERIAL LIFTS, AND DUMBWAITERS WITH AUTOMATIC TRANSFER DEVICES; 2025.
ISO 9001 - QUALITY MANAGEMENT SYSTEMS — REQUIREMENTS; 2015, WITH AMENDMENT (2024).
NFPA 70 - NATIONAL ELECTRICAL CODE; MOST RECENT EDITION ADOPTED BY AUTHORITY HAVING JURISDICTION, INCLUDING ALL APPLICABLE AMENDMENTS AND SUPPLEMENTS.
NFPA 80 - STANDARD FOR FIRE DOORS AND OTHER OPENING PROTECTIVES; 2025, WITH AMENDMENT (2024).
UL 10B - STANDARD FOR FIRE TESTS OF DOOR ASSEMBLIES; CURRENT EDITION, INCLUDING ALL REVISIONS.

1.02 SECTION INCLUDES

A. Electric traction passenger elevators.

1.03 RELATED SECTIONS

A. Section 002113 – Instructions to Bidders

B. Section 015000 – Temporary Facilities and Controls: Protection of floor openings and personnel barriers; temporary power and lighting.

C. Section 033000 – Cast-in-Place Concrete: Elevator pits.

D. Section 036000 – Grouts (Grouting): Grouting door frames and sills.

E. D.Section 042000 – Masonry Units (Unit Masonry): Setting sleeves, inserts, and anchoring devices in masonry for guide-rail brackets.

F. E. Section 051200 – Metal Stairs Structural Steel (Structural Steel Framing): Support steel, divider beams, and hoist beams.

G. Section 055000 – Gypsum Metal Fabrications: Pit ladders, supports for entrances in drywall hoistways.

H. Section 061053 – Miscellaneous Rough Carpentry: Temporary platform assembly.

I. Section 071600 – Cementitious Waterproofing: Waterproofing of elevator pit.

J. Section 092900 – Gypsum Board: Hoistway walls.

K. Section 099000 – Paints and Coatings (Painting and Coating): Field painting of elevator entrances over primer.

L. Section 283100 – Detection and Alarm (Fire Detection and Alarm): Heat, smoke, and products of combustion sensing devices, fire alarm signal lines to contacts in machine space.

M. Section 23000 – Heating, Ventilating, and Air Conditioning Equipment (Heating, Ventilating, and Air-Conditioning (HVAC)): Heating, cooling, and ventilation of control and machinery space.

N. Section 260500 – Wiring Methods (Common Work Results for Electrical): Light outlets, convenience outlets, light switches, and conduits.

O. Section 262400 – Switchboards, Panelboards, and Control Centers (Switchboards and Panelboards): Disconnect switches.

P. Section 265000 – Lighting: Light fixtures.

Q. Section 221429 – Sump Pumps: For sump pumps, sumps, and sump covers in elevator pits.

R. Section 271500 – Communications Horizontal Cabling: For Telephone service for elevators and for Internet connection to elevator controllers for remote monitoring.

S. Section 273000 – Telephone and Intercommunication Equipment (Voice Communications): Telephone outlets and elevator telephones.

T. Section 31000 – Earthwork: Excavation of elevator pit.

1.04 REFERENCES

A. ANSI/ASME A17.1/CAN/CSA B44 – Safety Code for Elevators and Escalators.

B. ADAAG – Americans with Disabilities Act Accessibility Guidelines.

C. ANSI/NFPA 70 – National Electrical Code.

D. ANSI/NFPA 80 – Fire Doors and Windows.

E. ANSI/UL 10B – Fire Tests of Door Assemblies.

F. CAN/CSA C22.1 – Canadian Electrical Code.

G. Model and Local Building CodesH. ISO 9001: 2000 - Quality Management Systems - Requirements.

1.05 SYSTEM DESCRIPTION

A. Provide at least one elevator designed and configured to accommodate an ambulance stretcher in accordance with IBC Section 3002.4.

B. Stretcher Requirements:
1. Elevator shall accommodate a 24 inch by 84 inch ambulance stretcher in the horizontal, open position with minimum 5-inch radius corner clearance.
2. Provide "Star of Life" identification signage at stretcher-compliant elevator(s).

1.06 DESIGN REQUIREMENTS

A. Arrange elevator components in control closet or machinery space so equipment can be removed for repairs or replaced with minimal disturbance to other equipment and components.

B. Where permitted by code, provide all elevator equipment including controls, drives, transformers, and rescue features within the elevator hoistway.

1.07 SUBMITTALS

A. Comply with Section 013300 (01 33 00) – Submittal Procedures.

B. Product Data: Submit manufacturer/installer’s product data, including,
1. Descriptive brochures or detail drawings of car and hall fixtures, cab ceilings, and product features.
2. Power Information: Horsepower, starting current, running current, machine and control heat release, and electrical requirements.

C. Shop Drawings: Submit manufacturer/installer’s shop drawings, including plans, elevations, sections, and details, indicating location of equipment, loads, dimensions, tolerances, materials, components, fabrication, fasteners, hardware, finish, options, accessories, and other information to render totally functional elevators.

D. Samples: Submit manufacturer/installer’s samples of standard colors and finishes of finish materials.

E. Operation and Maintenance Manual: Submit manufacturer/installer’s operation and maintenance manual; including operation, maintenance, adjustment, and cleaning instructions; trouble shooting guide; renewal parts catalogs; and electrical wiring diagrams.

F. Warranty: Submit manufacturer/installer’s standard warranty.

1.08 QUALITY ASSURANCE

A. A. Manufacturer/Installer’s Qualifications: Specialize in manufacturing and installing elevator equipment, with a minimum of 10 years successful experience.

B. B. Regulatory Requirements:
1. Elevator design, clearances, construction, workmanship, materials, and installation, unless specified otherwise, shall be in accordance with ANSI/ASME A17.1, handicap accessibility, Americans with Disabilities Act, and other codes having legal jurisdiction.
2. ANSI/ASME A17.1 shall govern, except where codes having legal jurisdiction include more rigid requirements or conflict with ANSI/ASME A17.1.
3. Elevator shall follow design and manufacturing procedures certified in accordance with ISO 9001-2000 to meet product and service requirements for quality assurance for new products.
4. Where product is in variance to the published ANSI/ASME A17.1 model code, provide a 3rd party AECO certification demonstrating equivalent function, safety, and performance.

C. Pre-installation Meeting:
1. Convene pre-installation meeting before start of installation of elevators.
2. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and elevator manufacturer/installer.

3. Review examination, installation, field quality control, adjusting, cleaning, protection, and coordination with other work.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to site in manufacturer/installer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer/installer.

B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer/installer's instructions.

C. Handling: Protect materials during handling and installation to prevent damage.

1.10 PROJECT CONDITIONS

A. Temporary Electrical Power:
   1. Owner will arrange for temporary 220 VAC, single-phase, 60 Hz., GFCI-protected electricity to be available for installation of elevator components.
   2. Comply with Section 015100 – Temporary Utilities.

B. Installation of the Elevator:
   1. General Contractor will provide permanent three-phase power prior to installation start.
   2. General Contractor will provide clear, rollable access to a 20' x 10' secure and dry storage area prior to delivery.
   3. General Contractor will provide a clean, dry, and complete hoistway along with temporary installation platform and all required OSHA-compliant barricades prior to delivery.

C. Temporary Use of Elevator:
   1. Owner will negotiate with manufacturer/installer for temporary use of elevator, if required.
   2. Temporary use of elevator shall be in accordance with terms and conditions of manufacturer/installer's temporary acceptance form.

1.11 SCHEDULING

A. Coordinate elevator work with work of other trades, for proper time and sequence to avoid construction delays.

1.12 WARRANTY

A. Manufacturer/installer shall guarantee materials and workmanship of equipment installed under these specifications and make good, defects not due to ordinary wear or to improper use, which may develop within 1 year after completion of installation or acceptance thereof by beneficial use, whichever is earlier.

1.13 MAINTENANCE SERVICE

A. Elevator maintenance service shall be performed by elevator manufacturer/installer.

B. B.Elevators shall receive regular maintenance on each unit for period of 6 months after completion of work specified herein or acceptance thereof by beneficial use, whichever is earlier.

C. Trained employees shall make periodic examinations and perform work including necessary adjusting, greasing, oiling, and replacing parts to keep elevators in operation, except parts that require replacement because of accidents, vandalism, misuse, or negligence by parties other than manufacturer/installer.

D. Manufacturer/installer shall perform all Work, except emergency minor adjustment call-back service, on overtime. Manufacturer/installer shall provide emergency minor adjustment call-back service, during regular working hours.

E. Should Owner request that examinations, cleaning, lubrication, adjustments, repairs, replacements, or emergency minor adjustment call-back service, unless specified herein, be performed on other than manufacturer/installer's regular working hours of regular working days, manufacturer/installer shall absorb straight-time labor charges and Owner will compensate manufacturer/installer for overtime premium, travel time, and expense at normal billing rates.

F. Elevator Control System:
   1. Include built-in remote diagnostic module to relay constant status of elevators and control system to a 24-hour, 7-days-a-week central-monitoring facility.
   2. Remote Monitoring Device: Transmit information on current status of elevators, including malfunctions, system errors, and shutdown.

G. Maintenance Options

Regular Maintenance: On Overtime

Maintenance Period: 6

PART 2 – PRODUCTS

2.01 MANUFACTURER/INSTALLER

A. Schindler Elevator Corporation, Website www.us.schindler.com.

B. Elevator shall be installed by elevator manufacturer.

2.02 ELEVATOR SYSTEM AND COMPONENTS

A. Electric Traction Passenger Elevators: Basis of design is the Schindler 3100 Gearless Traction Elevator or approved equal.

B. Elevator Equipment Summary:
1. Application: Machine Room Less (MRL)
2. Counterweight Location: Side
3. Machine Location: Top of the hoistway mounted on car and counterweight guide rails
4. Control Space Location: Top landing entrance frame or entrance frame at one floor below the top landing
5. Service: General Purpose Passenger
6. Quantity: 1 Unit
7. Capacity: Minimum 3000 lb (1360 kg); 3500 lb preferred where required for Fire Service Access Elevator compliance.
8. Speed: 100 fpm
9. Travel: 15' 2"
10. Landings: 2
11. Front Openings: 2
12. Rear Openings: 0
13. Rear Door Hand: N/A
14. Operation: Microprocessor Single Car Automatic Operation
15. Clear Inside Dimensions: 6' 9-5/16" Wide X 5' 6-7/8" Deep
16. Cab Height: 7' 9"
17. Guide Rails: Equivalent to 12 lb. per foot
18. Entrance Type and Width: Two Speed Side Opening 3' 6" Wide X 7' 0" High doors
19. Entrance Height: 7'-0"
20. Power Supply: 480 Volts 3 Phase 60 Hz

C. Cab Size and Configuration:
1. Provide car size and configuration sufficient to accommodate a 24 inch by 84 inch stretcher per IBC.
2. Minimum clear door opening: 42 inches.
3. Provide front, rear, or staggered openings as required to achieve stretcher compliance.

D. Cab Interior:
1. Configure cab layout, handrails, and accessories to permit stretcher maneuvering.
2. Coordinate handrail placement to avoid interference.

E. Performance:
1. Car Speed: -10% to +5% of contract speed under any loading condition or direction of travel.
2. Car Capacity: Safely lower, stop and hold up to 125% of rated load per code.

F. Ride Quality:
1. Vertical Vibration (maximum): 25 mg
2. Horizontal Vibration (maximum): 15 mg
3. Vertical Jerk (maximum): 2 ft/sec^3
4. Acceleration (maximum): 1.6 ft/sec^2
5. In Car Noise: 53-60 dB(A)
6. Stopping Accuracy: ±5mm
7. Starts per hour (maximum): 180

G. Elevator Operation:
   1. Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. When all calls have been answered, the car shall park at the last landing served.
   2. Group Automatic Operation with Demand-Based Dispatching: Provide a reprogrammable group automatic system that assigns cars to hall calls based on a dispatching algorithm designed to minimize passenger waiting time.

H. Operating Features - Standard:
   1. Door Light Curtain Protection
   2. Static AC Drive
   3. Phase Monitor Relay
   4. Cab Overload with Indicator
   5. Load-weighing
   6. Central Alarm
   7. Remote Monitoring
   8. Firefighter's Operation
   9. Automatic Evacuation
      a. When the main line power is lost for longer than 5 seconds the emergency battery power supply provides power automatically to the elevator controller. If the car is at a floor when the power fails, it remains at that floor, opens its doors, and shuts down. If the car is between floors, it is raised or lowered to the first available landing, opens it doors, and shuts down.
   10. Independent Service

I. Operating Features - Optional:

2.03 EQUIPMENT: CONTROL COMPONENTS AND CONTROL SPACE

A. Controller: Provide a microprocessor-based control system to perform all of the functions of safe elevator operation, as well as perform car and group operational control.
   1. All high voltage (110v or above) contact points inside the inspection and test panel shall be protected from accidental contact in a situation where the access panels are open.
   2. The controller shall be distributed throughout the elevator system located in the overhead, cab and inspection and test panel. The inverter will be mounted in the overhead adjacent to the hoist machine and an inspection and test panel will be located in the door jamb at the top floor or one floor below the top floor. No elevator equipment mechanical rooms or closets are required.
   3. Provide multi-bus control architecture to reduce cabling, material and waste.

B. Drive: Provide a Variable Voltage Variable Frequency AC Closed Loop drive system. Provide stable start without high peak current, quickly reaching a low energy consumption level.

C. Inspection and Test Panel: Integrated control equipment, main inspection and test panel in door frame at top level served or at one floor below the top level served.

2.04 EQUIPMENT: HOISTWAY COMPONENTS

A. Machine:
   1. Gearless asynchronous AC motor with integral drive sheave, service and emergency brakes.
   2. Design machine to enable direct power transfer, thereby avoiding loss of power.
   3. Design machine to be compact, lightweight and durable to optimize material usage and save space.
   4. Mount to structural support channels on top of guide rail system as applicable in hoistway overhead.

B. Governor:
   1. Tension type over-speed governor with remote manual reset.
   2. Mount to structural support channels as applicable in hoistway overhead.

C. Buffers, Car and Counterweight: Compression spring type buffers to meet code.

D. Hoistway Operating Devices:
   1. Emergency Stop switch in the pit.
   2. Terminal stopping switches.

3. Emergency stop switch on the machine.

E. Positioning System: System consisting of proximity sensors and door zone vanes.

F. Guide Rails and Attachments: Provide Tee-section steel rails with brackets and fasteners. Side counterweight arrangements shall have a dual purpose bracket that combines both counterweight guide rails, and one of the car guide rails to building fastening.

G. Suspension System: Non circular Elastomeric coated suspension media with high tensile grade steel cords.

H. Governor rope: Steel wire rope with 0.24 inch diameter.

2.05 EQUIPMENT: HOISTWAY ENTRANCES

A. Hoistway Doors and Frames:
1. UL rated with required fire rating.
2. Doors: Rigid flush panel construction with reinforcement ribs.
3. Frames: Securely fasten at corners to form unit frame. Frames shall be bolted.

B. Finish:
1. Exposed Areas of Corridor Frames: Stainless Steel - All Floors
2. Exposed Areas of Corridor Frames:
   a. 1st Floor: Painted Primer
   b. 2nd Floor: Painted Primer
   c. Typical Floors: Painted Primer
3. Doors: Stainless Steel - All Floors
4. Doors: Stainless Steel - All Floors
5. Doors:
   a. 1st Floor: Painted Primer
   b. 2nd Floor: Painted Primer
   c. Typical Floor: Painted Primer
6. Sills: Aluminum - All Floors
7. Sills: Aluminum - All Floors

C. Entrance Markings and Jamb Plates: Provide standard entrance jamb tactile markings on both jambs, at all floors. Plate Mounting: Refer to manufacturer drawings.

2.06 EQUIPMENT: CAR COMPONENTS

A. Car Frame and Safety: Provide car frame with adequate bracing to support the platform and car enclosure. The safety shall be integral to the car frame and shall be flexible guide clamp type.

B. Platform: Provide platform of steel construction with plywood subfloor and aluminum threshold.

C. Car Guides: Provide sliding guide shoes mounted to top and bottom of both car and counterweight frame. Arrange each guide shoe assembly to maintain constant contact on the rail surfaces. Provide retainers in areas with Seismic design requirements.

D. Provide central guiding system to reduce mechanical friction and energy consumption.

E. Steel Cab:
1. Fire rating: Provide Class B fire rating for cab, or Class A fire rating where required by local Code.
2. Design cab to comply with LEED Indoor Environmental Quality requirements through use of Low-Emitting Materials on walls, ceiling and subflooring.
3. Car wall finish: Steel #4 Stainless Steel Finish selected from manufacturer’s standard selections.
4. Base and frieze: Aluminum.
5. Car front finish: Brushed stainless steel.
6. Car door finish: Brushed stainless steel.
7. Ceiling: Canopy ceiling, finished in #4 Stainless Steel With Down Lit Led Lighting. Provide lighting consisting of four compact fluorescent energy saving lights located in two semi-oval lateral cutouts located on the center-sides of the cab ceiling, Lexan lens cover.
8. Handrail: Round Brushed Stainless Steel - Return End. Locate on Rear Wall.
9. Flooring: By others. Not to exceed 3/8” finished depth.

10. Ventilation: Provide one-speed fan in canopy.
11. Emergency Car Lighting: Provide an emergency power unit employing a 12 volt sealed rechargeable battery and static circuits to illuminate the elevator car and provide current to the alarm bell in the event of building power failure.
12. Emergency Siren: Provide siren mounted on top of the car that is activated when the Alarm button in the car operating panel is engaged.
13. Emergency Exit Switch: Provide an electrical contact to open the safety circuit when the emergency car top exit is opened. When the exit door is opened, the top exit switch shall signal the control and the car will be unable to move.
14. Emergency Exit Lock: Provide an emergency exit lock where required by local code.
15. Emergency Exit Guard: Provide emergency exit guard on top of car when required for hoistway wall to platform clearance exceeds 12” or for multiple cars in hoistway.

2.07 DOOR OPERATOR AND REOPENING DEVICES

A. Door Operator: Provide a closed loop VVVF high performance door operator with frequency controlled drive for fast and reliable operation to open and close the car and hoistway doors simultaneously.

B. In case of interruption or failure of electric power, the doors can be readily opened by hand from within the car, in accordance with applicable code. Provide emergency devices and keys for opening doors from the landing as required by local code.

C. Doors shall open automatically when the car has arrived at or is leveling at the respective landings. Doors shall close after a predetermined time interval or immediately upon pressing of a car button. Provide door open button in the car operating panel. Momentary pressing of this button shall reopen the doors and reset the time interval.

D. Provide door hangers and tracks for each car and hoistway door. Contour tracks to match the hanger sheaves. Design hangers for power operation with provisions for vertical and lateral adjustment. Hanger sheaves shall have polyurethane tires and pre-lubricated sealed for life bearings.

E. Electronic Door Safety Device: Equip car doors with concealed transmitter and receiver infrared beam devices to detect presence of object in process of passing through hoistway entrance and car doorway (light curtain device).
   1. Use multi-beam scanning without moving parts to detect obstructions in door opening.
   2. Detector Device: Prevent doors from closing, or if they have already started closing, cause doors to reopen and remain open while object is within detection zone.
   3. Horizontal Beams: Minimum of 33 infra red beams to fill doorway from ground level to a height of 6 feet.

2.08 EQUIPMENT: SIGNAL DEVICES AND FIXTURES

A. Car Operating Panel: Provide a car operating panel with all push buttons, key switches and message indicators for elevator operation.
   1. aull height car operating panel shall be surface-mounted on front return.
   2. Comply with handicap requirements.
   3. Push Buttons: Mechanical, illuminating using long-lasting LEDs for each floor served.
   4. Emergency Buttons: Provide in accordance with code. Emergency alarm button, door open and door close buttons.

B. Features of the Car Operating Panel Shall Include:
   1. Audible chime to signal that the car is either stopping at or passing a floor served by the elevator.
   2. Raised markings and Braille provided to the left hand side of each push button.
   3. Car Lantern: Provide LED illuminated car lantern with direction arrows to comply with local code when hall lanterns are not provided.
   4. Door open and close push buttons.
   5. Firefighter’s hat and Phase 2 Key-switch
   6. Inspection key-switch.
   7. Key-switch for optional Independent Service Operation
   8. Illuminated alarm button with raised marking.
   9. Elevator Data Plate marked with elevator capacity and car number.

10. Help Button: Activation of help button will initiate two-way communication between car and a location inside the building, switching over to alternate location if call is unanswered, where personnel are available to take the appropriate action. Visual indicators are provided for call initiation and call acknowledgement.
11. Certificate Frame.

C. Hall Fixtures: Provide hall fixtures with necessary push buttons and key switches for elevator operation.
   1. Push buttons: Metallic tactile push buttons, up button and down button at intermediate floors, single button at each terminal floor.
   2. Height: Comply with handicap requirements.
   3. Illumination: Illuminating using long-lasting low power LEDs.

D. Hall Lanterns and Position Indicators.
   1. LED illuminated direction arrows with audible and visible call acknowledgement.

E. Hoistway access switches: Provide key-switch at top and/or bottom floor in entrance jamb as required by local code.

F. Firefighter's Phase 1 Service: Key switch in brushed stainless steel cover plate.

G. Fixture Cover Plates: For push buttons, hall lanterns and position indicators, resistant white back-printed glass, no screws required for mounting. Provide stainless steel cover plates for Firefighter's Phase I switch and hoistway access switches, with tamper resistant screws in same finish.

H. Mounting: Mount hall fixtures in entrance frames.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine hoistways, hoistway openings, and pits before starting elevator installation.

B. Verify hoistway, pit, overhead, and openings are of correct size, within tolerances, and are ready for work of this section.

C. Verify walls are plumb where openings occur and ready for entrance sill installation. Traditional sill angle or concrete sill support shall not be required.

D. Verify hoistway is clear and plumb, with variations not to exceed -0 to at any point. Verify projections greater than 4" must be beveled not less than 75 degrees from horizontal. No negative tolerance is permitted for minimum hoistway dimensions.

E. Verify minimum 2-hour fire-resistance rating of hatch walls.

F. Notify Architect in writing of dimensional discrepancies or other conditions detrimental to proper installation or performance of elevators.

G. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to manufacturer/installer.

3.02 INSTALLATION

A. Install elevators in accordance with manufacturer/installer's instructions and ANSI/ASME A17.1.

B. Set entrances in vertical alignment with car openings, and aligned with plumb hoistway lines.

C. Install stretcher-compliant elevator in full accordance with IBC stretcher requirements and manufacturer's requirements.

D. Verify field dimensions to ensure required stretcher clearance is achieved.

E. Coordinate with hoistway dimensions to maintain required clearances without obstruction.

F. Install "Star of Life" signage at designated stretcher elevator.

G. Adjust and test elevator operation to confirm unobstructed stretcher access.

3.03 FIELD QUALITY CONTROL

A. Perform tests of elevator as required by ANSI/ASME A17.1 and governing codes.

3.04 ADJUSTING

A. Adjust elevators for proper operation in accordance with manufacturer/installer's instructions.

B. Adjust elevators for smooth acceleration and deceleration of car so not to cause passenger discomfort.

C. Adjust doors to prevent opening of doors at landing on corridor side, unless car is at rest at that landing, or is in leveling zone and stopping at that landing.

D. Adjust automatic floor leveling feature at each floor to within 1/4 inch of landing.

E. Repair minor damages to finish in accordance with manufacturer/installer's instructions and as approved by Architect.

F. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.05 CLEANING

A. Clean elevators promptly after installation in accordance with manufacturer/installer's instructions.

B. Do not use harsh cleaning materials or methods that could damage finish.

3.06 PROTECTION

A. Protect installed elevators from damage during construction in accordance with the negotiated temporary use agreement between Owner and manufacturer's installer.

END OF SECTION

This page intentionally left blank

SECTION 14 2700 ELEVATOR CAB INTERIOR SYSTEMS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

A. Section 09 6813 - Tile Carpeting for car floor finish.

1.02 REFERENCE STANDARDS

A. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2025.

B. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

C. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUMMARY

A. Section Includes: Elevator cars and elevator car finishes for electric traction and hydraulic elevators. Pre-engineered elevator interior system including rear and side wall panels, handrail and crash rail, stiles and rails, ceiling and lighting. Elevator interior system comes “ready to install” with fasteners, adhesives, and other materials required for a complete assembly. Fasteners shall be concealed type.

B. Related Sections:
   1. Division 26 – Electrical. General requirements for electrical and lighting specified in this Section.

1.04 REFERENCES

A. ASTM E84 – Surface Burning Characteristics of Building Materials.

B. ASME A17.1 – Safety Code for Elevators and Escalators.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories
   1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum
   2. Provide information required by AWI/AWMAC/WI (AWS).

C. Submit samples no less than 4" x 4" for all specified material finishes.

D. Submit panel edge extrusion samples no less than 4” of specified finish.

E. Manufacturer information:
   1. Provide overview literature describing manufacturer’s overall scope of products and manufacturing capabilities.
   2. Provide URL for manufacturer’s web site; web site must provide access to technical data, images and general product information.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications
   1. Minimum 10 years experience in the manufacture of architectural surface materials.
   2. Minimum 10 years experience in the fabrication of elevator cab interiors.
   3. Provide reference list of at least 20 public space projects currently using elevator interiors fabricated by the manufacturer.

B. Installer Qualifications
   1. Minimum three years experience in the installation of elevators or elevator interiors.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to installation site in manufacturer’s original packaging. Handle products in accordance with manufacturer’s instructions. Store in dry, secure location, protected against direct sunlight and excessive heat. Protect finished surfaces with strippable film.

1.08 WARRANTY

A. Provide manufacturer’s standard warranty.
   1. Warranty terms: one year against defects in materials and workmanship.

PART 2 PRODUCT

2.01 MANUFACTURER

A. As indicated in drawings.

B. Substitutions: See Section 01 6000 - Product Requirements.

2.02 ELEVATOR REAR AND SIDE WALL PANELS

A. General
   1. Pre-engineered elevator interior system including clad panels over fire-rated MDF backer with .020” aluminum sealer sheet and Z-clip mounting system, bases, handrail and ceiling, along with installation template. Wall panels to consist of vertical and horizontal stile and rail framing elements surrounding contrasting insets.
   2. Panel configuration: c2000. See drawing elevations for panel layout.
   3. Provide inset panels in the finishes specified.

B. Panel Inset Materials
   1. Upper Panel Stainless Steel Insets
      a. Material: Forms and Surfaces Stainless Steel
      b. Finish: Sandstone
      c. Treatment: Ceramiloc+
      d. Impression Pattern: None
      e. Eco-Etch Pattern: None
      f. Fire rating: Stainless Steel is inherently non-combustible and generally considered to be NFPA and IBC Class A fire rated and UBC Class 1 fire rated.
      g. Treatment: Provide Ceramiloc+™ treatment, an invisible, protective treatment that significantly increases the fingerprint resistance and maintenance ease of stainless steel. Patented technology molecularly bonds nano-silica particles to the surface of stainless steel.
   2. Lower Panel Other Laminate Insets
      a. Material: Formica - Planked Urban Oak 9321-NG Natural Grain Finish

C. Stile & Rail Materials
   1. Forms and SurfacesStainless Steel
      a. Material: Stainless Steel
      b. Finish: Satin
      c. Treatment: Ceramiloc+

D. Corner Reveals
   1. Material: Anodized aluminum
   2. Finish: Clear

2.03 HANDRAILS

A. General
   1. Provide handrails on rear (and side) walls of single opening cars, and on side walls of dual opening cars. For elevator door openings that are flush with the adjacent side wall(s), a returned handrail configuration is recommended.
   2. Style: Modular, handrail in stainless steel with clear annodized aluminum standoff
   3. Material: Forms and Surfaces Stainless Steel
   4. Finish: Satin
   5. Treatment: Ceramiloc+

2.04 CEILING SYSTEM

A. General
   1. Provide Forms+Surfaces Ceiling with inset panels mounted in extruded aluminum ceiling frame on fire-rated polycarbonate backer and integral lighting system.
   2. Provide removable exit hatch as per ASME A17.1 for emergency egress.

B. Ceiling Inset Material
   1. Forms and Surfaces Stainless Steel
      a. Material: Stainless Steel
      b. Finish: Satin
      c. Treatment: Ceramiloc+

C. LED Lighting
   1. Configuration: Recessed low-voltage LED downlights
   2. Color Temperature: 3000K

2.05 ASSOCIATED COMPONENTS

A. Materials for car operating panels, return panels, doors, jambs, transoms, and floor are not included in this section.

PART 3 EXECUTION

3.01 PREPARATION

A. Protect elevator finishes, fixtures, and equipment from damage caused by work of this Section.

3.02 INSTALLATION

A. Do not make structural changes to elevator cab. Do not install work in a manner that interferes with the safe operation of elevator.

B. Install in accordance with elevator interior system manufacturer's instructions.

3.03 CLEANING AND PROTECTION

A. Remove strippable film. Clean exposed surface in accordance with manufacturer's instructions.

B. Protect exposed surfaces from damage by subsequent construction.

END OF SECTION

This page intentionally left blank

SECTION 22 0513 COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General construction and requirements.

B. Single phase electric motors.

1.02 RELATED REQUIREMENTS

A. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections.

B. Section 26 2913 - Enclosed Controllers.

1.03 REFERENCE STANDARDS

A. 10 CFR 431 - Energy Efficiency Program for Certain Commercial and Industrial Equipment - Distribution Transformers; Current Edition.

B. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; 2015, with Errata (2026).

C. ABMA STD 11 - Load Ratings and Fatigue Life for Roller Bearings; 2014 (Reaffirmed 2020).

D. IEEE 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators; 2017.

E. NEMA MG 00001 - Motors and Generators; 2024.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Products Requiring Electrical Connection: Listed and classified by testing firm acceptable to the Authority Having Jurisdiction as suitable for the purpose specified and indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

1.07 SUMMARY

A. This Section includes minimum requirements for electric motors furnished integral with plumbing equipment.

B. Motors shall be provided by the equipment manufacturer unless explicitly indicated otherwise.

PART 2 PRODUCTS

2.01 GENERAL CONSTRUCTION AND REQUIREMENTS

A. Motors shall be:
   1. Continuous duty rated
   2. Designed for operation in a 104°F (40°C) ambient environment
   3. Rated and constructed in accordance with NEMA MG-1

B. Construction:
   1. Open drip-proof type where where located in dry, indoor environments
   2. Totally Enclosed Fan-Cooled (TEFC) or equivalent where exposed to moisture, dirt, or outdoor conditions

C. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.

2.02 VARIABLE FREQUENCY DRIVE APPLICATIONS

A. Motors serving equipment controlled by VFDs shall be inverter-duty rated in accordance with NEMA MG 00001, Part 31.

B. Motors shall be suitable for operation across the full speed range required by the equipment manufacturer.

2.03 THREE-PHASE MOTORS

A. Motors shall be NEMA Design B squirrel-cage induction motors unless otherwise required by the equipment manufacturer.

B. Bearings:
   1. Anti-friction ball bearings
   2. Minimum ABMA STD 11 L-10 life of 20,000 hours at rated load

C. Motors 50 HP and larger shall be provided with embedded winding temperature sensors for connection to motor protection devices furnished under Division 26.

2.04 EFFICIENCY

A. Motors shall comply with the minimum efficiency requirements of 10 CFR 431.

B. Motor efficiency and power factor shall be indicated on equipment submittals.

2.05 SINGLE PHASE POWER - SPLIT PHASE MOTORS

A. Starting Torque: Less than 150 percent of full load torque.

B. Starting Current: Up to seven times full load current.

C. Breakdown Torque: Approximately 200 percent of full load torque.

D. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve or ball bearings.

E. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

2.06 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

A. Starting Torque: Exceeding one fourth of full load torque.

B. Starting Current: Up to six times full load current.

C. Multiple Speed: Through tapped windings.

D. Open Drip-proof or Enclosed Air Over Enclosure: Class A (50 degrees C temperature rise) insulation, minimum 1.0 Service Factor, prelubricated sleeve or ball bearings, automatic reset overload protector.

2.07 SINGLE PHASE POWER - CAPACITOR START MOTORS

A. Starting Torque: Three times full load torque.

B. Starting Current: Less than five times full load current.

C. Pull-up Torque: Up to 350 percent of full load torque.

D. Breakdown Torque: Approximately 250 percent of full load torque.

E. Motors: Capacitor in series with starting winding; provide capacitor-start/capacitor-run motors with two capacitors in parallel with run capacitor remaining in circuit at operating speeds.

F. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve bearings.

G. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check line voltage, frequency and phase and ensure agreement with nameplate.

END OF SECTION

SECTION 22 0517 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe sleeves.

B. Pipe sleeve-seals.

1.02 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping.

1.03 REFERENCE STANDARDS

A. ASTM C592 - Standard Specification for Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation (Metal-Mesh Covered) (Industrial Type); 2024.

B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2024.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified this section.
   1. Minimum three years experience.

C. Clean equipment, pipes, valves, and fittings of grease, metal cuttings, and sludge that may have accumulated from the installation and testing of the system.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store sleeve and sleeve seals in shipping containers, with labeling in place.

B. Provide temporary protective coating on cast iron and steel sleeves if shipped loose.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 PIPE SLEEVES

A. Manufacturers:
   1. Flexicraft Industries; Pipe Wall Sleeve: www.flexicraft.com/#sle.

B. Vertical Piping:
   1. Sleeve Length: 1 inch above finished floor.
   2. Provide sealant for watertight joint.
   3. Blocked Out Floor Openings: Provide 1-1/2 inch angle set in silicon adhesive around opening.
   4. Drilled Penetrations: Provide 1-1/2 inch angle ring or square set in silicone adhesive around penetration.

C. Pipe Passing Through Below Grade Exterior Walls:
   1. Zinc coated or cast iron pipe.
   2. Provide watertight space with link rubber or modular seal between sleeve and pipe on both pipe ends.

D. Clearances:
   1. Provide allowance for insulated piping.
   2. Wall, Floor, Partitions, and Beam Flanges: 1 inch greater than external pipe diameter.
   3. All Rated Openings: Caulked tight with fire stopping material complying with ASTM E814 in accordance with Section 07 8400 to prevent the spread of fire, smoke, and gases.

2.02 PIPE-SLEEVE SEALS

A. Manufacturers:
   1. Advance Products & Systems, LLC; Innerlynx: www.apsonline.com/#sle.
   2. Flexicraft Industries; PipeSeal: www.flexicraft.com/#sle.

3. Substitutions: See Section 01 6000 - Product Requirements.

B. Modular Mechanical Sleeve-Seal:
   1. Elastomer-based interlocking links continuously fill annular space between pipe and wall-sleeve, wall or casing opening.
   2. Watertight seal between pipe and wall-sleeve, wall or casing opening.
   3. Size and select seal component materials in accordance with service requirements.
   4. Glass-reinforced plastic pressure end plates.

C. Sealing Compounds:
   1. Provide packing and sealing compound to fill pipe to sleeve thickness.
   2. Combined packing and sealing compounding to match partition fire-resistance hourly rating.

D. Pipe Sleeve Material:
   1. Bearing Walls: Steel, cast iron, or terra-cotta pipe.
   2. Masonry Structures: Sheet metal or fiber.

E. Wall Sleeve: PVC material with waterstop collar, and nailer end-caps.

F. Sleeve-Forming Disk: Non-conductive plastic-based material, 3 inch thick.

G. Pipeline-Casing Seals:
   1. Coated boltless casing-spacer for 4 inch carrier pipe.
   2. Coated boltless modular seal for 6 inch carrier pipe.
   3. Carbon steel band with risers for 12 inch carrier pipe.
   4. End Seals: 1/8 inch, pull-on type, rubber or synthetic rubber based.

PART 3 EXECUTION

3.01 INSTALLATION

A. Route piping in orderly manner, plumb and parallel to building structure. Maintain gradient.

B. Install piping to conserve building space, to not interfere with use of space and other work.

C. Install piping and pipe sleeves to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

D. Inserts:
   1. Provide inserts for placement in concrete formwork.
   2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
   3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.

E. Structural Considerations: Do not penetrate building structural members unless indicated.

F. Provide sleeves when penetrating footings, floors, walls, and partitions. Seal pipe including sleeve penetrations to achieve fire resistance equivalent to fire separation required.
   1. Underground Piping: Caulk pipe sleeve watertight with lead and oakum or mechanically expandable chloroprene inserts with bitumen sealed metal components.
   2. Aboveground Piping:
      a. Pack solid using mineral fiber complying with ASTM C592.
      b. Fill space with an elastomer caulk to a depth of 0.50 inch where penetrations occur between conditioned and unconditioned spaces.
   3. All Rated Openings: Caulk tight with fire stopping material complying with ASTM E814 in accordance with Section 07 8400 to prevent the spread of fire, smoke, and gases.
   4. Caulk exterior wall sleeves watertight with lead and oakum or mechanically expandable chloroprene inserts with mastic-sealed components.

G. Manufactured Sleeve-Seal Systems:
   1. Install manufactured sleeve-seal systems in sleeves located in grade slabs and exterior concrete walls at piping entrances into building.
   2. Provide sealing elements of the size, quantity, and type required for the piping and sleeve inner diameter or penetration diameter.
   3. Locate piping in center of sleeve or penetration.

4. Install field assembled sleeve-seal system components in annular space between sleeve and piping.
5. Tighten bolting for a water-tight seal.
6. Install in accordance with manufacturer's recommendations.

H. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.02 CLEANING

A. Upon completion of work, clean all parts of the installation.

B. Clean equipment, pipes, valves, and fittings of grease, metal cuttings, and sludge that may have accumulated from the installation and testing of the system.

END OF SECTION

This page intentionally left blank

SECTION 22 0529 HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Prefabricated trapeze-framed systems.

B. Strut systems for pipe or equipment support.

C. Beam clamps.

D. Pipe hangers.

E. Pipe rollers and roller supports.

F. Pipe supports, guides, shields, and saddles.

G. Nonpenetrating rooftop supports for low-slope roofs.

H. Anchors and fasteners.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Concrete equipment pads.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2018).

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

E. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping; 2025.

F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

G. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures; 1999 (Reapproved 2022).

H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

J. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

L. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

M. FM (AG) - FM Approval Guide; Current Edition.

N. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2025.

O. UL (DIR) - Online Certifications Directory; Current Edition.

P. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
2. Coordinate the work with other trades to provide additional framing and materials required for installation.

3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
5. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 3000.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for nonpenetrating rooftop supports.

1.06 QUALITY ASSURANCE

A. Comply with applicable building code.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Installer Qualifications for Powder-Actuated Fasteners (when specified): Certified by fastener system manufacturer with current operator's license.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide required hardware to hang or support piping, equipment, or fixtures with related accessories as necessary to complete installation of plumbing work.

B. Provide hardware products listed, classified, and labeled as suitable for intended purpose.

C. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported with a minimum safety factor of 1.5. Include consideration for vibration, equipment operation, and shock loads where applicable.

D. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.

E. Fire Resistance: Provide hardware rated for 60 minutes resistance unless specifically indicated by the authority having jurisdiction.

F. Materials for Metal Fabricated Supports:
1. Zinc-Plated Steel: Electroplated in accordance with ASTM B633 unless stated otherwise.
2. Galvanized Steel: Hot-dip galvanized in accordance with ASTM A123/A123M or ASTM A153/A153M unless stated otherwise.

G. Corrosion Resistance: Use corrosion-resistant metal-based materials fully compatible with exposed piping materials and suitable for the environment where installed.
1. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
2. Outdoor, Damp, or Wet-Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.

2.02 PREFABRICATED TRAPEZE-FRAMED SYSTEMS

A. Prefabricated Trapeze-Framed Metal Strut Systems:
1. Strut Channel or Bracket Material:
a. Indoor Dry Locations: Use zinc-plated steel or galvanized steel.
b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
2. Minimum Channel Thickness: Steel sheet, 12 gauge, 0.1046 inch.
3. Minimum Channel Dimensions: 1-5/8 inch width by 13/16 inch height.
4. Accessories: Provide bracket covers, cable basket clips, cable tray clips, clamps, conduit clamps, fire-retarding brackets, j-hooks, protectors, and vibration dampeners.

2.03 STRUT SYSTEMS FOR PIPE OR EQUIPMENT SUPPORT

A. Strut Channels:

1. ASTM A653/A653M galvanized steel bracket with clamps for surface mounting of piping or plumbing equipment support.
2. Channel or Bracket Kits: Include rods, brackets, end-fixed fittings, covers, clips, and other related hardware required to complete sectional trapeze section for piping or other support.

B. Hanger Rods:
1. Threaded zinc-plated steel unless otherwise indicated.
2. Minimum Size, Unless Otherwise Indicated or Required:
a. Equipment Supports: 1/2 inch diameter.
b. Piping up to 1 inch: 1/4 inch diameter.
c. Piping larger than 1 inch: 3/8 inch diameter.
d. Trapeze Support for Multiple Pipes: 3/8 inch in length.

C. Channel Nuts:
1. Provide carbon steel channel nut with epoxy copper or zinc finish and long, regular, or short spring as indicated on drawings.

2.04 BEAM CLAMPS

A. MSS SP-58 types 19 through 23, 25 or 27 through 30 based on required load.

B. Provide clamps with hardened steel cup-point set screws and lock-nuts for anchoring in place.

C. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.

2.05 PIPE HANGERS

A. Band Hangers, Adjustable:
1. MSS SP-58 type 7 or 9, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.

B. J-Hangers, Adjustable:
1. MSS SP-58 type 5, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.
2. Felt-Lined: Provide for uninsulated pipe to reduce noise and prevent static issues.

C. Swivel Ring Hangers, Adjustable:
1. MSS SP-58 type 10, epoxy-painted, zinc-colored.
2. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
3. FM (AG) and UL (DIR) listed for specific pipe size runs and loads.
4. Felt-Lined: Provide for uninsulated pipe to reduce noise and prevent static issues.

D. Clevis Hangers, Adjustable:
1. Copper Tube: MSS SP-58 type 1, epoxy-plated copper.
2. Felt-Lined: MSS SP-58 type 1, zinc-plated, silicone-free carbon steel.
3. Light-Duty: MSS SP-58 type 1, zinc-colored, epoxy plated.
4. Standard-Duty: MSS SP-58 type 1, zinc-colored, epoxy plated.

E. Nonmetallic Pipe Hangers:
1. CPVC fabricated, snap-action hanger for pendant or sidewall applications.

2.06 PIPE CLAMPS

A. Riser Clamps:
1. For insulated pipe runs, provide two bolt-type clamps designed for installation under insulation.
2. MSS SP-58 type 1 or 8, carbon steel or steel with epoxy plated, plain, stainless steel, or zinc plated finish.
3. UL (DIR) listed: Pipe sizes 1/2 to 8 inch.

B. Extension Split Pipe Clamp:
1. MSS SP-58 type 12, hinged split ring and yoke roller hanger with epoxy copper or plain finish.
2. Material: ASTM A47/A47M malleable iron or ASTM A36/A36M carbon steel.
3. Provide hanger rod and nuts of the same type and material for a given pipe run.

4. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.

C. Offset Pipe Clamps: Double-leg design two-piece pipe clamp.

D. Strut Clamps:
1. Pipe Clamp: Two-piece rigid, universal, or outer diameter type, carbon steel with epoxy copper or zinc finish.
2. Cushioned Pipe or Tubing Strut Clamp: Provide strut clamp with thermoplastic elastomer cushion having dielectric strength of 670 V/mil.
3. Service Temperature Range: Minus 65 to 275 degrees F.

E. Insulation Coupling:
1. Two bolt-type clamps designed for installation under insulation.
2. Material: Carbon steel with epoxy copper or zinc finish.

2.07 PIPE ROLLERS AND ROLLER SUPPORTS

A. MSS SP-58 type 43 based on required load, nonconductive and corrosion resistant.

B. Material: Zinc plated ASTM A36/A36M carbon steel or ASTM A47/A47M malleable iron.

2.08 PIPE SUPPORTS, GUIDES, SHIELDS, AND SADDLES

A. Dielectric Barriers: Provide between metallic supports and metallic piping and associated items of dissimilar type; acceptable dielectric barriers include rubber or plastic sheets or coatings attached securely to pipe or item.

B. Stanchions:
1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
2. Provide coated or plated saddles to isolate steel hangers from dissimilar metal tube or pipe.

C. U-Bolts:
1. MSS SP-58 type 24, carbon steel u-bolt for pipe support or anchoring.

D. Intermediate Anchors and Pipe Alignment Guides:
1. Pipe Sizes 6 inch and Smaller: Minimum clearance of 0.16 inch.
2. Pipe Size 8 inch: 0.625 inch U-bolt with double nuts providing minimum clearance of 0.28 inch.
3. Pipe Size 10 inch: 0.75 inch U-bolt.
4. Pipe Sizes 12 to 16 inch: 0.875 inch U-bolt.
5. Pipe Sizes 18 to 30 inches: 1 inch U-bolt.
6. Use pipe clamps with oversize pipe sleeve that provides clearance around pipe.

E. Pipe Alignment Guides:
1. Pipe Sizes 8 inch and Smaller: Spider or sleeve type.
2. Pipe Sizes 10 inch and Larger: Roller type.

F. Pipe Shields for Insulated Piping:
1. MSS SP-58 type 40, ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.
2. General Construction and Requirements:
a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
b. Shields Material: UV-resistant polypropylene with glass fill.
c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch.
d. Service Temperature: Minus 40 to 178 degrees F.
e. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.

G. Pipe Supports:
1. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
2. Liquid Temperatures Up to 122 degrees F:
a. Overhead Support: MSS SP-58 types 1, 3 through 12 clamps.
b. Support From Below: MSS SP-58 types 35 through 38.

H. Pipe Supports, Thermal Insulated:
1. General Requirements:

a. Insulated pipe supports to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
b. Surface Burning Characteristics: Flame spread index/smoke developed index of 5/30, maximum, when tested in accordance with ASTM E84 or UL 723.
c. Provide pipe supports for 1/2 to 30 inch iron pipes.
d. Insulation inserts to consist of rigid phenolic foam insulation surrounded by 360 degree, PVC jacketing.

2. PVC Jacket:
a. Pipe insulation protection shields to be provided with ball bearing hinge and locking seam.
b. Moisture Vapor Transmission: 0.0071 perm inch, when tested in accordance with ASTM E96/E96M.
c. Minimum Thickness: 60 mil, 0.06 inch.

2.09 NONPENETRATING ROOFTOP SUPPORTS FOR LOW-SLOPE ROOFS

A. Manufacturers:
1. Anvil International; H-Block: www.anvilintl.com/#sle.
2. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.
3. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.

B. Provide steel pedestals with thermoplastic or rubber base that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified.

C. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.

D. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports.

E. Mounting Height: Provide minimum clearance of 6 inches under supported component to top of roofing.

2.10 ANCHORS AND FASTENERS

A. Manufacturers - Mechanical Anchors:
1. Hilti, Inc: www.us.hilti.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

B. Manufacturers - Powder-Actuated Fastening Systems:
1. Hilti, Inc: www.us.hilti.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

C. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

D. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.

E. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.

F. Hollow Masonry: Use toggle bolts.

G. Hollow Stud Walls: Use toggle bolts.

H. Steel: Use beam ceiling clamps, beam clamps, machine bolts, or welded threaded studs.

I. Beam Ceiling Flanges: ASTM A47/A47M Grade 32510, malleable iron or stainless steel with copper, plain, stainless steel, or zinc finish.

J. Sheet Metal: Use sheet metal screws.

K. Wood: Use wood screws.

L. Plastic and lead anchors are not permitted.

M. Powder-actuated fasteners are not permitted.

N. Hammer-driven anchors and fasteners are not permitted.

O. Post-Installed Concrete and Masonry Anchors: Evaluated and recognized by ICC Evaluation Service, LLC (ICC-ES) for compliance with applicable building code.

P. Preset Concrete Inserts: Continuous metal strut channel and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
   1. Channel Material: Use galvanized steel.
   2. Manufacturer: Same as manufacturer of metal strut channel framing system.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

C. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.

D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

G. Provide thermal insulated pipe supports complete with hangers and accessories. Install thermal insulated pipe supports during the installation of the piping system.

H. Equipment Support and Attachment:
   1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
   2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
   3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   4. Unless otherwise indicated, mount floor-mounted equipment on properly sized 4 inch high concrete pad constructed in accordance with Section 03 3000.
   5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

I. Preset Concrete Inserts: Use manufacturer-provided closure strips to inhibit concrete seepage during concrete pour.

J. Secure fasteners according to manufacturer's recommended torque settings.

K. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flexible elastomeric cellular insulation.

B. Glass fiber insulation.

C. Weather barrier coatings.

D. Jacketing and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping.

B. Section 09 9123 - Interior Painting: Painting insulation jacket.

1.03 REFERENCE STANDARDS

A. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

B. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).

C. ASTM C195 - Standard Specification for Mineral Fiber Thermal Insulating Cement; 2007 (Reapproved 2024).

D. ASTM C449 - Standard Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement; 2007 (Reapproved 2024).

E. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2025.

F. ASTM C547 - Standard Specification for Mineral Fiber Pipe Insulation; 2025.

G. ASTM C795 - Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel; 2008 (Reapproved 2023).

H. ASTM D5590 - Standard Test Method for Determining the Resistance of Paint Films and Related Coatings to Fungal Defacement by Accelerated Four-Week Agar Plate Assay; 2017 (Reapproved 2021).

I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

J. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

K. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum 3 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

1.07 FIELD CONDITIONS

A. Maintain ambient conditions required by manufacturers of each product.

B. Maintain temperature before, during, and after installation for minimum of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, UL 723, ASTM E84, or UL 723.

2.02 GLASS FIBER INSULATION

A. Manufacturers:
   1. CertainTeed Corporation: www.certainteed.com.
   2. Johns Manville Corporation: www.jm.com.
   3. Knauf Insulation: www.knaufinsulation.com/#sle.
   4. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Insulation: ASTM C547and ASTM C795; rigid molded, noncombustible.
   1. K Value: ASTM C177, 0.24 at 75 degrees F.
   2. Maximum Service Temperature: 850 degrees F.
   3. Maximum Moisture Absorption: 0.2 percent by volume.

C. Insulation: ASTM C547and ASTM C795; rigid molded, noncombustible, with wicking material to transport condensed water to the outside of the system for evaporation to the atmosphere.
   1. K Value: ASTM C177, 0.23 at 75 degrees F.
   2. Maximum Service Temperature: 220 degrees F.
   3. Maximum Moisture Absorption: 0.2 percent by volume.

D. Insulation: ASTM C547and ASTM C795; semi-rigid, noncombustible, end grain adhered to jacket.
   1. K Value: ASTM C177, 0.24 at 75 degrees F.
   2. Maximum Service Temperature: 650 degrees F.
   3. Maximum Moisture Absorption: 0.2 percent by volume.

E. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm.

F. Tie Wire: 0.048 inch stainless steel with twisted ends on maximum 12 inch centers.

G. Vapor Barrier Lap Adhesive: Compatible with insulation.

H. Insulating Cement/Mastic: ASTM C195; hydraulic setting on mineral wool.

I. Fibrous Glass Fabric:
   1. Cloth: Untreated; 9 oz/sq yd weight.
   2. Blanket: 1.0 pcf density.
   3. Weave: 5 by 5.

J. Indoor Vapor Barrier Finish:
   1. Cloth: Untreated; 9 oz/sq yd weight.
   2. Vinyl emulsion type acrylic, compatible with insulation, black color.

K. Outdoor Vapor Barrier Mastic: Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

L. Outdoor Breather Mastic: Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

M. Insulating Cement: ASTM C449.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturers:
   1. Aeroflex USA, Inc: www.aeroflexusa.com.
   2. Armacell LLC; AP Armaflex: www.armacell.us/#sle.
   3. K-Flex USA LLC: www.kflexusa.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
   1. 'K' value: ASTM C177, 0.25 at 75 degrees F.
   2. Minimum Service Temperature: Minus 40 degrees F.
   3. Maximum Service Temperature: 220 degrees F.
   4. Connection: Waterproof vapor barrier adhesive.

C. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

2.04 WEATHER BARRIER COATINGS

A. Weather-Resistive Barrier Coating: Fire-resistive, UV resistant, water-based mastic for use over closed cell polyethylene and polyurethane foam insulation; applied with glass fiber or synthetic reinforcing mesh.
   1. Surface Burning Characteristics: Flame spread index of 25 or less, smoke developed index of 450 or less, Class A, when tested in accordance with ASTM E84.
   2. Water Vapor Permeance: Greater than 1.0 perm in accordance with ASTM E96/E96M.
   3. Resistance to Fungal Growth: No growth when tested in accordance with ASTM D5590.
   4. Color: As selected by Architect.

2.05 JACKETING AND ACCESSORIES

A. PVC Plastic Jacket:
   1. Manufacturers:
      a. Johns Manville Corporation: www.jm.com.
      b. Substitutions: See Section 01 6000 - Product Requirements.
   2. Jacket: One piece molded type fitting covers and sheet material, off-white color.
      a. Minimum Service Temperature: 0 degrees F.
      b. Maximum Service Temperature: 150 degrees F.
      c. Moisture Vapor Permeability: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
      d. Thickness: 10 mil, 0.010 inch.
      e. Connections: Brush on welding adhesive.
   3. Covering Adhesive Mastic: Compatible with insulation.

B. Aluminum Jacket:
   1. Comply with ASTM B209/B209M, Temper H14, minimum thickness of 0.016 inch with factory-applied polyethylene and kraft paper moisture barrier on the inside surface.
   2. Thickness: 0.016 inch sheet.
   3. Finish: Smooth.
   4. Joining: Longitudinal slip joints and 2 inch laps.
   5. Fittings: 0.016 inch thick die-shaped fitting covers with factory-attached protective liner.
   6. Metal Jacket Bands: 3/8 inch wide; 0.015 inch thick aluminum.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that piping has been tested before applying insulation materials.

B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.

C. Exposed Piping: Locate insulation and cover seams in least visible locations.

D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.

E. Glass fiber insulated pipes conveying fluids below ambient temperature:
   1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
   2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.

F. For hot piping conveying fluids 140 degrees F or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.

G. For hot piping conveying fluids over 140 degrees F, insulate flanges and unions at equipment.

H. Glass fiber insulated pipes conveying fluids above ambient temperature:

1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure-sensitive adhesive. Secure with outward clinch expanding staples.
2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.

I. Inserts and Shields:
1. Application: Piping 1-1/2 inches diameter or larger.
2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
3. Insert Location: Between support shield and piping and under the finish jacket.
4. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.
5. Insert Material: Hydrous calcium silicate insulation or other heavy density insulating material suitable for the planned temperature range.

J. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions. At fire separations, see Section 07 8400.

K. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet above finished floor): Finish with canvas jacket sized for finish painting.

L. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

M. Heat Traced Piping: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

3.03 SCHEDULES

A. Plumbing Systems:
1. Domestic Hot Water (Copper Piping, 105°F-140°F):
   a. Glass Fiber Insulation:
      1) Pipe Size Range: <1 1/2 inch.
      2) Thickness: 1 inch.
2. Domestic Hot Water (Copper Piping, 105°F-140°F):
   a. Glass Fiber Insulation:
      1) Pipe Size Range: 1 1/2 to 4 inch.
      2) Thickness: 1 1/2 inch.
3. Domestic Hot Water Recirculation (Copper Piping 105-140 degree):
   a. Glass Fiber Insulation:
      1) Pipe Size Range: <1 1/2 inch.
      2) Thickness: 1 inch.
4. Domestic Hot Water (Copper Piping, 141°F-200°F):
   a. Glass Fiber Insulation:
      1) Pipe Size Range: <1 1/2 inch.
      2) Thickness: 1 1/2 inch.
5. Domestic Hot Water (Copper Piping, 141°F-200°F):
   a. Glass Fiber Insulation:
      1) Pipe Size Range: 1 1/2 to 4 inch.
      2) Thickness: 2 inch.
6. Domestic Hot Water Recirculation (Copper Piping, 141-200 degree):
   a. Glass Fiber Insulation:
      1) Pipe Size Range: 3/8-1.1/2 inch.
      2) Thickness: 1 1/2 inch.
7. Domestic Hot Water (PEX Piping, 105°F-140°F):
   a. Flexible Elastomeric Insulation:
      1) Pipe Size Range: <1 1/2 inch.
      2) Thickness: 1 inch.
8. Domestic Hot Water (PEX Piping, 105°F-140°F):

a. Flexible Elastomeric Insulation:
    1) Pipe Size Range: 1 1/2 to 4 inch.
    2) Thickness: 1 1/2 inch.

9. Domestic Cold Water (Copper Piping):
    a. Glass Fiber Insulation:
        1) Pipe Size Range: <4 inch.
        2) Thickness: 1 inch.
10. Domestic Cold Water (PEX Piping):
    a. Flexible Elastomeric Insulation:
        1) Pipe Size Range: <4 inch.
        2) Thickness: 1 inch.
11. Roof Drain Bodies (Primary and Overflow):
    a. Flexible Elastomeric Insulation:
        1) Thickness: 1 inch.
12. Roof Drainage Above Grade (Horizontal and Vertical Piping):
    a. Glass Fiber Insulation:
        1) Pipe Size Range: All
        2) Thickness: 1 inch.
13. Overflow Roof Drainage Above Grade (Horizontal and Vertical Piping):
    a. Insulate pipe within 20 feet of drain body.
    b. Glass Fiber Insulation:
        1) Pipe Size Range: All
        2) Thickness: 1 inch.

END OF SECTION

This page intentionally left blank

SECTION 22 1005 PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sanitary waste piping, buried within 5 feet of building.

B. Sanitary waste piping, above grade.

C. Domestic water piping, buried within 5 feet of building.

D. Domestic water piping, above grade.

E. Pipe, pipe fittings, valves, regulators, and connections for piping systems.
   1. Storm drainage piping, above grade.
   2. Natural gas piping, buried within 5 feet of building.
   3. Natural gas piping, above grade.
   4. Pipe flanges, unions, and couplings.
   5. Pipe hangers and supports.
   6. Ball valves.

1.02 RELATED REQUIREMENTS

A. Section 09 9113 - Exterior Painting.

B. Section 22 0516 - Expansion Fittings and Loops for Plumbing Piping.

C. Section 22 0548 - Vibration and Seismic Controls for Plumbing Piping and Equipment.

D. Section 22 0553 - Identification for Plumbing Piping and Equipment.

E. Section 22 0719 - Plumbing Piping Insulation.

F. Section 31 2316 - Excavation.

1.03 REFERENCE STANDARDS

A. ANSI LC 1/CSA 6.26 - Fuel Gas Piping Systems Using Corrugated Stainless Steel Tubing; 2023.

B. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2021.

C. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings; 2021.

D. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.

E. ASME B16.51 - Copper and Copper Alloy Press-Connect Pressure Fittings; 2021.

F. ASME B31.1 - Power Piping; 2024.

G. ASME B31.9 - Building Services Piping; 2025.

H. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators; 2025, with Errata.

I. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2020.

J. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings; 2026.

K. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

L. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2025.

M. ASTM B32 - Standard Specification for Solder Metal; 2020.

N. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2022.

O. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.

P. ASTM B813 - Standard Specification for Water Flushable Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube; 2024.

Q. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings; 2023.

R. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings; 2026.

S. ASTM C1277 - Standard Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings; 2020.

T. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems; 2020 (Reapproved 2024).

U. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings; 2025.

V. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets; 2020 (Reapproved 2024).

W. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings; 2024, with Editorial Revision (2025).

X. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

Y. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings; 2023.

Z. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast; 2023.

AA. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2021.

BB. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications; 2020.

CC. IAPMO (UPC) - Uniform Plumbing Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

DD. IAPMO/ANSI/CAN Z1117 - Standard for Press Connections; 2022.

EE. ICC (IPC) - International Plumbing Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

FF. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements; 2018, with Editorial Revision (2020).

GG. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry; 2018, with Editorial Revision (2020).

HH. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2017, with Editorial Revision (2020).

II. ICC-ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements; 2023.

JJ. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2025.

KK. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends; 2010, with Errata .

LL. NFPA 54 - National Fuel Gas Code; 2024.

MM. NSF 61 - Drinking Water System Components - Health Effects; 2025, with Addendum

NN. NSF 372 - Drinking Water System Components - Lead Content; 2024.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

C. Certification that press-fit systems are installed by manufacturer-trained personnel using approved tools.

D. Shop Drawings: For non-penetrating rooftop supports, submit detailed layout developed for this project, with design calculations for loadings and spacings.

E. Project Record Documents: Record actual locations of valves.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 6000 - Product Requirements for additional provisions.
2. Valve Repacking Kits: One for each type and size of valve.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.

D. Welder Qualifications: Certified in accordance with ASME BPVC-IX.

E. Press-Fit Systems: Installation personnel shall be trained and certified by the manufacturer of the press system being installed.

F. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary protective coating on cast iron and steel valves.

C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

D. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.07 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Potable Water Supply Systems: Provide piping, pipe fittings, solder, and flux (if used), complying with NSF 61 and NSF 372; label pipe and fittings.

2.02 SANITARY WASTE PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Cast Iron Pipe: ASTM A74 extra heavy weight.
   1. Fittings: Cast iron.
   2. Joints: Hub-and-spigot, CISPI HSN compression type with ASTM C564 neoprene gaskets or lead and oakum.

B. Cast Iron Pipe: CISPI 301, hubless.
   1. Fittings: Cast iron.
   2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.

C. PVC Pipe: ASTM D2665, Schedule 40.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.
   3. Foam core piping not allowed.

2.03 SANITARY WASTE PIPING, ABOVE GRADE

A. Cast Iron Pipe: CISPI 301, hubless, service weight.
   1. Fittings: Cast iron.
   2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.04 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Copper Pipe: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).
   1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
   2. Joints: ASTM B32, solder.
   3. Joints: Brazed.

B. Ductile Iron Pipe (5" and larger): AWWA C151/A21.51.
   1. Fittings: Ductile or gray iron, standard thickness.
   2. Joints: AWWA C111/A21.11, styrene butadiene rubber (SBR) or vulcanized SBR gasket with 3/4 inch diameter rods.

2.05 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Tube: ASTM B88 (ASTM B88M), Type L (B), Drawn (H).

1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
2. Joints: ASTM B32 solder.
3. Mechanical Press Sealed Fittings: ASME B16.51 or IAPMO/ANSI/CAN Z1117, ICC (IPC), and IAPMO (UPC) approved, NSF 61 and NSF 372 certified, with EPDM seals.

2.06 STORM DRAINAGE PIPING, ABOVE GRADE

A. Cast Iron Pipe: CISPI 301, hubless, service weight.
   1. Fittings: Cast iron.
   2. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies.

B. PVC Pipe: ASTM D2665.
   1. Fittings: PVC.
   2. Joints: Solvent welded, with ASTM D2564 solvent cement.
   3. Foam core piping not allowed.

2.07 NATURAL GAS PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Steel Pipe: ASTM A53/A53M, Grade B, Type F, Schedule 40 black.
   1. Fittings: ASTM A234/A234M, wrought steel welding type.
   2. Joints: ASME B31.1, welded.
   3. Jacket: AWWA C105/A21.5 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape.

2.08 NATURAL GAS PIPING, ABOVE GRADE

A. Steel Pipe: ASTM A53/A53M Schedule 40 black.
   1. Fittings: ASME B16.3, malleable iron, or ASTM A234/A234M, wrought steel welding type.
   2. Joints: Threaded or welded to ASME B31.1.

B. Flexible Gas Piping:
   1. Corrugated Stainless Steel Tubing: Comply with ANSI LC 1/CSA 6.26.
   2. Comply with ASTM E84.
   3. Fittings: Provided by piping system manufacturer.
   4. Bonding of CSST systems shall comply with NFPA 54 and manufacturer requirements.

2.09 PIPE FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe Sizes 3 inch and Under:
   1. Ferrous Pipe: Class 150 malleable iron threaded unions.
   2. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.

B. Flanges for Pipe Sizes Over 1 inch:
   1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
   2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.

C. No-Hub Couplings:
   1. Testing: In accordance with ASTM C1277 and CISPI 310.
   2. Gasket Material: Neoprene complying with ASTM C564.
   3. Band Material: Stainless steel.
   4. Eyelet Material: Stainless steel.

D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.10 PIPE HANGERS AND SUPPORTS

A. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
   2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
      a. Cold and Hot Pipe Sizes 6 inch and Larger: Double hangers.
   3. Trapeze Hangers: Welded steel channel frames attached to structure.
   4. Vertical Pipe Support: Steel riser clamp.
   5. Floor Supports: Concrete pier or steel pedestal with floor flange; fixture attachment.

6. Rooftop Supports for Low-Slope Roofs: Steel pedestals with bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified; and as follows:
   a. Bases: High-density polypropylene.
   b. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
   c. Steel Components: Stainless steel or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
   d. Attachment and Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion-resistant material.
   e. Height: Provide minimum clearance of 6 inches under pipe to top of roofing.
   f. Manufacturers:
      1) PHP Systems/Design: www.phpsd.com.
      2) Miro, Inc.: www.miroind.com.
      3) Substitutions: See Section 01 6000 - Product Requirements.

B. Plumbing Piping - Drain, Waste, and Vent:
   1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
   2. Hangers for Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.
   3. Wall Support for Pipe Sizes to 3 inch: Cast iron hook.
   4. Wall Support for Pipe Sizes 4 inch and Over: Welded steel bracket and wrought steel clamp.
   5. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   6. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

C. Plumbing Piping - Water:
   1. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
   2. Hangers for Cold Pipe Sizes 2 inch and Over: Carbon steel, adjustable, clevis.
   3. Hangers for Hot Pipe Sizes 2 to 4 inch: Carbon steel, adjustable, clevis.
   4. Hangers for Hot Pipe Sizes 6 inch and Larger: Adjustable steel yoke, cast iron pipe roll, double hanger.
   5. Wall Support for Pipe Sizes Up to 3 inch: Cast iron hook.
   6. Wall Support for Pipe Sizes 4 inch and Larger: Welded steel bracket and wrought steel clamp.
   7. Wall Support for Hot Pipe Sizes 6 inch and Larger: Welded steel bracket and wrought steel clamp with adjustable steel yoke and cast iron pipe roll.
   8. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   9. Floor Support for Hot Pipe Sizes to 4 inch: Cast iron adjustable pipe saddle, locknut, nipple, floor flange, and concrete pier or steel support.
   10. Floor Support for Hot Pipe Sizes 6 inch and Larger: Adjustable cast iron pipe roll and stand, steel screws, and concrete pier or steel support.
   11. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

D. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
   1. Concrete Wedge Expansion Anchors: Comply with ICC-ES AC193.
   2. Masonry Wedge Expansion Anchors: Comply with ICC-ES AC01.
   3. Concrete Screw Type Anchors: Comply with ICC-ES AC193.
   4. Masonry Screw Type Anchors: Comply with ICC-ES AC106.
   5. Concrete Adhesive Type Anchors: Comply with ICC-ES AC308.
   6. Other Types: As required.
   7. Manufacturers:
      a. Powers Fasteners, Inc.: www.powers.com.
      b. Substitutions: See Section 01 6000 - Product Requirements.

2.11 BALL VALVES

A. Manufacturers:
   1. Apollo Valves: www.apollovalves.com.
   2. Watts, Inc.: www.watts.com.

3. Crane Energy: www.craneenergy.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

B. Construction, 4 Inches and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, solder, threaded, or grooved ends with union.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

D. Install piping to maintain headroom, conserve space, and not interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. See Section 22 0516.

G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

H. Provide access where valves and fittings are not exposed.

I. Establish elevations of buried piping outside the building to ensure not less than 4 ft of cover.

J. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc-rich primer to welding.

K. Provide support for utility meters in accordance with requirements of utility companies.

L. Prepare exposed, unfinished pipe, fittings, supports, and accessories for finish painting.
1. See Section 09 9113 for painting of exterior plumbing systems and components.

M. Excavate in accordance with Section 31 2316.

N. Install bell and spigot pipe with bell end upstream.

O. Install water piping to ASME B31.9.

P. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

Q. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

R. Sleeve pipes passing through partitions, walls, and floors.

S. Inserts:
1. Provide inserts for placement in concrete formwork.
2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches.
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

T. Pipe Hangers and Supports:
1. Install in accordance with ASME B31.9.

2. Support horizontal piping as indicated.
3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
4. Place hangers within 12 inches of each horizontal elbow.
5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
8. Provide copper plated hangers and supports for copper piping.
9. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
10. Provide hangers adjacent to motor-driven equipment with vibration isolation; see Section 22 0548.
11. Support cast iron drainage piping at every joint.

U. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.04 APPLICATION

A. Install unions downstream of valves and at equipment or apparatus connections.

B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

3.05 TOLERANCES

A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.

B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

3.06 FIELD TESTS AND INSPECTIONS

A. Verify and inspect systems according to requirements by the Authority Having Jurisdiction.

B. Gas Distribution Systems:
1. Test Preparation: Close each appliance valve or disconnect and cap each connected appliance.
2. Test gas piping with air or inert gas at not less than 1.5 times operating pressure for a minimum of 30 minutes.

C. Test Results: Document and certify successful results, otherwise repair, document, and retest.

3.07 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A.

3.08 SCHEDULES

A. Pipe Hanger Spacing:
1. Metal Piping:
   a. Pipe Size: 1/2 inch to 1-1/4 inch:
      1) Maximum Hanger Spacing: 6.5 ft.
      2) Hanger Rod Diameter: 3/8 inches.
   b. Pipe Size: 1-1/2 inch to 2 inch:
      1) Maximum Hanger Spacing: 10 ft.
      2) Hanger Rod Diameter: 3/8 inch.
   c. Pipe Size: 2-1/2 inch to 3 inch:
      1) Maximum Hanger Spacing: 10 ft.
      2) Hanger Rod Diameter: 1/2 inch.
   d. Pipe Size: 4 inch to 6 inch:
      1) Maximum Hanger Spacing: 10 ft.
      2) Hanger Rod Diameter: 5/8 inch.
2. Plastic Piping:
   a. All Sizes:

1) Maximum Hanger Spacing: 6 ft.
2) Hanger Rod Diameter: 3/8 inch.

END OF SECTION

SECTION 22 1119 DOMESTIC WATER PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mixing valves.

B. Balancing valves.

1.02 REFERENCE STANDARDS

A. ASSE 1010 - Performance Requirements for Water Hammer Arresters; 2025.

B. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies; 2021.

C. ASSE 1017 - Performance Requirements for Temperature Actuated Mixing Valves for Hot Water Distribution Systems; 2023.

D. ASSE 1052 - Performance Requirements for Hose Connection Backflow Preventers; 2023.

E. ASSE 1070 - Performance Requirements for Water Temperature Limiting Devices; 2020.

F. AWWA C511 - Reduced-Pressure Principle Backflow Prevention Assembly; 2017 (Reaffirmed 2021).

G. AWWA C550 - Protective Interior Coatings for Valves and Hydrants; 2024.

H. NSF 61 - Drinking Water System Components - Health Effects; 2025, with Addendum

I. NSF 372 - Drinking Water System Components - Lead Content; 2024.

J. PDI-WH 201 - Water Hammer Arresters; 2017.

1.03 SUBMITTALS

A. Product Data: Provide manufacturer's literature and data sheets for each product. Include information on materials of fabrication, assembly of components, dimensions, ratings, finishes, rough-in requirements, and installed accessories.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

C. Store products under cover and protected from weather and dirt. Elevate above grade.

D. Protect end connections, flanges, threads, and grooves from dirt and damage.

E. Protect product interiors against rust and corrosion.

F. Do not use operating handles or stems as lifting or rigging points.

G. Handle large products using slings.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Specialties in Potable Water Supply Systems: Provide products complying with NSF 61 and NSF 372.

B. Source Limitations: Furnish domestic water piping specialties of same kind by same manufacturer.

C. Provide brass-bodied domestic water piping specialties in DZR brass.

2.02 BACKFLOW PREVENTERS

A. Reduced-Pressure-Principle Backflow Preventers:
   1. NPS 2-1/2 and Larger:
      a. Assembly: ASSE 1013 and AWWA C511.
      b. Backflow Valve: Manufactured from epoxy-coated cast iron, epoxy-coated ductile iron, or stainless steel.
      c. Isolation Valves: Epoxy-coated OS&Y valves on inlet and outlet.
      d. Epoxy Coatings: AWWA C550.
      e. Maximum Working Pressure: 175 psi.
      f. Working Temperature Range: 33 to 140 degrees F.

B. Hose-Connection Backflow Preventers:

1. Valve: ASSE 1052, brass, nonremovable once installed, drainable, with hose-thread end connections.
    a. Provide with chrome finish when associated faucet, hose bibb, or hydrant is specified in chrome.
2. Maximum Working Pressure: 125 psi.
3. Working Temperature Range: 33 to 180 degrees F.

2.03 MIXING VALVES

A. Thermostatic Master Mixing Valves:
    1. Valve: ASSE 1017, brass or bronze body; thermostatic element; corrosion- and lime-resistant internal components; integral locking temperature adjustment.

B. Digitally Controlled Thermostatic Master Mixing Valves:
    1. Valve: ASSE 1017, brass or bronze body; corrosion- and lime-resistant internal components; microprocessor-control unit for temperature control and monitoring.
    2. Microprocessor Controller:
        a. Manufacturer-provided, packaged application-specific controller with keypad or touch-screen operator interface.
        b. Integral display of temperature, pressure, and flow.
        c. Field Programmable: Settings configurable locally at controller or remotely through building automation system.
        d. Programmable high-temperature sanitization mode.
        e. Programmable high- and low-temperature alarms.
        f. Failsafe: Upon loss of water pressure, valve ceases hot water flow.
    3. Accessories:
        a. Shut-off valve on inlets and outlet.
        b. Stem thermometer on outlet.

C. Water Temperature Limiting Valves:
    1. Valve: ASSE 1070, brass or bronze body; thermostatic element; corrosion- and lime-resistant internal components; integral locking temperature adjustment with high-temperature limit stop; integral check valves with strainer screens on inlets.
    2. Mixed-Water Temperature Setting: 105 degrees F.

2.04 BALANCING VALVES

A. Calibrated Balancing Valves and Circuit Setters:
    1. Valve: Brass, factory preset and calibrated, ball valve design, with metering ports, position indicator, and memory stop.
    2. Maximum Working Pressure: 150 psi.
    3. Working Temperature Range: 33 to 200 degrees F.

B. Automatic Balancing Valves:
    1. Valve: Brass, pressure independent, with removable cartridge.
    2. Maximum Working Pressure: 200 psi.
    3. Working Temperature Range: 33 to 200 degrees F.

2.05 WATER-HAMMER ARRESTORS

A. Piston Type:
    1. Description: ASSE 1010 or PDI-WH 201, copper body with plastic piston and EPDM O-rings.
    2. Air Preload Pressure: 60 psi.
    3. Maximum Working Pressure: 150 psi.
    4. Working Temperature Range: 33 to 180 degrees F.

PART 3 EXECUTION

3.01 INSTALLATION

A. Prior to installation of domestic water piping specialties, flush domestic water piping of foreign material.

B. Install products in accordance with manufacturer's instructions.

C. Install products level and plumb.

D. Install products with clearance for access and maintenance.

E. Support products NPS 2-1/2 and larger independently of surrounding pipe.

F. Support products with flanged or grooved ends independently of surrounding pipe.

G. For products containing isolation or shutoff valves, locate valves in horizontal piping with stems at or above center of piping, maintaining unimpeded stem movement.

H. Backflow Preventers:
   1. Install backflow preventers in accordance with requirements of local authorities having jurisdiction, including requirements of local water utility.
   2. Pipe relief from reduced-pressure-principle backflow preventers to nearest drain.

I. Balancing Valves: Install in accessible locations. Install shutoff valves on inlet and outlet.

J. Water Hammer Arrestors: Install in accordance with PDI-WH 201.

3.02 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Inspect each product for damage and defects.

C. Repair or replace damaged products.

D. Replace defective products.

E. For products containing isolation or shutoff valves, exercise isolation and shutoff valves from fully closed to fully open. Confirm smooth operation.

F. Backflow Preventers:
   1. Test in accordance with manufacturer's instructions.
   2. Test in accordance with requirements of authorities having jurisdiction.
   3. Test in accordance with ASSE listing of backflow preventer.
   4. Replace backflow preventers that fail testing.

G. Mixing Valves: Confirm outlet temperature remains steady without fluctuation.

H. Coordination of Other Tests and Inspections: Provide access to accommodate tests and inspections by independent testing agencies employed by Owner.

3.03 ADJUSTING

A. Adjust mixing valves to design temperature set point.

B. Adjust balancing valves to design flow.

END OF SECTION

This page intentionally left blank

SECTION 22 1319 SANITARY WASTE PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Floor drains.

B. Floor sinks.

C. Cleanouts.

1.02 RELATED REQUIREMENTS

A. Section 22 1005 - Plumbing Piping.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASME A112.6.3 - Floor Drains; 2022.

C. ASME A112.6.7 - Sanitary Floor Sinks; 2022.

D. ASME A112.36.2 - Cleanouts; 2022.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's literature and data sheets for each product. Include information on fabrication materials, assembly of components, dimensions, ratings, finishes, rough-in requirements, and installed accessories.

PART 2 PRODUCTS

2.01 FLOOR DRAINS

A. Cast Iron Floor Drains:
   1. Assembly: ASME A112.6.3.
   2. Body: Lacquered cast iron with anchor flange and membrane clamping collar with weepholes.
   3. Strainer: Adjustable, removable, with vandal-proof screws.
      a. Round:
         1) Material: Nickel bronze.
         2) Diameter: 6 inches.
   4. Accessories:
      a. Trap seal insert.

2.02 FLOOR SINKS

A. Cast Iron Floor Sinks:
   1. Assembly: ASME A112.6.7.
   2. Body: Cast iron with white acid-resistant enameled interior and interior anti-splash dome strainer.
   3. Accessories:
      a. Trap seal insert.

2.03 CLEANOUTS

A. Floor Cleanouts:
   1. Assembly: ASME A112.36.2.
   2. Body: Lacquered cast iron.
   3. Closure Plug: PVC or ABS, threaded, gastight and watertight.
   4. Top: Adjustable, with vandal-proof screws.
      a. Shape and Finish:
         1) Concrete, Finished and Unfinished: Round; nickel bronze.
         2) Terrazzo: Round; cover recessed for terrazzo insert.
         3) Tile: Square; cover recessed for tile insert.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Maintain continuity of waterproofing membranes. Secure waterproofing membranes to drain clamping collars and bonding flanges.

C. Install drains so strainers and grates are level and are at design elevation.

D. Install floor sinks so grates are flush with finished floor unless noted otherwise or unless directed otherwise by adopted code.

E. Extend cleanouts to finished floor or wall surface. Ensure clearance at cleanout for rodding or jetting of drainage system.

F. Install floor cleanouts to allow for floor finishes.

G. Locate, provide, and install cleanouts in piping in accordance with adopted code.

END OF SECTION

SECTION 22 1423 STORM DRAINAGE PIPING SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof and exterior surface drains.

B. Downspout adaptors, boots, and nozzles.

C. Cleanouts.

1.02 RELATED REQUIREMENTS

A. Section 22 1005 - Plumbing Piping.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASME A112.6.4 - Roof, Deck, and Balcony Drains; 2022.

C. ASME A112.36.2 - Cleanouts; 2022.

D. NSF 14 - Plastics Piping System Components and Related Materials; 2025.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's literature and data sheets for each product. Include information on fabrication materials, assembly of components, dimensions, ratings, finishes, rough-in requirements, and installed accessories.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Plastic Storm Drainage Piping Specialties: Provide plastic products complying with NSF 14.

B. Source Limitations: Furnish drains and storm drainage piping specialties of same kind by same manufacturer.

2.02 ROOF AND EXTERIOR SURFACE DRAINS

A. Cast Iron Roof Drains and Overflow Roof Drains:
   1. Assembly: ASME A112.6.4.
   2. Body: Lacquered cast iron with membrane clamping ring with gravel stop.
   3. Strainer: Removable thermoplastic polymer dome with vandal-proof screws.

2.03 DOWNSPOUT ADAPTERS, BOOTS, AND NOZZLES

A. Downspout Adapters:
   1. Description: Lacquered cast iron transition fitting to connect parapet drain to exterior rainwater downspout.

B. Downspout Nozzles, Metal:
   1. Description: Cast bronze or nickel bronze wall-mounted fitting for terminating interior rainwater leader on building exterior, with anchor flange and decorative cow's tongue outlet.
      a. Provide with stainless steel bird screen.

2.04 CLEANOUTS

A. Wall Cleanouts:
   1. Assembly: ASME A112.36.2.
   2. Body: Tee type; body material to match surrounding pipe.
   3. Plug: PVC or ABS, threaded, gastight.
   4. Access Cover: Round, stainless steel wall access cover with vandal-proof screw.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Maintain continuity of waterproofing membranes. Secure waterproofing membranes to drain clamping collars.

C. Install roof drains at low points of roof areas.

D. Extend cleanouts to finished floor or wall surface. Ensure clearance at cleanout for rodding or jetting of drainage system.

E. Locate, provide, and install cleanouts in piping in accordance with adopted code.

END OF SECTION

SECTION 22 1429 SUMP PUMPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Submersible sump pumps.

1.02 REFERENCE STANDARDS

A. ICC (IPC) - International Plumbing Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide certified pump chart or curve with duty point marked over.

C. Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.

1.04 QUALITY ASSURANCE

PART 2 PRODUCTS

2.01 SUBMERSIBLE SUMP PUMPS

A. Manufacturers:
   1. Grundfos Pumps Corporation: www.grundfos.com/us/#sle.
   2. PROFLO: www.ferguson.com/#sle.
   3. Superior Pump: www.superiorpump.com/#sle.
   4. Zoeller Company: www.zoeller.com/#sle.

B. General: Rugged stainless steel and cast iron housing and base with oil-filled motor chamber, ball bearings, and mechanical seal.

C. Impeller: Thermoplastic; open nonclog, stainless steel shaft.

D. Motor: Base mount, enclosed, lubricated oil-free, thermal-overload protected, continuous duty, permanent split capacitor with oil-resistant, three-prong connector, 10 foot power cord.

E. Controls: Integral, chemically-resistant, vertical plated-steel rod float switch. Cycle pump Off/On between 2.5 and 9 inch heights from bottom of pump.

F. Solids Handling Capacity: Pass lint and other small solids up to 1/2 inch in size.

G. Discharge Pipe Size: 2 inch, NPT, female.

H. Maximum Water-Based Effluent Temperature: 120 degrees F.

I. Accessories: Provide full flow swing-type discharge check valve.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products with related fittings and accessories according to manufacturer instructions.

B. Observe and provide incidentals required to complete installation in compliance with ICC (IPC).

END OF SECTION

This page intentionally left blank

SECTION 22 4000 PLUMBING FIXTURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush valve water closets.

B. Lavatories.

C. Sinks.

D. Supply stops.

E. Under-lavatory pipe supply covers.

F. Electric water coolers.

G. Bi-level, electric water coolers.

H. Mop sinks.

I. Service sinks.

1.02 RELATED REQUIREMENTS

A. Section 22 1005 - Plumbing Piping.

B. Section 22 1119 - Domestic Water Piping Specialties.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

B. ASHRAE Std 18 - Methods of Testing for Rating Drinking-Water Coolers with Self-Contained Mechanical Refrigeration; 2008 (Reaffirmed 2013).

C. ASME A112.6.1M - Floor-Affixed Supports for Off-the-Floor Plumbing Fixtures for Public Use; 1997 (Reaffirmed 2017).

D. ASME A112.18.1 - Plumbing Supply Fittings; 2024.

E. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures; 2011 (Reaffirmed 2022).

F. ASME A112.19.1 - Enamelled Cast Iron and Enamelled Steel Plumbing Fixtures; 2024.

G. ASME A112.19.2 - Ceramic Plumbing Fixtures; 2024.

H. ASME A112.19.3 - Stainless Steel Plumbing Fixtures; 2022.

I. ASSE 1070 - Performance Requirements for Water Temperature Limiting Devices; 2020.

J. ASTM C1822 - Standard Specification for Insulating Covers on Accessible Lavatory Piping; 2021.

K. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.

L. NSF 61 - Drinking Water System Components - Health Effects; 2025, with Addendum

M. NSF 372 - Drinking Water System Components - Lead Content; 2024.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Manufacturer's Instructions: Indicate installation methods and procedures.

C. Maintenance Data: Include fixture trim exploded view and replacement parts lists.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Potable Water Systems: Provide drinking water system components certified as complying with NSF 61 and NSF 372.

B. ADA: Where indicated to be ADA-compliant, provide fixtures complying with ADA Standards and ICC A117.1.

2.02 FLUSH VALVE WATER CLOSETS

A. Water Closets:

1. Vitreous china, ASME A112.19.2, floor mounted, siphon jet flush action, china bolt caps.

2. Flush Valve: Exposed (top spud).
3. Flush Operation: Sensor operated.
4. Handle Height: 44 inches or less.
5. Manufacturers:
   a. Advanced Modern Technologies Corporation: www.amtcorporation.com/#sle.
   b. American Standard: www.americanstandard-us.com/#sle
   c. Kohler Company: www.kohler.com/#sle.
   d. Zurn Water, LLC: www.zurn.com/#sle.
   e. Substitutions: See Section 01 6000 - Product Requirements.

B. Flush Valves:
1. Valve Supply Size: 1-1/2 inches.
2. Valve Outlet Size: 1-1/2 inches.
3. Manufacturers:
   a. Advanced Modern Technologies Corporation: www.amtcorporation.com/#sle.
   b. Sloan Valve Company: www.sloanvalve.com/#sle.

C. Toilet Seats:
1. Manufacturers:
   a. Bemis Manufacturing Company: www.bemismfg.com/#sle.
   b. Church Seat Company: www.churchseats.com/#sle.
   c. Olsonite; _____: www.olsonite.com/#sle.
   d. PROFLO; Commercial - Baby Bowls, Open Front: www.ferguson.com/#sle.
   e. Zurn Water, LLC: www.zurn.com/#sle.
   f. Substitutions: See Section 01 6000 - Product Requirements.
2. Plastic: Solid, white finish, enlongated shape, closed front, slow-closing hinged seat cover, and brass bolts with covers.
3. Plastic: Solid, white finish, enlongated shape, open front, slow-closing hinged seat cover, extended back complete with self-sustaining hinges, and brass bolts with covers.

D. Water Closet Carriers:
1. Manufacturers:
   a. Jay R. Smith Manufacturing Company: www.jrsmith.com/#sle.
   b. JOSAM Company: www.josam.com/#sle.
   c. Zurn Water, LLC; Z1201-N: www.zurn.com/#sle.
   d. Substitutions: See Section 01 6000 - Product Requirements.
2. ASME A112.6.1M; adjustable cast iron frame, integral drain hub and vent, adjustable spud, lugs for floor and wall attachment, threaded fixture studs with nuts and washers.

2.03 LAVATORIES

A. Manufacturers:
1. Allora USA: www.allorausa.com/#sle.
2. Gerber Plumbing Fixtures LLC: www.gerberonline.com/#sle.
3. Mansfield Plumbing Products LLC: www.mansfieldplumbing.com/#sle.
4. Zurn Water, LLC: www.zurn.com/#sle.

B. Wall-Hung Basin:
1. Porcelain-Enamelled Cast Iron: ASME A112.19.1; white, rectangular basin with splash lip, front overflow, soap depression, and hanger. Size as indicated on drawings with 4-inch centerset spacing.
2. Vitreous China: ASME A112.19.2; white, rectangular basin with splash lip, front overflow, soap depression, and hanger. Size as indicated on drawings with 4-inch centerset spacing.

C. Supply Faucet:
1. Wall Mounted Faucet Manufacturers:
   a. Advanced Modern Technologies Corporation; AEF-300 Series, Wall Mounted: www.amtcorporation.com/#sle.
   b. Kohler Company: www.kohler.com/#sle.
   c. Stern Engineering; Behind the Mirror Faucet: www.sternfaucets.com/#sle.
   d. Sloan Valve Company: www.sloanvalve.com/#sle.

e. Substitutions: See Section 01 6000 - Product Requirements.

2. ASME A112.18.1; chrome plated combination supply fitting with pop-up waste, water economy aerator with maximum flow of 2.2 gpm, indexed handles.

D. Thermostatic Mixing Valve:
1. ASSE 1070 water temperature limiting valve.
2. See Section 22 1119 for mixing valve specifications.

2.04 SINKS

A. Manufacturers:
1. Elkay Manufacturing Company: www.elkay.com/#sle.
2. Allora USA: www.allorausa.com/#sle.
3. American Bath Group: www.americanbathgroup.com/#sle.
4. Kohler Company: www.kohler.com/#sle.
5. Meganite, Inc: www.meganite.com/#sle.
6. Substitutions: See Section 01 6000 - Product Requirements.

B. Single Compartment Bowl
1. ASME A112.19.3; 22 by 18 by 6 inch outside dimensions, 18 gauge, 0.050 inch thick, type 304 stainless steel, self-rimming and undercoated, with ledge back drilled for trim.

C. Faucets:
1. Manufacturers:
a. American Standard: www.americanstandard-us.com/#sle
b. Kohler Company: www.kohler.com/#sle.
c. PROFLO: www.ferguson.com/#sle.
d. Substitutions: See Section 01 6000 - Product Requirements.
2. Single Handle Faucet with Three-Function Pulldown Spray Head:
a. Minimum Spout Reach: 8-1/4 inch.
b. Type: Deck-mount, swivel faucet with mounting plate.
c. Spray Functions: Stream, full spray and pause at 1.8 gpm, maximum.
d. ASME A112.18.1, ADA Standards, and NSF 61 compliant assembly.
e. Materials: Ceramic disc-cartridge valve on brass body with polished chrome finish.

2.05 SUPPLY STOPS

A. Manufacturers:
1. Jones Stephens: www.jonesstephens.com/#sle.
2. PROFLO: www.ferguson.com/#sle.
3. SharkBite, a brand of Reliance Worldwide Corporation: www.sharkbite.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.

B. Description: ASME A112.18.1, quarter-turn full-port brass ball valve.

C. Operation: Handwheel or T-handle.

D. Finish: Polished chrome.

E. End Connections: Provide supply stops with end connections to match rough-in piping.

F. Maximum Working Pressure: 125 psi.

G. Working Temperature Range: 33 to 160 degrees F.

2.06 UNDER-LAVATORY PIPE SUPPLY COVERS

A. Manufacturers:
1. Plumberex Specialty Products, Inc: www.plumberex.com/#sle.
2. Substitutions: See Section 01 6000 - Product Requirements.

B. Basis of Design: Plumberex Specialty Products, Inc; www.plumberex.com/#sle.
1. Fusion Molded Under-Lavatory Insulators (Non-Sewn): Plumberex Handy-Shield Maxx.
2. Slim Fit Under-Lavatory Insulators (Non-Sewn): Plumberex Trap Gear.
3. Under-Lavatory Covers with Snap-Lock Fasteners (Molded): Plumberex Pro-Extreme.

C. General:
1. Insulate exposed drainage piping including hot, cold and tempered water supplies under lavatories or sinks per ADA Standards.

2. Construction: 1/8 inch PVC with antimicrobial, antifungal and UV resistant properties.
   a. Comply with ASTM C1822 Type I for covers on accessible lavatory piping.
   b. Comply with ASME A112.18.9 for covers on accessible lavatory piping.
   c. Comply with ICC A117.1.
3. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces. No cable ties allowed.

2.07 ELECTRIC WATER COOLERS

A. Manufacturers:
   1. Elkay Manufacturing Company: www.elkay.com/#sle.
   2. Haws Corporation: www.hawsco.com/#sle.
   3. Oasis International: www.oasiscoolers.com/#sle.

B. Water Cooler: Electric, mechanically refrigerated; surface mounted, ADA compliant; stainless steel top, vinyl on steel body, elevated anti-squirt bubbler with stream guard, automatic stream regulator, push button, mounting bracket; integral air cooled condenser and stainless steel grille.
   1. Capacity: 8 gph of 50 degrees F water with inlet at 80 degrees F and room temperature of 90 degrees F, when tested in accordance with ASHRAE Std 18.
   2. Electrical: 115 VAC, 60 Hertz compressor, 6 foot cord and plug for connection to electric wiring system including grounding connector.

2.08 BI-LEVEL, ELECTRIC WATER COOLERS

A. Manufacturers:
   1. Elkay Manufacturing Company: www.elkay.com/#sle.
   2. Haws Corporation: www.hawsco.com/#sle.
   3. Oasis International: www.oasiscoolers.com/#sle.

B. Water Cooler: Bi-level, electric, mechanically refrigerated; surface mounted, ADA compliant; stainless steel top, vinyl on steel body, elevated anti-squirt bubbler with stream guard, automatic stream regulator, push button, mounting bracket; integral air cooled condenser and stainless steel grille.
   1. Capacity: 8 gph of 50 degrees F water with inlet at 80 degrees F and room temperature of 90 degrees F, when tested in accordance with ASHRAE Std 18.
   2. Electrical: 115 VAC, 60 Hertz compressor, 6 foot cord and plug for connection to electric wiring system including grounding connector.

2.09 MOP SINKS

A. Manufacturers:
   1. Acorn Engineering Company: www.acorneng.com/#sle.
   2. American Bath Group: www.americanbathgroup.com/#sle.
   3. Just Manufacturing Company: www.justmfg.com/#sle.
   4. Fiat Products: fiat.com/#sle.
   5. Zurn Water, LLC: www.zurn.com/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.

B. Material: Molded Stone

C. Type: Rectilinear.

D. Grid Strainer: Stainless steel; integral; removable.

E. Dimensions: As indicated on drawings.

F. Accessories:
   1. 5 feet of 1/2 inch diameter plain end reinforced plastic hose.

2.10 SERVICE SINKS

A. Two-Lever Handle Service Faucet:
   1. Spray Type: Full stream spray at 1.8 gpm, maximum.
   2. ASME A112.18.1, ADA Standards, and NSF 61 compliant assembly.
   3. Materials: Ceramic disc cartridge valve on brass body with polished chrome finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify walls, floors, and finishes are prepared and ready for installation of fixtures.

B. Verify rough-ins for field connections match sizes and locations shown on drawings.

C. Verify casework and countertops are prepared and ready for installation of fixtures.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install components level and plumb.

C. Secure fixtures in place.

D. Install rigid or flexible supplies to fixtures. Provide supply stops, reducers, and escutcheons.

3.03 ADJUSTING

A. Adjust stops and valves so fixtures operate without splashing, noise, or overflow.

3.04 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Clean plumbing fixtures to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.05 CLOSEOUT ACTIVITIES

3.06 PROTECTION

A. Protect installed products from damage due to subsequent construction operations.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General construction and requirements.

B. Applications.

C. Single phase electric motors.

D. Three phase electric motors.

E. Electronically Commutated Motors (ECM).

1.02 RELATED REQUIREMENTS

A. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; 2015, with Errata (2026).

B. IEEE 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators; 2017.

C. NEMA MG 00001 - Motors and Generators; 2024.

D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacture of electric motors for _____ use, and their accessories, with minimum three years documented product development, testing, and manufacturing experience.

B. Comply with NFPA 70.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

PART 2 PRODUCTS

2.01 GENERAL CONSTRUCTION AND REQUIREMENTS

A. Construction:
   1. Open drip-proof type except where specifically noted otherwise.
   2. Design for continuous operation in 104 degrees F environment.
   3. Design for temperature rise in accordance with NEMA MG 00001 limits for insulation class, service factor, and motor enclosure type.

B. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.

C. Wiring Terminations:
   1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
   2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.02 APPLICATIONS

A. Exception: Motors less than 250 watts, for intermittent service may be the equipment manufacturer's standard and need not comply with these specifications.

B. Single phase motors for shaft mounted fans, oil burners, and centrifugal pumps: Split phase type.

C. Single phase motors for shaft mounted fans or blowers: Permanent split capacitor type.

D. Motors located in exterior locations, wet air streams downstream of sprayed coil dehumidifiers, draw through cooling towers, air cooled condensers, humidifiers, direct drive axial fans, roll filters, explosion proof environments, and dust collection systems: Totally enclosed type.

2.03 SINGLE PHASE POWER - SPLIT PHASE MOTORS

A. Starting Torque: Less than 150 percent of full load torque.

B. Starting Current: Up to seven times full load current.

C. Drip-proof Enclosure: Class A (50 degrees C temperature rise) insulation, NEMA Service Factor, prelubricated sleeve or ball bearings.

D. Enclosed Motors: Class A (50 degrees C temperature rise) insulation, 1.0 Service Factor, prelubricated ball bearings.

2.04 SINGLE PHASE POWER - PERMANENT-SPLIT CAPACITOR MOTORS

A. Starting Torque: Exceeding one fourth of full load torque.

B. Starting Current: Up to six times full load current.

2.05 THREE PHASE POWER - SQUIRREL CAGE MOTORS

A. Starting Torque: Between 1 and 1-1/2 times full load torque.

B. Starting Current: Six times full load current.

C. Power Output, Locked Rotor Torque, Breakdown or Pull Out Torque: NEMA Design B characteristics.

D. Testing Procedure: In accordance with IEEE 112. Load test motors to determine free from electrical or mechanical defects in compliance with performance data.

E. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.

F. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA STD 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.

G. Nominal Efficiency: As indicated at full load and rated voltage when tested in accordance with IEEE 112.

H. Nominal Power Factor: As indicated at full load and rated voltage when tested in accordance with IEEE 112.

2.06 ELECTRONICALLY COMMUTATED MOTORS (ECM)

A. Applications:
   1. Commercial:
      a. Roof Top Unit:
         1) Input: Motor manufacturer to coordinate control requirements with the control board of the roof top unit and/or specified sequence of operation.
         2) Shaft Extension: Single.
         3) RPM: 300 through 1200.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.

C. Check line voltage and phase and ensure agreement with nameplate.

END OF SECTION

SECTION 23 0529 HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Support and attachment components.

1.02 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2018).

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

E. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping; 2025.

F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates; 2018.

G. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures; 1999 (Reapproved 2022).

H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2018a.

J. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

K. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

L. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

M. FM (AG) - FM Approval Guide; Current Edition.

N. MFMA-4 - Metal Framing Standards Publication; 2004.

O. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2025.

P. UL (DIR) - Online Certifications Directory; Current Edition.

Q. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for nonpenetrating rooftop supports.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of plumbing work.
   2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
   3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.

4. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
5. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
    a. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.
    b. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
    c. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Prefabricated Trapeze-Framed Metal Strut Systems:
1. Manufacturers:
    a. ABB Installation Products: electrification.us.abb.com/#sle.
    b. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.
    c. Elgen Manufacturing Company, Inc: www.elgenmfg.com/#sle.
    d. Gripple, Inc; Fast Track - Standard: www.gripple.com/#sle.
    e. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.
    f. Substitutions: See Section 01 6000 - Product Requirements.
2. MFMA-4 compliant, pre-fabricated, MSS SP-58 type 59 continuous-slot metal strut channel with associated tracks, fittings, and related accessories.
3. Strut Channel or Bracket Material:
    a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
    b. Outdoor and Damp or Wet Indoor Locations: Use galvanized steel.
4. Minimum Channel Dimensions: 1-5/8 inch width by 13/16 inch height.
5. Accessories: Provide bracket covers, cable basket clips, cable tray clips, clamps, conduit clamps, fire-retarding brackets, j-hooks, protectors, and vibration dampeners.

C. Strut Channels:
1. ASTM A653/A653M galvanized steel bracket with clamps for surface mounting of piping or HVAC equipment support.
2. Channel or Bracket Kits: Include rods, brackets, end-fixed fittings, covers, clips, and other related hardware required to complete sectional trapeze section for piping or other support.

D. Channel Nuts:
1. Provide carbon steel channel nut with epoxy copper or zinc finish and long, regular, or short spring.

E. Hanger Rods:
1. Threaded zinc-plated steel unless otherwise indicated.
2. Minimum Size, Unless Otherwise Indicated or Required:
    a. Equipment Supports: 1/2 inch diameter.
    b. Piping up to 1 inch: 1/4 inch diameter.
    c. Piping larger than 1 inch: 3/8 inch diameter.
    d. Trapeze Support for Multiple Pipes: 3/8 inch diameter.

F. Steel Cable:
1. Manufacturers:
    a. Ductmate Industries, Inc, a DMI Company; Clutcher Cable Hanging System: www.ductmate.com/#sle.
    b. Elgen Manufacturing Company, Inc: www.elgenmfg.com/#sle.
    c. Substitutions: See Section 01 6000 - Product Requirements.

G. Cable Hanging System Kits:
1. Manufacturers:
    a. B-Line, a brand of Eaton Corporation: www.eaton.com/#sle.
    b. Ductmate Industries, Inc: ductmate.com/#sle.
    c. Gripple, Inc: www.gripple.com/#sle.
    d. Substitutions: See Section 01 6000 - Product Requirements.
2. Provide cable-wire in bulk or precut lengths with respective cable hangers as required to hold minimum weight of 120 lb.

3. Accessories: Provide brackets, clip or c-clip hangers, covers, and y-hook hangers.

H. Thermal Insulated Pipe Supports:
1. General Requirements:
a. Insulated pipe supports to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.
b. Surface Burning Characteristics: Flame spread index/smoke developed index of 5/30, maximum, when tested in accordance with ASTM E84 or UL 723.
c. Pipe supports to be provided for nominally sized, 1/2 to 30 inch iron pipes.
d. Insulation inserts to consist of rigid polyisocyanurate (urethane) insulation surrounded by a 360 degree, PVC jacketing.
2. PVC Jacket:
a. Pipe insulation protection shields to be provided with a ball bearing hinge and locking seam.
b. Moisture Vapor Transmission: 0.0071 perm inch, when tested in accordance with ASTM E96/E96M.
c. Thickness: 60 mil.
3. Pipe insulation protection shields to be provided at the hanger points and guide locations on pipes requiring insulation.

I. Pipe Supports:
1. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
2. Liquid Temperatures Up To 122 degrees F:
a. Overhead Support: MSS SP-58 Types 1, 3 through 12.
b. Support From Below: MSS SP-58 Types 35 through 38.
3. Operating Temperatures from 122 to 446 degrees F:
a. Overhead Support: MSS SP-58 Type 1 or 3 through 12, with appropriate saddle of MSS SP-58 Type 40 for insulated pipe.
b. Roller Support: MSS SP-58 Types 41 or 43 through 46, with appropriate saddle of MSS SP-58 Type 39 for insulated pipe.
c. Sliding Support: MSS SP-58 Types 35 through 38.

J. Roller Chairs:
1. MSS SP-58 type 43 based on required load, nonconductive and corrosion resistant.
2. Steel Yoke Type: MSS SP-58 type 44, vertically adjustable, nonconductive, and corrosion resistant.
3. Material: Zinc plated ASTM A36/A36M carbon steel or ASTM A47/A47M malleable iron.

K. Pipe Stanchions:
1. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.
2. Provide coated or plated saddles to isolate steel hangers from dissimilar metal tube or pipe.
3. For pipe runs, use stanchions of same type and material where vertical adjustment is required for stationary pipe.

L. Beam Clamps:
1. MSS SP-58 types 19 through 23, 25 or 27 through 30 based on required load.
2. Beam C-Clamp: MSS SP-58 type 23, malleable iron and steel with plain, stainless steel, and zinc finish.
3. Small or Junior Beam Clamp: MSS SP-58 type 19, malleable iron with plain finish. For inverted usage provide manufacturer listed size(s).
4. Wide Mouth Beam Clamp: MSS SP-58 type 19, malleable iron with plain finish.
5. Centerload Beam Clamp with Extension Piece: MSS SP-58 type 30, malleable iron with plain finish.
6. FM (AG) and UL (DIR) Approved Beam Clamp: MSS SP-58 type 19, plain finish,
7. Provide clamps with hardened steel cup-point set screws and lock-nuts for anchoring in place.
8. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.

M. Riser Clamps:
   1. For insulated pipe runs, provide two bolt-type clamps designed for installation under insulation.
   2. MSS SP-58 type 1 or 8, carbon steel or steel with epoxy plated, plain, stainless steel, or zinc plated finish.
   3. Medium Split Horizontal Pipe Clamp: MSS SP-58 type 4, carbon steel or stainless steel with epoxy plated, plain, stainless steel, or zinc plated finish.
   4. Copper Tube Pipe Clamp: MSS SP-58 type 8, epoxy plated copper.
   5. UL (DIR) listed: Pipe sizes 1/2 to 8 inch.

N. U-Bolts:
   1. MSS SP-58 Type 24, carbon steel u-bolt for pipe support or anchoring.

O. Strut Clamps:
   1. Pipe Clamp: Two-piece rigid, universal, or outer diameter type, carbon steel with epoxy copper or zinc finish.
   2. Cushioned Pipe or Tubing Strut Clamp: Provide strut clamp with thermoplastic elastomer cushion having dielectric strength of 670 V/mil.
   3. Service Temperature Range: Minus 65 to 275 degrees F.

P. Insulation Clamps:
   1. Two bolt-type clamps designed for installation under insulation.
   2. Material: Carbon steel with epoxy copper or zinc finish.

Q. Pipe Hangers:
   1. Split Ring Hangers:
      a. Provide hinged split ring and yoke roller hanger with epoxy copper or plain finish.
      b. Material: ASTM A47/A47M malleable iron or ASTM A36/A36M carbon steel.
      c. Provide hanger rod and nuts of the same type and material for a given pipe run.
      d. Provide coated or plated hangers to isolate steel hangers from dissimilar metal tube or pipe.
   2. Swivel Ring Hangers, Adjustable:
      a. MSS SP-58 Type 10, epoxy-painted, zinc-colored.
      b. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
      c. FM (AG) and UL (DIR) listed for specific pipe size runs and loads.
      d. Felt-Lining: Provide for uninsulated pipe to reduce noise and prevent static issues.
   3. Clevis Hangers, Adjustable:
      a. Copper Tube: MSS SP-58 Type 1, epoxy-plated copper.
      b. Felt-Lined: MSS SP-58 Type 1, zinc-plated, silicone-free carbon steel.
      c. Light-Duty: MSS SP-58 Type 1, zinc-colored, epoxy plated.
      d. Standard-Duty: MSS SP-58 Type 1, zinc-colored, epoxy plated.
      e. UL (DIR) listed: Pipe sizes 2-1/2 to 8 inch.

R. Intermediate Pipe Guides:
   1. Pipe Diameter 6 inch and Smaller: Provide minimum clearance of 0.16 inch.
   2. Pipe Sizes 8 inch: 0.625 inch U-bolt with double nuts providing minimum clearance of 0.28 inch.
   3. Pipe Size 10 inch: 0.75 inch U-bolt.
   4. Pipe Sizes 12 to 16 inch: 0.875 inch U-bolt.
   5. Pipe Sizes 18 to 30 inch: 1 inch U-bolt.
   6. Use pipe clamps with oversize pipe sleeve that provides clearance around pipe.

S. Dielectric Barriers: Provide between metallic supports and metallic piping and associated items of dissimilar type; acceptable dielectric barriers include rubber or plastic sheets or coatings attached securely to pipe or item.

T. Nonpenetrating Rooftop Supports for Low-Slope Roofs:
   1. Manufacturers:
      a. Anvil International; H-Block: www.anvilintl.com/#sle.
      b. Unistrut, a brand of Atkore International Inc: www.unistrut.com/#sle.

c. Substitutions: See Section 01 6000 - Product Requirements.

2. Provide steel pedestals with thermoplastic or rubber base that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified.
3. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
4. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports.
5. Mounting Height: Provide minimum clearance of 6 inches under supported component to top of roofing.

U. Pipe Shields for Insulated Piping:
1. MSS SP-58 Type 40, ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel
2. General Construction and Requirements:
a. Surface Burning Characteristics: Comply with ASTM E84 or UL 723.
b. Shields Material: UV-resistant polypropylene with glass fill.
c. Maximum Insulated Pipe Outer Diameter: 12-5/8 inch.
d. Minimum Service Temperature: Minus 40 degrees F.
e. Maximum Service Temperature: 178 degrees F.
f. Pipe shields to be provided at hanger, support, and guide locations on pipe requiring insulation or additional support.

V. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
4. Hollow Masonry: Use toggle bolts.
5. Hollow Stud Walls: Use toggle bolts.
6. Steel: Use beam-ceiling clamps, beam clamps, machine bolts, or welded threaded studs.
7. Beam Ceiling Flanges: ASTM A47/A47M Grade 32510, malleable iron or stainless steel with copper, plain, stainless steel, or zinc finish.
8. Sheet Metal: Use sheet metal screws.
9. Wood: Use wood screws.
10. Plastic and lead anchors are not permitted.
11. Powder-actuated fasteners are not permitted.
12. Hammer-driven anchors and fasteners are not permitted.
13. Preset Concrete Inserts: Continuous metal channel (strut) and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
a. Comply with MFMA-4.
b. Channel Material: Use galvanized steel.
c. Manufacturer: Same as manufacturer of metal channel (strut) framing system.

W. Pipe Installation Accessories:
1. Thermal Insulated, Surface-Mounted Pipe Supports:
a. Material: Carbon steel with epoxy copper or zinc finish.
b. Weather and UV light resistant foam, plastic, or rubber material with built-in strut. Maximum Load: 50 lb for single pipe or multiple landed on top strut.

X. Equipment Roof Supports
1. Manufacturers:
a. The Pate Company: www.patecurbs.com.
b. Miro Industries: www.miroind.com.
c. Subsitutions: See Section 01 6000 - Product Requirements.
2. Roof Rails: 18 ga. galvanized steel, unitized construciton with integral base plate, continous welded corner seams, pressure treated wood nailer, counterflashing with screws.
a. Provide for equipment as shown on plans.

3. 14 Ga. Hilti Channel (1/8x1-5/8) with a zinc-magnesium finish for outdoor use. Sits on 12X12 support base of polycarbonate with carbon black for UV resistance. Hot dip galvanized or electro-galvanized hardware and brackets.
   a. Design and sized for application. Refer to drawings for equipment.
   b. Factory engineered and designed for wind and/or seismic tie downs.

END OF SECTION

SECTION 23 0553 IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates.

B. Tags.

C. Adhesive-backed duct markers.

D. Stencils.

E. Pipe markers.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting: Identification painting.

1.03 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems; 2023.

B. ASTM D709 - Standard Specification for Laminated Thermosetting Materials; 2025.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. List: Submit list of wording, symbols, letter size, and color coding for mechanical identification.

C. Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.

D. Product Data: Provide manufacturers catalog literature for each product required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Brady Corporation: www.bradycorp.com.

B. Champion America, Inc: www.Champion-America.com.

C. Seton Identification Products: www.seton.com/aec.

D. Substitutions: See Section 01 6000 - Product Requirements.

2.02 NAMEPLATES

A. Manufacturers:
   1. Advanced Graphic Engraving, LLC: www.advancedgraphicengraving.com.
   2. Kolbi Pipe Marker Co.: www.kolbipipemarkers.com.
   3. Seton Identification Products, a Tricor Direct Company: www.seton.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Description: Laminated three-layer plastic with engraved letters.
   1. Letter Color: White.
   2. Letter Height: 1/4 inch.
   3. Background Color: Black.
   4. Plastic: Comply with ASTM D709.

2.03 TAGS

A. Manufacturers:
   1. Advanced Graphic Engraving: www.advancedgraphicengraving.com.
   2. Brady Corporation: www.bradycorp.com.
   3. Kolbi Pipe Marker Co.: www.kolbipipemarkers.com.
   4. Seton Identification Products, a Tricor Company: www.seton.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch diameter.

C. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch diameter with smooth edges.

2.04 ADHESIVE-BACKED DUCT MARKERS

A. Material: High gloss acrylic adhesive-backed vinyl film 0.0032 inch; printed with UV and chemical resistant inks.

B. Style: Individual Label.

2.05 STENCILS

A. Manufacturers:
   1. Brady Corporation: www.bradycorp.com.
   2. Kolbi Pipe Marker Co.: www.kolbipipemarkers.com.
   3. Seton Identification Products, a Tricor Company: www.seton.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Stencils: With clean cut symbols and letters of following size:
   1. 3/4 to 1-1/4 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 1/2 inch high letters.
   2. 1-1/2 to 2 inch Outside Diameter of Insulation or Pipe: 8 inch long color field, 3/4 inch high letters.
   3. 2-1/2 to 6 inch Outside Diameter of Insulation or Pipe: 12 inch long color field, 1-1/4 inch high letters.

2.06 PIPE MARKERS

A. Manufacturers:
   1. Brady Corporation: www.bradycorp.com.
   2. Brimar Industries, Inc: www.pipemarker.com.
   3. Kolbi Pipe Marker Co.: www.kolbipipemarkers.com.
   4. Seton Identification Products, a Tricor Company: www.seton.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Color: Comply with ASME A13.1.

C. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.

D. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure-sensitive adhesive backing and printed markings.

PART 3 EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with Section 09 9123 for stencil painting.

3.02 INSTALLATION

A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags with corrosion resistant chain.

C. Apply stencil painting in accordance with Section 09 9123.

D. Install plastic pipe markers in accordance with manufacturer's instructions.

E. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

F. Use tags on piping 3/4 inch diameter and smaller.
   1. Identify service, flow direction, and pressure.
   2. Install in clear view and align with axis of piping.
   3. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

G. Identify air handling units, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates. Small devices, such as in-line pumps, may be identified with tags.

H. Identify control panels and major control components outside panels with plastic nameplates.

I. Identify thermostats relating to terminal boxes or valves with adhesive label in discreet location.

J. Identify valves in main and branch piping with tags.

K. Identify air terminal units and radiator valves with numbered tags.

L. Tag automatic controls, instruments, and relays. Key to control schematic.

M. Identify piping, concealed or exposed, with plastic pipe markers. Use tags on piping 3/4 inch diameter and smaller. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20 feet on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction.

N. Install ductwork with adhesive-backed duct markers. Identify with air handling unit identification number and area served. Locate identification at air handling unit, at each side of penetration of structure or enclosure, and at each obstruction.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Testing, adjustment, and balancing of air systems.

B. Testing, adjustment, and balancing of hydronic and refrigerating systems.

C. Measurement of final operating condition of HVAC systems.

1.02 RELATED REQUIREMENTS

A. Section 01 9113 - General Commissioning Requirements: Commissioning requirements that apply to all types of work.

B. Section 23 0800 - Commissioning of HVAC.

1.03 REFERENCE STANDARDS

A. AABC (NSTSB) - AABC National Standards for Total System Balance, 7th Edition; 2016.

B. ASHRAE Std 111 - Measurement, Testing, Adjusting, and Balancing of Building HVAC Systems; 2024, with Errata (2025).

C. NEBB (TAB) - Procedural Standard for Testing Adjusting and Balancing of Environmental Systems; 2019.

D. SMACNA (TAB) - HVAC Systems Testing, Adjusting and Balancing; 2023.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Installer Qualifications: Submit name of adjusting and balancing agency and TAB supervisor for approval within 30 days after award of Contract.

C. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
   1. Revise TAB plan to reflect actual procedures and submit as part of final report.
   2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
   3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
   4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
   5. Units of Measure: Report data in I-P (inch-pound) units only.

1.05 QUALITY ASSURANCE

A. To avoid conflicts, the Testing and Balancing subcontractor is not to be the the controls subcontractor engaged in this project.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Perform total system balance in accordance with one of the following:
   1. AABC (NSTSB), AABC National Standards for Total System Balance.
   2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
   3. SMACNA (TAB).

B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.

C. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.

D. TAB Agency Qualifications:
   1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
   2. Certified by one of the following:
      a. AABC, Associated Air Balance Council: www.aabc.com/#sle; upon completion submit AABC National Performance Guaranty.

b. NEBB, National Environmental Balancing Bureau: www.nebb.org/#sle.
c. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#sle.

E. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.

F. Pre-Qualified TAB Agencies:
1. Great Lakes Test and Balance .
2. Aireconomics.
3. Mechanical Testing Service..
4. Third Coast Test and Balance.
5. Control Solutions Inc.
6. Substitutions: See Section 01 6000 - Product Requirements.

3.02 EXAMINATION

A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
1. Systems are started and operating in a safe and normal condition.
2. Temperature control systems are installed complete and operable.
3. Proper thermal overload protection is in place for electrical equipment.
4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
5. Duct systems are clean of debris.
6. Fans are rotating correctly.
7. Fire and volume dampers are in place and open.
8. Air coil fins are cleaned and combed.
9. Access doors are closed and duct end caps are in place.
10. Air outlets are installed and connected.
11. Duct system leakage is minimized.
12. Hydronic systems are flushed, filled, and vented.
13. Pumps are rotating correctly.
14. Proper strainer baskets are clean and in place.
15. Service and balance valves are open.

B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.

C. Promptly report abnormal conditions in mechanical systems or conditions that prevent system balance.

D. If, for design reasons, system cannot be properly balanced, report as soon as observed.

E. Beginning of work means acceptance of existing conditions.

3.03 ADJUSTMENT TOLERANCES

A. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 5 percent of design for return and exhaust systems.

B. Air Outlets and Inlets: Adjust total to within plus 5 percent and minus 5 percent of design to space. Adjust outlets and inlets in space to within plus or minus 5 percent of design.

C. Hydronic Systems: Adjust to within plus or minus 10 percent of design.

3.04 RECORDING AND ADJUSTING

A. Ensure recorded data represents actual measured or observed conditions.

B. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.

C. Mark on drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.

D. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.

E. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.

3.05 AIR SYSTEM PROCEDURE

A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.

B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.

C. Measure air quantities at air inlets and outlets.

D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.

E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.

F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.

G. Provide system schematic with required and actual air quantities recorded at each outlet or inlet.

H. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.

I. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.

J. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.

K. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.

L. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches positive static pressure near the building entries.

M. Check multi-zone units for motorized damper leakage. Adjust air quantities with mixing dampers set first for cooling, then heating, then modulating.

N. For variable air volume system powered units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.

3.06 WATER SYSTEM PROCEDURE

A. Adjust water systems to provide required or design quantities.

B. Use calibrated Venturi tubes, orifices, or other metered fittings and pressure gauges to determine flow rates for system balance. Where flow metering devices are not installed, base flow balance on temperature difference across various heat transfer elements in the system.

C. Adjust systems to provide specified pressure drops and flows through heat transfer elements prior to thermal testing. Perform balancing by measurement of temperature differential in conjunction with air balancing.

D. Effect system balance with automatic control valves fully open to heat transfer elements.

E. Effect adjustment of water distribution systems by means of balancing cocks, valves, and fittings. Do not use service or shut-off valves for balancing unless indexed for balance point.

F. Where available pump capacity is less than total flow requirements or individual system parts, full flow in one part may be simulated by temporary restriction of flow to other parts.

G. Measure each branch flow at coils to set differential pressure sensor on variable flow pumping systems at critical branch.

3.07 COMMISSIONING

A. See Sections 01 9113 - General Commissioning Requirements and 23 0800 for additional requirements.

B. Perform prerequisites prior to starting commissioning activities.

C. Fill out Prefunctional Checklists for:
   1. Air side systems.
   2. Water side systems.

D. Furnish to the Commissioning Authority, upon request, any data gathered but not shown in the final TAB report.

E. Re-check a random sample equivalent to 20 percent of the final TAB report data as directed by Commissioning Authority.
   1. Original TAB agency shall execute the re-checks, witnessed by the Commissioning Authority.
   2. Use the same test instruments as used in the original TAB work.
   3. Failure of more than 10 percent of the re-checked items of a given system shall result in the rejection of the system TAB report; rebalance the system, provide a new system TAB report, and repeat random re-checks.
   4. For purposes of re-check, failure is defined as follows:
      a. Air Flow of Supply and Return: Deviation of more than 10 percent of instrument reading.
      b. Minimum Outside Air Flow: Deviation of more than 20 percent of instrument reading; for inlet vane or VFD OSA compensation system using linear proportional control, deviation of more than 30 percent at intermediate supply flow.
      c. Temperatures: Deviation of more than one degree F.
      d. Air and Water Pressures: Deviation of more than 10 percent of full scale of test instrument reading.
      e. Sound Pressures: Deviation of more than 3 decibels, with consideration for variations in background noise.
   5. For purposes of re-check, a whole system is defined as one in which inaccuracies will have little or no impact on connected systems; for example, the air distribution system served by one air handler or the hydronic chilled water supply system served by a chiller or the condenser water system.

F. In the presence of the Commissioning Authority, verify that:
   1. Final settings of all valves, splitters, dampers and other adjustment devices have been permanently marked.
   2. The air system is being controlled to the lowest possible static pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from fan to diffuser having all balancing dampers wide open and that during full cooling of all terminal units taking off downstream of the static pressure sensor, the terminal unit on the critical leg has its damper 90 percent or more open.
   3. The water system is being controlled to the lowest possible pressure while still meeting design loads, less diversity; this shall include a review of TAB methods, established control setpoints, and physical verification of at least one leg from the pump to the coil having all balancing valves wide open and that during full cooling the cooling coil valve of that leg is 90 percent or more open.

END OF SECTION

SECTION 23 0713 DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Duct insulation.

B. Duct liner.

C. Jacketing and accessories.

1.02 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping.

B. Section 23 0553 - Identification for HVAC Piping and Equipment.

C. Section 23 3100 - HVAC Ducts and Casings: Glass fiber ducts.

1.03 REFERENCE STANDARDS

A. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

B. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.

C. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2025.

D. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2024.

E. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2025.

F. ASTM C1071 - Standard Specification for Fibrous Glass Duct Lining Insulation (Thermal and Sound Absorbing Material); 2025.

G. ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings; 2025.

H. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers; 2015 (Reapproved 2022).

I. ASTM C1423 - Standard Guide for Selecting Jacketing Materials for Thermal Insulation; 2021.

J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

K. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

L. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi; 2015, with Editorial Revision (2021).

M. SAE AMS3779 - Tape, Adhesive, Pressure-Sensitive Thermal Radiation Resistant, Aluminum Coated Glass Cloth; 2016b.

N. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

O. UL 181A - Closure Systems for Use with Rigid Air Ducts; Current Edition, Including All Revisions.

P. UL 181B - Closure Systems for Use with Flexible Air Ducts and Air Connectors; Current Edition, Including All Revisions.

Q. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products of the type specified in this section with not less than three years of documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified in this section and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labelled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.07 FIELD CONDITIONS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84, UL 723, ASTM E84, or UL 723.

2.02 GLASS FIBER, FLEXIBLE

A. Manufacturer:
   1. CertainTeed Corporation: www.certainteed.com.
   2. Johns Manville: www.jm.com.
   3. Knauf Insulation: www.knaufinsulation.com.
   4. Owens Corning Corporation: www.ocbuildingspec.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Insulation: ASTM C553; flexible, noncombustible blanket.
   1. K value: 0.25 at 75 degrees F, when tested in accordance with ASTM C518.

C. Vapor Barrier Jacket:
   1. Kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
   3. Secure with pressure-sensitive tape.

D. Vapor Barrier Tape:
   1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure-sensitive rubber-based adhesive.

E. Indoor Vapor Barrier Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

F. Outdoor Vapor Barrier Mastic:
   1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.

G. Tie Wire: Annealed steel, 16 gauge, 0.0508 inch diameter.

2.03 GLASS FIBER, RIGID

A. Manufacturer:
   1. CertainTeed Corporation: www.certainteed.com.
   2. Johns Manville: www.jm.com.
   3. Knauf Insulation: www.knaufinsulation.com.
   4. Owens Corning Corporation: www.ocbuildingspec.com.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Insulation: ASTM C612; rigid, noncombustible.
   1. Interior Duct: K Value: 0.24 at 75 degrees F, when tested in accordance with ASTM C518.
   2. Exterior Duct: K Value: 0.16 at 75 degrees F, when tested in accordance with ASTM C518.
   3. Minimum Density: 3.0 lb/cu ft.

C. Vapor Barrier Jacket:
   1. Kraft paper with glass fiber yarn and bonded to aluminized film.
   2. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.

3. Secure with pressure-sensitive tape.

D. Vapor Barrier Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure-sensitive rubber-based adhesive.

2.04 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturers:
1. Armacell LLC: www.armacell.us.
2. Substitutions: See Section 01 6000 - Product Requirements

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1, in sheet form.
1. Minimum Service Temperature: Minus 40 degrees F.
2. Maximum Service Temperature: 180 degrees F.
3. Connection: Waterproof vapor barrier adhesive.
4. 'K' Value: 0.16 at 75 degrees F, when tested in accordance with ASTM C518.

C. Vapor Barrier Jacket:
1. 17.5 mils laminated covering.
2. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.

D. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.

2.05 JACKETING AND ACCESSORIES

A. Aluminum Jacket:
1. Comply with ASTM B209/B209M, Temper H14, minimum thickness of 0.016 inch with factory-applied polyethylene and kraft paper moisture barrier on the inside surface.
2. Joining: Longitudinal slip joints and 2 inch laps.
3. Fittings: 0.016 inch thick die-shaped fitting covers with factory-attached protective liner.

B. Flexible Weather-Proofing Outdoor Jacket: Self-healing, field-applied outdoor cladding.
1. Material: Aluminum foil/polymer laminate with rubberized asphalt layer and acrylic adhesive.
2. Thickness: 34 mil, 0.034 inch.
3. Water Vapor Transmission: 0.002 perm inch, maximum, when tested in accordance with ASTM E96/E96M.
4. Mold Resistance: Pass when tested in accordance with ASTM C1338.
5. Emissivity: 0.30 when tested in accordance with ASTM C1371.
6. Manufacturers:
a. Polyguard Products; Alumaguard: www.polyguardproducts.com.com/#sle.
b. Substitutions: See Section 01 6000 - Product Requirements

C. Reinforced Tape:
1. FSK tape suitable for sealing seams between insulation, insulated elbows, and fittings resulting in a tight, smooth surface without wrinkles.
2. Comply with UL 723 or ASTM E84.
3. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.

D. UL181 Tape for Rigid and Flexible Ductwork:
1. Comply with UL 181A for rigid ductwork.
2. Comply with UL 181B for flexible ductwork.
3. Aluminum foil coated with pressure-sensitive adhesive on paper release liner.
4. Foil tape suitable for sealing seams between insulation, insulated elbows, and fittings resulting in a tight, smooth surface without wrinkles.

2.06 DUCT LINER

A. Manufacturers:
1. CertainTeed Corporation: www.certainteed.com/#sle.
2. Ductmate Industries, Inc, a DMI Company: www.ductmate.com.
3. Johns Manville: www.jm.com.
4. Knauf Insulation: www.knaufinsulation.com/#sle.

5. Owens Corning Corporation: www.ocbuildingspec.com.
6. Substitutions: See Section 01 6000 - Product Requirements.

B. Glass Fiber Insulation: Non-corrosive, incombustible glass fiber complying with ASTM C1071; flexible blanket and rigid board; impregnated surface and edges coated with black composite.
1. Fungal Resistance: No growth when tested according to ASTM G21.
2. Apparent Thermal Conductivity: Maximum of .23 at 75 degrees F.
3. Rated Velocity on Coated Air Side for Air Erosion: 5,000 fpm, minimum.
4. Minimum Noise Reduction Coefficients:
a. 1/2 inch Thickness: 0.30.
b. 1 inch Thickness: 0.45.
c. 1-1/2 inches Thickness: 0.60.
d. 2 inch Thickness: 0.70.

C. Liner Fasteners: Galvanized steel, impact applied or welded with integral head.

PART 3 EXECUTION

3.01 EXAMINATION

A. Test ductwork for design pressure prior to applying insulation materials.

B. Verify that surfaces are clean, foreign material removed, and dry.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NAIMA National Insulation Standards.

C. Insulated Ducts Conveying Air Below Ambient Temperature:
1. Provide insulation with vapor barrier jackets.
2. Finish with tape and vapor barrier jacket.
3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
4. Insulate entire system, including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.

D. Insulated Ducts Conveying Air Above Ambient Temperature:
1. Provide with or without standard vapor barrier jacket.
2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
3. Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces (below 10 feet above finished floor): Finish with aluminum jacket or ____.
4. Exterior Applications: Provide insulation with vapor barrier jacket. Cover with with calked aluminum jacket with seams located on bottom side of horizontal duct section.
5. External Duct Insulation Application:
a. Secure insulation with vapor barrier with wires and seal jacket joints with vapor barrier adhesive or tape to match jacket.
b. Secure insulation without vapor barrier with staples, tape, or wires.
c. Install without sag on underside of duct. Use adhesive or mechanical fasteners where necessary to prevent sagging. Lift duct off trapeze hangers and insert spacers.
d. Seal vapor barrier penetrations by mechanical fasteners with vapor barrier adhesive.
e. Stop and point insulation around access doors and damper operators to allow operation without disturbing wrapping.
6. Duct and Plenum Liner Application:
a. Adhere insulation with adhesive for 100 percent coverage.
b. Secure insulation with mechanical liner fasteners. Refer to SMACNA (DCS) for spacing.
c. Seal and smooth joints. Seal and coat transverse joints.
d. Seal liner surface penetrations with adhesive.
e. Duct dimensions indicated are net inside dimensions required for airflow. Increase duct size to allow for insulation thickness.
f. Ductwork with liner not to be insulated unless indicated otherwise.

3.03 SCHEDULES

A. Ductwork not insulated:

1. Internally insulated ductwork
2. Relief air ducts (unless noted below)
3. Exhaust air ducts and plenums (unless noted below)

B. Ductwork exposed in mechanical and electrical equipment rooms, unfinished spaces:
1. Supply: Rigid Glass Fiber, 1 1/2 inch thick, faced with ASJ
2. Return, Mixed air plenums: Rigid Glass Fiber, 1 1/2 inch thick, faced with ASJ
3. Outside air intake ducts and plenums: Rigid Glass Fiber, 1 inch thick, faced with ASJ

C. Ductwork exposed to outdoor weather:
1. Supply and return: Rigid Glass Fiber, 2 inch thick, R Value 12, faced with reinforcing membrane and two coats of vapor barrier mastic or multi-layer vapor barrier. Provide metal jacket.
2. Supply and return: Flexible Elastomer, 2 inch thick, R Value 12, faced with multi-layer vapor barrier. Provide metal jacket.

D. Ductwork exposed in conditioned spaces:
1. Supply and return: Not insulated

E. Concealed Ductwork:
1. Supply: Flexible Glass Fiber, 1 1/2 inch thick, faced with FSK.
2. Return above ceilings at a roof level, unconditioned areas and in chases with external wall: Flexible Glass Fiber, 1 1/2 inch thick, faced with FSK.
3. Return in other locations: not insulated
4. Exhaust or Relief ducts from exterior penetration to isolation damper: Flexible Glass Fiber, 1 1/2 inch thick, faced with FSK.

F. Ductwork to be internally lined:
1. Ductwork downstream of terminal units: Glass Fiber, 1” thick, 10 feet minimum
2. Transfer ducts and boots: Glass Fiber, 1” thick

END OF SECTION

This page intentionally left blank

SECTION 23 0716 HVAC EQUIPMENT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Equipment insulation.

B. Weather barrier coatings.

C. Jacketing and accessories.

1.02 RELATED REQUIREMENTS

A. Section 23 0553 - Identification for HVAC Piping and Equipment.

1.03 REFERENCE STANDARDS

A. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

B. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus; 2019, with Editorial Revision (2023).

C. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus; 2021.

D. ASTM C534/C534M - Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form; 2025.

E. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2024.

F. ASTM C1136 - Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation; 2023.

G. ASTM C1393 - Standard Specification for Perpendicularly Oriented Mineral Fiber Roll and Sheet Thermal Insulation for Pipes and Tanks; 2025.

H. ASTM C1423 - Standard Guide for Selecting Jacketing Materials for Thermal Insulation; 2021.

I. ASTM C1775 - Standard Specification for Laminate Protective Jacket and Tape for Use Over Thermal Insulation for Outdoor Applications; 2022.

J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

K. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

L. SAE AMS3779 - Tape, Adhesive, Pressure-Sensitive Thermal Radiation Resistant, Aluminum Coated Glass Cloth; 2016b.

M. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide product description, thermal characteristics, list of materials and thickness for equipment scheduled.

C. Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with not less than three years of documented experience.

B. Applicator Qualifications: Company specializing in performing the type of work specified in this section with minimum 5 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.07 FIELD CONDITIONS

A. Maintain ambient temperatures and conditions required by manufacturers of adhesives, mastics, and insulation cements.

B. Maintain temperature during and after installation for minimum period of 24 hours.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER, FLEXIBLE

A. Manufacturers:
   1. CertainTeed Corporation: www.certainteed.com/#sle.
   2. Johns Manville Corporation: www.jm.com/#sle.
   3. Knauf Insulation: www.knaufinsulation.com/#sle.
   4. Manson Insulation, a company of Knauf Insulation: www.imanson.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Insulation: ASTM C553; flexible, noncombustible.
   1. K Value: 0.36 at 75 degrees F, when tested in accordance with ASTM C177 or ASTM C518.
   2. Maximum Service Temperature: 1,000 degrees F.
   3. Maximum Water Vapor Absorption: 5.0 percent by weight.

C. Insulation: ASTM C1393; pipe and tank, end grain adhered to jacket.
   1. K Value: ASTM C177, 0.27 at 75 degrees F.
   2. Maximum Service Temperature: 850 degrees F.
   3. Maximum Moisture Absorption: 0.2 percent by volume.

D. Vapor Barrier Jacket: Kraft paper reinforced with glass fiber yarn and bonded to aluminized film.
   1. Moisture Vapor Permeability: 0.02 perm inch, when tested in accordance with ASTM E96/E96M.
   2. Secure with self-sealing longitudinal laps and butt strips.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. Manufacturer:
   1. Aeroflex USA; AEROFLEX EPDM Sheet/Roll: www.aeroflexusa.com/#sle.
   2. Armacell LLC; AP ArmaFlex: www.armacell.us/#sle.
   3. Jones Stephens; Rubber Pipe Insulation: www.jonesstephens.com/#sle.
   4. K-Flex USA LLC; Insul-Sheet: www.kflexusa.com/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements

B. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1, in sheet form.
   1. Minimum Service Temperature: Minus 40 degrees F.
   2. Maximum Service Temperature: 220 degrees F.
   3. Connection: Waterproof vapor barrier adhesive.

2.04 JACKETING AND ACCESSORIES

A. Aluminum-Foil Laminate Jacket:
   1. Factory-applied, pressure sensitive adhesive jacketing to comply with ASTM C1775.

B. Reinforced Tape:
   1. FSK tape suitable for sealing seams in insulation, insulated pipe bends, and fittings resulting in a tight, smooth surface without wrinkles.
   2. Comply with UL 723 or ASTM E84.
   3. Moisture Vapor Permeability: 0.00 perm inch, when tested in accordance with ASTM E96/E96M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Factory Insulated Equipment: Do not insulate.

C. Apply insulation close to equipment by grooving, scoring, and beveling insulation. Fasten insulation to equipment with studs, pins, clips, adhesive, wires, or bands.

D. Fill joints, cracks, seams, and depressions with bedding compound to form smooth surface. On cold equipment, use vapor barrier cement.

E. Insulated equipment containing fluids below ambient temperature; insulate entire system.

F. Fiber glass insulated equipment containing fluids below ambient temperature; provide vapor barrier jackets, factory-applied or field-applied. Finish with glass cloth and vapor barrier adhesive.

G. Inserts and Shields:
   1. Application: Equipment 1-1/2 inches diameter or larger.
   2. Shields: Galvanized steel between hangers and inserts.
   3. Insert Location: Between support shield and equipment and under the finish jacket.
   4. Insert Configuration: Minimum 6 inches long, of same thickness and contour as adjoining insulation; may be factory fabricated.

H. Finish insulation at supports, protrusions, and interruptions.

I. Exterior Applications:
   1. Provide vapor barrier jacket or finish with glass mesh reinforced vapor barrier cement.
   2. Cover with aluminum or stainless steel.

J. Cover glass fiber insulation with metal mesh and finish with heavy coat of insulating cement.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Control panels.

B. Dampers.

C. Damper Operators:
   1. Electric operators.

D. Humidistats:
   1. Room humidistats.
   2. Limit duct humidistats.

E. Wall-, Surface-, and Duct-Mounted Sensors:
   1. Temperature sensors.
   2. Humidity sensors.
   3. Building static pressure transmitters.
   4. Room pressure monitors.
   5. Static air pressure sensors.
   6. Airflow meters; pitot tubes.
   7. Airflow meters; thermal dispersion.
   8. Carbon monoxide sensors.
   9. Carbon dioxide sensors.

F. Thermostats:
   1. Electric thermostats.
   2. Freezestats.
   3. Room-mount thermostat accessories.
   4. Outdoor-reset thermostats.
   5. Immersion thermostats.
   6. Airstream thermostats.
   7. Electric high/low limit duct thermostats.

1.02 RELATED REQUIREMENTS

A. Section 23 3300 - Air Duct Accessories.

B. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections.

C. Section 26 2726 - Wiring Devices: Elevation of exposed components.

1.03 REFERENCE STANDARDS

A. AMCA 500-D - Laboratory Methods of Testing Dampers for Rating; 2018.

B. ASME B1.20.1 - Pipe Threads, General Purpose, Inch; 2013 (Reaffirmed 2018).

C. ASTM B32 - Standard Specification for Solder Metal; 2020.

D. ASTM B88 - Standard Specification for Seamless Copper Water Tube; 2022.

E. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric); 2020.

F. ASTM B819 - Standard Specification for Seamless Copper Tube for Medical Gas Systems; 2019.

G. IEC 60529 - Degrees of Protection Provided by Enclosures (IP Code); 1989 (Corrigendum 2019).

H. NEMA BS 31032 - Residential Controls–Electrical Wall-Mounted Room Thermostats; 2025.

I. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

J. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

K. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

L. TIA-568.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standards; 2018d, with Addenda (2020).

M. UL 444 - Communications Cables; Current Edition, Including All Revisions.

N. ANSI/AMCA 500-D- Laboratory methods of testing dampers for rating.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.

C. Shop Drawings: Indicate complete operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system.

D. Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors.
   1. Revise shop drawings to reflect actual installation and operating sequences.

E. Operation and Maintenance Data: Include inspection period, cleaning methods, recommended cleaning materials, and calibration tolerances.

F. Project Record Documents: Record actual location of control components, including panels, thermostats, and sensors.
   1. Revise shop drawings to reflect actual installation and operating sequences.

G. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements for additional provisions.
   2. Extra Thermostats and Other Exposed Sensors: One of each type.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years experience approved by manufacturer.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Correct defective work within a two year period after Substantial Completion.

PART 2 PRODUCTS

2.01 EQUIPMENT - GENERAL

A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

2.02 CABLE

A. Description: 100 ohm, balanced twisted pair cable complying with TIA-568.2 and listed and labeled as complying with UL 444.

B. Cable Type - Voice and Data: TIA-568.2 Category 6 UTP (unshielded twisted pair); 23 AWG.

C. Cable Applications:
   1. All Control System Applications: Use listed NFPA 70 Type CMP plenum cable.

D. Aluminum conductors shall not be used under any circumstances.

2.03 CONTROL PANELS

A. Unitized cabinet type for each system under automatic control with relays and controls mounted in cabinet and temperature indicators, pressure gauges, pilot lights, push buttons and switches flush on cabinet panel face.

B. NEMA EN 10250, general purpose utility enclosures with enameled finished face panel.

C. Provide common keying for all panels.

2.04 DAMPERS

A. See Section 23 3300 for dampers and this section for actuators and operators.

2.05 DAMPER OPERATORS

A. General:
   1. Provide actuators with torque capacity sized for minimum of 20 percent greater than maximum design stream velocity and hold tight seal against maximum system pressures.
   2. Provide spring return for two position control and for fail safe operation.
   3. Provide sufficient number of operators to achieve unrestricted movement throughout damper range.
   4. Provide one operator for maximum 36 sq ft damper section.
   5. See Section 25 3513 for field-mount damper actuators and operators.

B. Electric Operators:
   1. Manufacturers:
      a. Honeywell International, Inc: buildingcontrols.honeywell.com/#sle.
      b. Johnson Controls International, PLC: www.johnsoncontrols.com/#sle.
      c. Schneider Electric: www.schneider-electric.us/#sle.
      d. Belimo Aircontrols (USA), Inc[<>]: www.belimo.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.
   2. Spring return, adjustable stroke motor having oil immersed gear train, with auxiliary end switch.

2.06 WALL-, SURFACE-, AND DUCT-MOUNT SENSORS

A. Temperature Sensors:
   1. Manufacturers:
      a. Dwyer Instruments Inc: www.dwyer-inst.com/#sle.
      b. Johnson Controls International, PLC: www.johnsoncontrols.com/#sle.
      c. Veris Industries: www.veris.com/#sle.
   2. Use thermistor or RTD type temperature sensing elements with characteristics resistant to moisture, vibration, and other conditions consistent with the application without affecting accuracy and life expectancy.
   3. Construct RTD of nickel or platinum with base resistance of 1000 ohms at 70 degrees F.
   4. Temperature Sensing Device: Compatible with project DDC controllers.
   5. Performance Characteristics:
      a. RTD:
         1) Room Sensor Accuracy: Plus/minus 0.50 degrees F minimum.
         2) Duct Averaging Accuracy: Plus/minus 0.50 degrees F minimum.
         3) Chilled Water Accuracy: Plus/minus 0.50 degrees F minimum.
         4) All Other Accuracy: Plus/minus 0.75 degrees F minimum.
         5) Range: Minus 40 degrees F through 220 degrees F minimum.
      b. Temperature Transmitter:
         1) Accuracy: 0.10 degree F minimum or plus/minus 0.20 percent of span.
         2) Output: 4 to 20 mA.
      c. Sensing Range:
         1) Provide limited range sensors if required to sense the range expected for a respective point.
         2) Use RTD type sensors for extended ranges beyond minus 30 to 230 degrees F.
         3) Use temperature transmitters in conjunction with RTDs when RTDs are incompatible with DDC controller direct temperature input.
      d. Room Temperature Sensors with Integral Digital Display:
         1) Construct for surface.
         2) Provide a four button keypad with the following capabilities:
            (a) Indication of space and outdoor temperatures.
            (b) Display and control fan operation status.
            (c) Manual occupancy override and indication of occupancy status.
            (d) Controller mode status.
            (e) Password enabled setpoint and override modes.

B. Humidity Sensors, Outdoor-Mount:
   1. Digitally profiled thin-film capacitive sensor encased in a die-cast metal, weather-proof plastic or metal housing with solar shield.
   2. Measuring Scale: 0 to 100 percent RH, noncondensing, temperature compensated.
   3. Hardwired Output: Two-wire, 4 to 20 mA, loop powered.
   4. Accuracy: Plus/minus 1 percent between 20 to 40 percent RH linear range, NIST traceable with multi-point calibration.

C. Building Static Pressure Transmitters:
   1. Single port for direct or tubing connection into wall or ceiling static pressure tip, direct acting, double bell, scale range 0.01 to 6.0 in-wc positive or negative, and sensitivity of 0.0005 in-wc. Transmit electronic signal to receiver with matching scale range.

D. Room Pressure Monitors:
   1. Transmitter: Five percent accuracy, adjustable zero and span, 100 to 1 turndown, 0.1 percent of calibrated span linearity, 30 to 50 millisecond response time, minimum overpressure of 150 percent over highest range value, alphanumeric indicating display, wired or wireless connectivity for configuration, and terminal strip within enclosed electronic components.

E. Static-Air Pressure Sensors:
   1. Unidirectional with ranges not exceeding 150 percent of maximum expected input.
   2. Temperature compensate with typical thermal error or 0.06 percent of full scale in temperature range of 40 to 100 degrees F.
   3. Accuracy: One percent of full scale with repeatability 0.3 percent.
   4. Output: 0 to 5 vdc with power at 12 to 28 vdc.

F. Airflow Meters; Pitot Tubes:
   1. Sensor Type: Provide duct-inserted probe, duct-inserted pitot-tube assembly, and wall-mounted assembly for outside air with built-in transmitter.
   2. Flow Range: Equivalent velocity pressure required to match scheduled flow range with a 100 to 1 signal turndown ratio.
   3. Linearity: 0.1 percent of calibrated span.
   4. Minimum Overpressure: 150 percent over highest range value.
   5. Output: Two-wire, 4 to 20 mA.
   6. Access Box: NEMA EN 10250, Type 1 with hinged cover housing and cable access ports.

G. Airflow Meters; Thermal Dispersion:
   1. Configuration: Duct or plenum inserted assembly using up to eight water-resistant thermal dispersion sensors per metal probe wired into external access box holding self-diagnosing sensor interface electronics with respective field wire and cable landing terminals.
   2. Provide thermal dispersion flow meters complete with matched transducers, self aligning installation hardware, and transducer cables.
   3. Optimize thermal dispersion transducer for the specific duct or pipe and process conditions for the application.
   4. Signal Monitoring Range:
      a. Air Velocity: 0 to 2000 fpm, bidirectional converted to airflow using section area and air velocity from listed range.
      b. Temperature: 32 to 104 degrees F.
   5. Accuracy: Plus or minus 1 percent, NIST with a plus or minus 0.25 percent repeatability over listed range. Include means to zero, adjust, and calibrate outputs.
   6. Access Box: NEMA EN 10250, Type 1 with hinged cover housing and cable access ports.
   7. Outputs: Two-wire, 4 to 20 mA, for each measured signal, configurable.

H. Carbon Monoxide Sensors:
   1. Manufacturers:
      a. Greystone Energy Systems, Inc: www.greystoneenergy.com/#sle.
      b. Macurco, a brand or Aerionics, Inc: www.macurco.com/#sle.
      c. Veris Industries: www.veris.com.
      d. Substitutions: See Section 01 6000 - Product Requirements.

2. Gas sensing module that holds fixed or replaceable carbon monoxide gas-sensor cartridge.
3. Form Factor: IEC 60529, IP20 enclosure, single-gang electrical box mounted.
4. Electromechanical sensor with 0 to 500 ppm measurement range.
5. Accuracy: Plus/minus Five percent of range with 1 ppm resolution.
6. Hardwired Output: Three-wire, 4 to 20 mA, loop powered.
7. Alarm: Auxiliary dry contact relay driven by setpoint adjustable between 25 to 180 ppm.

I. Carbon Dioxide Sensors, Duct and Wall:
1. General: Provide nondispersive infrared (NDIR), diffusion sampling CO2 sensors with integral transducers and linear output.
2. Air Temperature: Range of 32 to 122 degrees F.
3. Relative Humidity: Range of 0 to 95 percent (noncondensing).
4. Power Input: Class 2; 12 to 30VDC or 24VAC 50/60 Hz; 100mA max.
5. Calibration Characteristics:
   a. Automatically compensating algorithm for sensor drift due to sensor degradation.
   b. Maximum Drift: 2 percent.
   c. User calibratable with a minimum calibration interval of 5 years.
6. Construction:
   a. Sensor Chamber: Noncorrosive material for neutral effect on carbon dioxide sample.
   b. Provide duct mounted sensors with duct probe designed to protect sensing element from dust accumulation and mechanical damage.
   c. Housing: High impact plastic.

2.07 THERMOSTATS

A. Electric Thermostats:
1. Type: NEMA BS 31032, 24 volts, with setback/setup temperature control.
2. Service: Cooling only.
3. Covers: Locking with set point adjustment and setpoint indication, with thermometer.

B. Freezestats:
1. Manufacturers:
   a. Honeywell International, Inc: buildingcontrols.honeywell.com/#sle.
   b. Johnson Controls International, PLC: www.johnsoncontrols.com/#sle.
   c. Siemens Industry, Inc: www.siemens.com/#sle.
   d. Veris Industries: www.veris.com/#sle.
   e. Automation Components, Inc.:www.workaci.com.
   f. Substitutions: See Section 01 6000 - Product Requirements.
2. Configuration: Vapor-filled capillary Vapor-filled capillary.
3. Probe Sensing Length: 20 feet.
4. Setpoint Adjust Control: Screw with manual reset switch.
5. Switch Type: DPDT, snap-action, form C in dust-protected enclosure.
6. Sensing Range: 10 to 54 deg F.
7. Mounting: Locate on as indicated on drawings or cooling coil intake side.
8. Field Interface: Connect load line-voltage to fan VFD or starter and connect auxilary circuit to BMS alarm.
9. Electrical Rating: Pilot duty, 125 VA at 125 to 600 VAC.

C. Room-Mounted Thermostat Accessories:
1. Thermostat Covers: Brushed aluminum.
2. Insulating Bases: For thermostats located on exterior walls.
3. Thermostat Guards: Metal mounted on separate base.
4. Adjusting Key: As required for device.
5. Aspirating Boxes: Where indicated for thermostats requiring flush installation.

D. Outdoor Reset Thermostats:
1. Remote bulb or bimetal rod and tube type, proportioning action with adjustable throttling range, adjustable setpoint.
2. Scale range: Minus 10 to 70 degrees F.

E. Immersion Thermostats:

1. Manufacturers:
   a. Resideo Technologies, Inc: www.resideo.com/#sle.
   b. Substitutions: See Section 01 6000 - Product Requirements.
2. Remote bulb or bimetallic rod and tube type, proportional action with adjustable setpoint and adjustable throttling range.

F. Airstream Thermostats:
1. Remote bulb or bimetallic rod and tube type, proportional action with adjustable setpoint in middle of range and adjustable throttling range.
2. Averaging service remote bulb element: 7.5 feet.

G. Electric High/Low Limit Duct Thermostats:
1. Snap acting, single pole, single throw, manual reset switch that trips if temperature sensed across any 12 inches of bulb length is above, equal to, or below setpoint,
2. Bulb length: Minimum 20 feet.
3. Provide one thermostat for every 20 sq ft of coil surface.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that systems are ready to receive work.

C. Beginning of installation means installer accepts existing conditions.

D. Sequence work to ensure installation of components is complementary to installation of similar components in other systems.

E. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

F. Ensure installation of components is complementary to installation of similar components.

G. Coordinate installation of system components with installation of mechanical systems equipment such as air handling units and air terminal units.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check and verify location of thermostats with plans and room details before installation. Locate 60 inches above floor. Align with lighting switches and humidistats; see Section 26 2726.

C. Mount freeze protection thermostats using flanges and element holders.

D. Mount outdoor reset thermostats and outdoor sensors indoors, with sensing elements outdoors with sun shield.

E. Provide separable sockets for liquids and flanges for air bulb elements.

F. Provide guards on thermostats in entrances.

G. Provide valves with position indicators and with pilot positioners where sequenced with other controls.

H. Provide mixing dampers of opposed blade construction arranged to mix streams. Provide pilot positioners on mixed air damper motors.

I. Provide isolation (two-position) dampers of parallel blade construction.

J. Install damper motors on outside of duct in warm areas. Do not install motors in locations at outdoor temperatures.

K. Mount control panels adjacent to associated equipment on vibration free walls or free-standing angle iron supports. One cabinet may accommodate more than one system in same equipment room. Provide engraved plastic nameplates for instruments and controls inside cabinet and engraved plastic nameplates on cabinet face.

L. Install "hand/off/auto" selector switches to override automatic interlock controls when switch is in "hand" position.

M. Provide conduit and electrical wiring in accordance with Section 26 0583. Electrical material and installation shall be in accordance with appropriate requirements of NFPA 70.
1. Cable and wiring installed in return air plenums shall be plenum rated.

3.03 MAINTENANCE

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements relating to maintenance service.

B. Provide a separate maintenance contract for specified maintenance service.

C. Provide service and maintenance of control system for one year from Date of Substantial Completion.

D. Provide complete service of controls systems, including call backs, and submit written report of each service call.

END OF SECTION

This page intentionally left blank

SECTION 23 0993 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section defines the manner and method by which controls function. Requirements for each type of control system operation are specified. Equipment, devices, and system components required for control systems are specified in other sections.

1.02 RELATED REQUIREMENTS

A. Section 23 0913 - Instrumentation and Control Devices for HVAC.

B. Section 23 0923 - Direct-Digital Control System for HVAC.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Sequence of Operation Documentation: Submit written sequence of operation for entire HVAC system and each piece of equipment.
   1. Preface: 1 or 2 paragraph overview narrative of the system describing its purpose, components and function.
   2. State each sequence in small segments and give each segment a unique number for referencing in Functional Test procedures; provide a complete description regardless of the completeness and clarity of the sequences specified in Contract Documents.
   3. Include at least the following sequences:
      a. Start-up.
      b. Warm-up mode.
      c. Normal operating mode.
      d. Unoccupied mode.
      e. Shutdown.
      f. Capacity control sequences and equipment staging.
      g. Temperature and pressure control, such as setbacks, setups, resets, etc.
      h. Detailed sequences for all control strategies, such as economizer control, optimum start/stop, staging, optimization, demand limiting, etc.
      i. Effects of power or equipment failure with all standby component functions.
      j. Sequences for all alarms and emergency shut downs.
      k. Seasonal operational differences and recommendations.
      l. Interactions and interlocks with other systems.
   4. Include initial and recommended values for all adjustable settings, setpoints and parameters that are typically set or adjusted by operating staff; and any other control settings or fixed values, delays, etc. that will be useful during testing and operating the equipment.
   5. For packaged controlled equipment, include manufacturer's furnished sequence of operation amplified as required to describe the relationship between the packaged controls and the control system, indicating which points are adjustable control points and which points are only monitored.
   6. Include schedules, if known.

C. Control System Diagrams: Submit graphic schematic of the control system showing each control component and each component controlled, monitored, or enabled.
   1. Label with settings, adjustable range of control and limits.
   2. Include flow diagrams for each control system, graphically depicting control logic.
   3. Include the system and component layout of all equipment that the control system monitors, enables or controls, even if the equipment is primarily controlled by packaged or integral controls.
   4. Include draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value.
   5. Include all monitoring, control and virtual points specified in elsewhere.
   6. Include a key to all abbreviations.

D. Points List: Submit list of all control points indicating at least the following for each point.
   1. Name of controlled system.
   2. Point abbreviation.
   3. Point description; such as dry bulb temperature, airflow, etc.

4. Display unit.
5. Control point or setpoint (Yes / No); i.e. a point that controls equipment and can have its setpoint changed.
6. Monitoring point (Yes / No); i.e. a point that does not control or contribute to the control of equipment but is used for operation, maintenance, or performance verification.
7. Intermediate point (Yes / No); i.e. a point whose value is used to make a calculation which then controls equipment, such as space temperatures that are averaged to a virtual point to control reset.
8. Calculated point (Yes / No); i.e. a “virtual” point generated from calculations of other point values.

E. Designer's Qualification Statement.

F. Project Record Documents: Record actual locations of components and setpoints of controls, including changes to sequences made after submission of shop drawings.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - REFER TO DRAWINGS

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Piping.

B. Refrigerant.

C. Moisture and liquid indicators.

D. Valves.

E. Strainers.

F. Filter-driers.

G. Flexible connections.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting.

B. Section 23 0716 - HVAC Equipment Insulation.

1.03 REFERENCE STANDARDS

A. AHRI 730 (I-P) - Flow Capacity Rating of Suction Line Filters and Suction Line Filter Driers; 2013 (Reapproved 2014).

B. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2024, with Addendum (2026).

C. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings; 2021.

D. ASME B31.5 - Refrigeration Piping and Heat Transfer Components; 2022.

E. ASME B31.9 - Building Services Piping; 2025.

F. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators; 2025, with Errata.

G. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

H. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service; 2023.

I. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding; 2026.

J. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2025.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide general assembly of specialties, including manufacturer's catalogue information. Provide manufacturer's catalog data including load capacity.

C. Shop Drawings: Indicate schematic layout of system, including equipment, critical dimensions, and sizes.

D. Design Data: Submit design data indicating pipe sizing. Indicate load-carrying capacity of trapeze, multiple pipe, and riser support hangers.

E. Test Reports: Indicate results of leak test, acid test.

F. Manufacturer's Installation Instructions: Indicate support, connection requirements, and isolation for servicing.

G. Submit welders certification of compliance with ASME BPVC-IX.

H. Project Record Documents: Record exact locations of equipment and refrigeration accessories on record drawings.

I. Maintenance Data: Include instructions for changing cartridges, assembly views, spare parts lists.

J. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Filter-Dryer Cartridges: One of each type and size.
   3. Extra Refrigerant: One container of refrigerant, _____ pounds size.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store piping and specialties in shipping containers with labeling in place.

B. Protect piping and specialties from entry of contaminating material by leaving end caps and plugs in place until installation.

C. Dehydrate and charge components such as piping and receivers, seal prior to shipment, until connected into system.

PART 2 PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Where more than one piping system material is specified ensure system components are compatible and joined to ensure integrity of system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

B. Provide pipe hangers and supports in accordance with ASME B31.5 unless indicated otherwise.

C. Liquid Indicators:
   1. Use line size liquid indicators in main liquid line leaving condenser.
   2. If receiver is provided, install in liquid line leaving receiver.
   3. Use line size on leaving side of liquid solenoid valves.

D. Refrigerant Charging (Packed Angle) Valve: Use in liquid line between receiver shut-off valve and expansion valve.

E. Pressure Relief Valves: Use on ASME receivers and pipe to outdoors.

F. Filter-Driers:
   1. Use a filter-drier immediately ahead of liquid-line controls, such as thermostatic expansion valves, solenoid valves, and moisture indicators.
   2. Use a filter-drier on suction line just ahead of compressor.

G. Receivers:
   1. Use on systems with long piping runs.

H. Flexible Connectors: Utilize at or near compressors where piping configuration does not absorb vibration.

2.02 REGULATORY REQUIREMENTS

A. Comply with ASME B31.9 for installation of piping system.

2.03 PIPING

A. Copper Tube: ASTM B280, H58 hard drawn or O60 soft annealed.
   1. Fittings: ASME B16.22 wrought copper.
   2. Joints: Braze, AWS A5.8M/A5.8 BCuP silver/phosphorus/copper alloy.

B. Pipe Supports and Anchors:
   1. Provide hangers and supports that comply with MSS SP-58.
      a. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
   2. Hangers for Pipe Sizes 1/2 to 1-1/2 Inch: Malleable iron adjustable swivel, split ring.
   3. Hangers for Pipe Sizes 2 Inches and Over: Carbon steel, adjustable, clevis.
   4. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
   5. Wall Support for Pipe Sizes to 3 Inches: Cast iron hook.
   6. Vertical Support: Steel riser clamp.
   7. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
   8. Copper Pipe Support: Carbon steel ring, adjustable, copper plated.
   9. Hanger Rods: Mild steel threaded both ends, threaded one end, or continuous threaded.
   10. Inserts: Malleable iron case of galvanized steel shell and expander plug for threaded connection with lateral adjustment, top slot for reinforcing rods, lugs for attaching to forms; size inserts to suit threaded hanger rods.

11. Rooftop Supports for Low-Slope Roofs: Steel pedestals with bases that rest on top of roofing membrane, not requiring any attachment to the roof structure and not penetrating the roofing assembly, with support fixtures as specified; and as follows:
    a. Bases: High density, UV tolerant, polypropylene or reinforced PVC.
    b. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
    c. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
    d. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion resistant material.
    e. Height: Provide minimum clearance of 6 inches under pipe to top of roofing.

2.04 REFRIGERANT

A. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.

2.05 MOISTURE AND LIQUID INDICATORS

A. Manufacturers:
    1. Henry Technologies: www.henrytech.com.
    2. Parker Hannifin/Refrigeration and Air Conditioning: www.parker.com.
    3. Substitutions: See Section 01 6000 - Product Requirements.

B. Indicators: Double port type, UL listed, with copper or brass body, flared or solder ends, sight glass, color coded paper moisture indicator with removable element cartridge and plastic cap; for maximum temperature of 200 degrees F and maximum working pressure of 500 psi.

2.06 VALVES

A. Manufacturers:
    1. Hansen Technologies Corporation: www.hantech.com.
    2. Henry Technologies: www.henrytech.com.
    3. Flomatic Valves: www.flomatic.com.
    4. Parker Hannifin - Sporlan Division: www.parker.com/#sle.
    5. Alco
    6. Mueller Brass
    7. Superior Valves
    8. Substitutions: See Section 01 6000 - Product Requirements.

B. Ball Valves:
    1. Two piece bolted forged brass body with teflon ball seals and copper tube extensions, brass bonnet and seal cap, chrome plated ball, stem with neoprene ring stem seals; for maximum working pressure of 500 psi and maximum temperature of 300 degrees F.

2.07 STRAINERS

A. Straight Line or Angle Line Type:
    1. Brass or steel shell, steel cap and flange, and replaceable cartridge, with screen of stainless steel wire or monel reinforced with brass; for maximum working pressure of 430 psi.

2.08 FLEXIBLE CONNECTORS

A. Manufacturers:
    1. Circuit Hydraulics, Ltd: www.circuit-hydraulics.co.uk.
    2. Flexicraft Industries: www.flexicraft.com.
    3. Penflex: www.penflex.com.
    4. Substitutions: See Section 01 6000 - Product Requirements.

B. Corrugated stainless steel hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for maximum working pressure of 500 psi.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain-end ferrous pipe.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.02 INSTALLATION

A. Install refrigeration specialties in accordance with manufacturer's instructions.

B. Route piping in orderly manner, with plumbing parallel to building structure, and maintain gradient.

C. Install piping to conserve building space and avoid interference with use of space.

D. Group piping whenever practical at common elevations and locations. Slope piping one percent in direction of oil return.

E. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

F. Inserts:

G. Pipe Hangers and Supports:
   1. Install in accordance with ASME B31.5.
   2. Support horizontal piping as indicated.
   3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.
   4. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
   5. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.

H. Arrange piping to return oil to compressor. Provide traps and loops in piping, and provide double risers as required. Slope horizontal piping 0.40 percent in direction of flow.

I. Provide clearance for installation of insulation and access to valves and fittings.

J. Provide access to concealed valves and fittings.

K. Flood piping system with nitrogen when brazing.

L. Where pipe support members are welded to structural building frame, brush clean, and apply one coat of zinc rich primer to welding.

M. Prepare unfinished pipe, fittings, supports, and accessories for finish painting. See Section 09 9123.

N. Insulate piping.

O. Follow ASHRAE Std 15 procedures for charging and purging of systems and for disposal of refrigerant.

P. Fully charge completed system with refrigerant after testing.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Test refrigeration system in accordance with ASME B31.5.

C. Pressure test system with dry nitrogen to 200 psi. Perform final tests at 27 inches vacuum and 200 psi using halide torch. Test and repair piping until no leakage.

3.04 SCHEDULES

A. Hanger Spacing for Copper Tubing.
   1. 1/2 inch, 5/8 inch, and 7/8 inch OD: Maximum span, 5 feet; minimum rod size, 1/4 inch.
   2. 1-1/8 inch OD: Maximum span, 6 feet; minimum rod size, 1/4 inch.
   3. 1-3/8 inch OD: Maximum span, 7 feet; minimum rod size, 3/8 inch.
   4. 1-5/8 inch OD: Maximum span, 8 feet; minimum rod size, 3/8 inch.
   5. 2-1/8 inch OD: Maximum span, 8 feet; minimum rod size, 3/8 inch.

B. Hanger Spacing for Steel Piping.
   1. 1/2 inch, 3/4 inch, and 1 inch: Maximum span, 7 feet; minimum rod size, 1/4 inch.
   2. 1-1/4 inches: Maximum span, 8 feet; minimum rod size, 3/8 inch.
   3. 1-1/2 inches: Maximum span, 9 feet; minimum rod size, 3/8 inch.
   4. 2 inches: Maximum span, 10 feet; minimum rod size, 3/8 inch.
   5. 2-1/2 inches: Maximum span, 11 feet; minimum rod size, 3/8 inch.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal ducts.

B. Flexible ducts.

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting: Weld priming, paint or coating.

B. Section 23 0713 - Duct Insulation: External insulation and duct liner.

C. Section 23 3300 - Air Duct Accessories.

D. Section 23 3700 - Air Outlets and Inlets: Fabric air distribution devices.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2019.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.

C. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2026a.

E. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements; 2018, with Editorial Revision (2020).

F. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry; 2018, with Editorial Revision (2020).

G. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements; 2017, with Editorial Revision (2020).

H. ICC-ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements; 2023.

I. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

J. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

K. SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual; 2012.

L. UL 181 - Standard for Factory-Made Air Ducts and Air Connectors; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for duct materials.

C. Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate per appropriate seal class, following SMACNA (LEAK).

D. Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience, and approved by manufacturer.

B. Installer Qualifications: Company specializing in performing the type of work specified in this section, with minimum five years of documented experience.

1.06 FIELD CONDITIONS

A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.

B. Maintain temperatures within acceptable range during and after installation of duct sealants.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide UL Class 1 ductwork, fittings, hangers, supports, and appurtenances in accordance with NFPA 90A and SMACNA (DCS) guidelines unless stated otherwise.

B. Acoustical Treatment: Provide sound-absorbing liners and sectional silencers for metal-based ducts in compliance with Section 23 3319.

C. Duct Shape and Material in accordance with Allowed Static Pressure Range:
   1. Round: Plus or minus 2 in-wc of galvanized steel.
   2. Rectangular: Plus or minus 2 in-wc of galvanized steel.
   3. Flat Oval: Plus 2 in-wc of galvanized steel.
   4. Flexible Duct (Fabric and wire): Plus or minus 1 in-wc; see Section 23 3700.

D. Duct Sealing and Leakage in accordance with Static Pressure Class:
   1. Duct Pressure Class and Material for Common Mechanical Ventilation Applications:
      a. Supply Air: 4 in-wc pressure class, galvanized steel.
      b. Outside Air Intake: 2 in-wc pressure class, galvanized steel.
      c. Return and Relief Air: 3 in-wc pressure class, galvanized steel.
      d. General Exhaust Air: 2 in-wc pressure class, galvanized steel, aluminum.
   2. Outdoor and Inaccessible (duct in shafts, above hard ceilings and any made inaccessible by work of other trades) Ductwork:
      a. Seal: Class A, apply sealing of transverse joints, longitudinal seams, and duct wall penetrations.

E. Duct Fabrication Requirements:
   1. Duct and Fitting Fabrication and Support: SMACNA (DCS) including specifics for continuously welded round and oval duct fittings.
   2. Use reinforced and sealed sheet-metal materials at recommended gauges for indicated operating pressures or pressure class.
   3. Construct tees, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide airfoil turning vanes of perforated metal with glass fiber insulation.
   4. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
   5. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
   6. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.

2.02 METAL DUCTS

A. Material Requirements:
   1. Galvanized Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G90/Z275 coating.
   2. Aluminum: ASTM B209/B209M, aluminum sheet, alloy 3003-H14.

B. Rectangular Metal Duct:
   1. Rectangular Single Wall: Rectangular, longitudinal lock seam duct with galvanized steel wall.

C. Round Metal Ducts:
   1. Round Single Wall Duct: Round lock seam duct with galvanized steel outer wall.
      a. Manufacturers:
         1) EHG, a DMI Company: www.ehgduct.com/#sle.
         2) Elgen Manufacturing Company, Inc: www.elgenmfg.com/#sle.
         3) Linx Industries, Inc, a DMI Company: www.li-hvac.com/#sle.
         4) MKT Metal Manufacturing: www.mktduct.com/#sle.
         5) Universal Spiral Air: usaduct.com.
         6) Substitutions: See Section 01 6000 - Product Requirements.

2. Round Double Wall Insulated Duct: Round spiral lock seam duct with galvanized steel outer wall, perforated galvanized steel inner wall; fitting with the solid inner wall.
   a. Insulation:
      1) Thickness: 1 inch.
      2) Material: Fiberglass.
3. Round Connection System: Interlocking duct connection system in accordance with SMACNA (DCS).
   a. Manufacturers:
      1) Ductmate Industries, Inc, a DMI Company; _____: www.ductmate.com/#sle.
      2) Substitutions: See Section 01 6000 - Product Requirements.

D. Round Spiral Duct:
1. Round spiral lock seam duct with galvanized steel outer wall.
2. Manufacturers:
   a. EHG, a DMI Company: www.ehgduct.com/#sle.
   b. Elgen Manufacturing Company, Inc: www.elgenmfg.com/#sle.
   c. GSI, a DMI Company: www.greenseamind.com/#sle.
   d. Linx Industries, Inc, a DMI Company: www.li-hvac.com/#sle.
   e. MKT Metal Manufacturing: www.mktduct.com/#sle.
   f. Universal Spiral Air: usaduct.com.
   g. Substitutions: See Section 01 6000 - Product Requirements.

E. Connectors, Fittings, Sealants, and Miscellaneous:
1. Fittings: Manufacture with solid inner wall of perforated galvanized steel.
2. Transverse Duct Connection System: SMACNA "E" rated rigid class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips in accordance with SMACNA (DCS).
3. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
   a. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
   b. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
   c. For Use with Flexible Ducts: UL labeled.
   d. Manufacturers:
      1) Carlisle HVAC Products; Hardcast Versa-Grip 181 Water Based Fiber Reinforced Duct Sealant: www.carlislehvac.com/#sle.
4. Gasket Tape:
   a. Provide butyl rubber gasket tape for a flexible seal between transfer duct connector (TDC), transverse duct flange (TDF), applied flange connections, and angle ring connections.
   b. Manufacturers:
      1) Design Polymerics; DP 1040 100 Percent Solids, High Pressure/High-Velocity Butyl Gasket Tape: www.designpoly.com/#sle.
      2) Elgen Manufacturing Company, Inc; 440 Butyl Gasket Tape: www.elgenmfg.com/#sle.
      3) Substitutions: See Section 01 6000 - Product Requirements.
5. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
6. Hanger Fasteners: Attach hangers to structure using appropriate fasteners as follows:
   a. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
   b. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.
   c. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
   d. Masonry Screw Type Anchors: Complying with ICC-ES AC106.
   e. Concrete Adhesive Type Anchors: Complying with ICC-ES AC308.
   f. Other Types: As required.

2.03 FLEXIBLE DUCTS

A. Flexible Ducts: UL 181, Class 1, polyethylene film, mechanically fastened and rolled using galvanized steel to form spiral helix.
   1. Insulation: R6 insulation with polyethylene vapor barrier film.
   2. Pressure Rating: 10 in-wc positive and 5 in-wc negative.
   3. Maximum Velocity: 5500 fpm.
   4. Temperature Range: Minus 20 degrees F to 250 degrees F.
   5. Manufacturers:
      a. Flexmaster USA, a brand of Masterduct, Inc; Type 1: www.flexmasterusa.com/#sle.
      b. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install, support, and seal ducts in accordance with SMACNA (DCS).

B. Install products following the manufacturer's instructions.

C. During construction, provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering the ductwork system.

D. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.

E. Flexible Ducts: Connect to metal ducts with adhesive plus sheet metal screws.

F. Duct sizes indicated are precise inside dimensions. For lined ducts, maintain sizes inside lining.

G. Provide openings in ductwork as indicated to accommodate thermometers and controllers. Provide pilot tube openings as indicated for testing of systems, complete with metal can with spring device or screw to insure against air leakage. For openings, insulate ductwork and install insulation material inside a metal ring.

H. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.

I. Use crimp joints with or without bead for joining round duct sizes 8 inch and smaller with a crimp in the direction of airflow.

J. Use double nuts and lock washers on threaded rod supports.

K. Connect terminal units to supply ducts directly or with one foot maximum length of flexible duct. Do not use flexible duct to change direction.

L. Connect diffusers or light troffer boots to low-pressure ducts directly or with 5 feet maximum length of flexible duct held in place with strap or clamp.

M. Fire Partitions: Provide firestopping sealing. See Section 07 8400.

N. Duct Accessories, Terminal Units, Inlets, and Outlets: Interconnect as indicated in Sections 23 3300, 23 3600, and 23 3700.

O. Duct Insulation: Provide duct insulation. See Section 23 0713.

P. Painting: Provide surface finish as indicated on drawings. See Sections 09 9113 and 09 9123.

3.02 SEALING, INSPECTING AND LEAKAGE TESTING

A. Seal, inspect and test prior to insulating or concealing ductwork. Leak test in accordance with SMACNA (LEAK).

B. Seal ductwork and plenums with pressure class ratings to SMACNA (LEAK) Seal Class A.

C. Perform measured leak testing on the following ductwork:
   1. Duct that is designed to operate at static pressures in excess of 3 inch w.g. and outdoor ductwork.
      a. Test representative sections totaling no less than 25% of the total installed duct area for the designated pressure class.
   2. Maximum permissible leakage rate:
      a. Round/Oval Metal: SMACNA (LEAK) Leakage Class 3.

b. Rectangular Metal: SMACNA (LEAK) Leakage Class 4.

END OF SECTION

This page intentionally left blank

SECTION 23 3300 AIR DUCT ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backdraft dampers - metal.

B. Duct access doors.

C. Duct test holes.

D. Flexible duct connectors.

E. Volume control dampers.

F. Low leakage (Class 1A) control dampers.

1.02 RELATED REQUIREMENTS

A. Section 23 3100 - HVAC Ducts and Casings.

1.03 REFERENCE STANDARDS

A. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

B. NFPA 96 - Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations; 2024.

C. SMACNA (DCS) - HVAC Duct Construction Standards Metal and Flexible; 2020.

D. ANSI/AMCA 500-D - Laboratory methods of testing dampers for rating.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide for shop-fabricated assemblies including volume control dampers, duct access doors, duct test holes, and hardware used. Include electrical characteristics and connection requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect dampers from damage to operating linkages and blades.

PART 2 PRODUCTS

2.01 BACKDRAFT DAMPERS - METAL

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com.
   2. Nailor Industries Inc: www.nailor.com.
   3. Ruskin Company: www.ruskin.com.
   4. Greenheck: www.greenheck.com

B. Gravity Backdraft Dampers, Size 18 by 18 inches or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.

C. Performance: Test in accordance with AMCA 500-D

D. Approved for Exhaust/Relief air systems only.

E. Leakage: 20 cfm per square foot at 1 inches wg pressure.

2.02 DUCT ACCESS DOORS

A. Manufacturers:
   1. Louvers and Dampers, Inc.
   2. Greenheck
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.03 DUCT TEST HOLES

A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.

B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

2.04 FLEXIBLE DUCT CONNECTORS

A. Manufacturers:
   1. Carlisle HVAC Products: www.carlislehvac.com.
   2. Ductmate Industries, Inc, a DMI Company: www.ductmate.com.
   3. Elgen Manufacturing: www.elgenmfg.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Fabricate in accordance with SMACNA (DCS) and as indicated.

C. Flexible Duct Connections: Fabric crimped into metal edging strip.
   1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz/sq yd.
      a. Net Fabric Width: Approximately 6 inches wide.

D. Maximum Installed Length: 14 inch.

2.05 VOLUME CONTROL DAMPERS

A. Manufacturers:
   1. Louvers & Dampers, Inc: www.louvers-dampers.com.
   2. Nailor Industries Inc: www.nailor.com.
   3. Ruskin Company: www.ruskin.com.
   4. Greenheck: www.greenheck.com
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Fabricate in accordance with SMACNA (DCS) and as indicated.

C. Splitter Dampers:
   1. Material: Same gauge as duct to 24 inches size in either direction, and two gauges heavier for sizes over 24 inches.
   2. Blade: Fabricate of single thickness sheet metal to streamline shape, secured with continuous hinge or rod.
   3. Operator: Minimum 1/4 inch diameter rod in self aligning, universal joint action, flanged bushing with set screw.

D. Single Blade Dampers:
   1. Fabricate for duct sizes up to 6 by 30 inch.
   2. Blade: 24 gauge, 0.0239 inch, minimum.

E. Multi-Blade Damper: Fabricate consisting of opposed blades with maximum blade sizes 8 by 72 inches. Assemble center- and edge-crimped blades in prime-coated or galvanized-channel frame with suitable hardware.
   1. Blade: 18 gauge, 0.0478 inch, minimum.

F. End Bearings: Except in round ducts 12 inches and smaller, provide end bearings. On multiple blade dampers, provide oil-impregnated nylon, thermoplastic elastomer, or sintered bronze bearings.
   1. Manufacturers:
      a. Carlisle HVAC Products; Dynair End Bearing Leak Resistant Sets: www.carlislehvac.com.
      b. Elgen Manufacturing Company, Inc; Snap-in Bushing: www.elgenmfg.com.

2.06 LOW LEAKAGE (CLASS 1A) CONTROL DAMPERS

A. Manufacturers:
   1. Ruskin Company: www.ruskin.com.
   2. United Enertech: www.unitedenertech.com/#sle.
   3. Greenheck; www.greenheck.com.
   4. Tamco; www.tamcodampers.com..
   5. Substitutions: See Section 01 6000 - Product Requirements.

B. Maximum Leakage Allowed: 3 cfm/sq ft at 1 in-wc.

C. Frame:
   1. Material: 20-gauge galvanized steel.
   2. Free-area: As indicated on drawings.

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that electric power is available and of the correct characteristics.

3.02 INSTALLATION

A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS). See Section 23 3100 for duct construction and pressure class.

B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.

C. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96 Provide minimum 8 by 8 inch size access door for hand and shoulder access, or as indicated on drawings. Provide minimum 4 by 4 inch size access door for balancing dampers only. Review locations prior to fabrication.

D. Provide duct test holes where indicated and required for testing and balancing purposes.

E. Demonstrate re-setting of fire dampers to authorities having jurisdiction and Owner's representative.

F. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.

G. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.

H. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum two duct widths from duct take-off.

I. Use splitter dampers only where indicated.

J. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

K. Cut or drill temporary test holes in duct as required. Cap with neat patches, neoprene plugs, threaded plugs, or theaded or twist on metal caps.

L. Permanent test holes shall be factory fabricated, airtight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.

END OF SECTION

This page intentionally left blank

SECTION 23 3700 AIR OUTLETS AND INLETS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Diffusers
   1. Perforated ceiling diffusers.

B. Rectangular ceiling diffusers.

C. Slot ceiling diffusers.

D. Registers/grilles
   1. Ceiling-mounted, egg crate exhaust and return register/grilles.
   2. Ceiling-mounted, exhaust and return register/grilles.
   3. Ceiling-mounted, supply register/grilles.
   4. Wall-mounted, supply register/grilles.
   5. Wall-mounted, exhaust and return register/grilles.

E. Louvers:

1.02 RELATED REQUIREMENTS

A. Section 09 9123 - Interior Painting: Painting of ducts visible behind outlets and inlets.

1.03 REFERENCE STANDARDS

A. ASHRAE Std 70 - Method of Testing the Performance of Air Outlets and Air Inlets; 2023.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.

1.05 QUALITY ASSURANCE

A. Test and rate air outlet and inlet performance in accordance with ASHRAE Std 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Hart & Cooley, Inc: www.hartandcooley.com.

B. Krueger-HVAC: www.krueger-hvac.com.

C. Price Industries: www.price-hvac.com.

D. Ruskin Company: www.ruskin.com.

E. Titus: www.titus-hvac.com.

F. Tuttle and Bailey: www.tuttleandbailey.com.

G. Nailor: www.nailor.com.

H. Substitutions: See Section 01 6000 - Product Requirements.

2.02 RECTANGULAR CEILING DIFFUSERS

A. Type: Provide architectural square panel ceiling diffuser to discharge air in 360 degree patternFace panel shall project ¼ inch below the outside border of the diffuser backpan. The exposed surface of the face panel shall be smooth, flat, and free of visible fasteners.

B. Connections: Round.

C. Frame: Provide Lay-in type.

D. Fabrication: Aluminum with baked enamel finish.

E. Color: white.

2.03 PERFORATED FACE CEILING DIFFUSERS

A. Type: Perforated face with fully adjustable pattern and removable face.

B. Frame: Lay-in type.

C. Fabrication: Steel with steel frame and baked enamel finish.

D. Color: white.

2.04 CEILING SLOT DIFFUSERS

A. Type: Continuous 1 inch wide slot, two slots wide, with adjustable vanes for left, right, or vertical discharge.

B. Fabrication: Aluminum extrusions with factory clear lacquer finish.

C. Color: white.

D. Frame: 1 inch margin with concealed mounting and gasket, mitered end border.

E. Plenum: Integral, galvanized steel, insulated.

2.05 CEILING SUPPLY REGISTERS/GRILLES

A. Type: Streamlined and individually adjustable curved blades to discharge air along face of grille, two-way deflection.

B. Frame: 1 inch margin with concealed mounting and gasket.

C. Construction: Made of aluminum extrusions with factory enamel finish.

D. Color: white.

2.06 CEILING EXHAUST AND RETURN REGISTERS/GRILLES

A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with blades set at 45 degrees, horizontal face.

B. Frame: 1 inch margin with concealed mounting.

C. Fabrication: Steel with 20 gauge, 0.0359 inch minimum frames and 22 gauge, 0.0299 inch minimum blades, steel and aluminum with 20 gauge, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.

D. Color: white.

2.07 CEILING EGG CRATE EXHAUST AND RETURN GRILLES

A. Type: Egg crate style face consisting of 1/2 by 1/2 by 1/2 inch grid core.

B. Fabrication: Grid core consists of aluminum with mill aluminum finish.

C. Frame: 1 inch margin with concealed mounting.

D. Frame: Channel lay-in frame for suspended grid ceilings.

2.08 WALL SUPPLY REGISTERS/GRILLES

A. Type: Streamlined and individually adjustable blades, 3/4 inch minimum depth, 3/4 inch maximum spacing with spring or other device to set blades, horizontal face, double deflection.

B. Frame: 1 inch margin with concealed mounting and gasket.

C. Fabrication: Steel with 20 gauge, 0.0359 inch minimum frames and 22 gauge, 0.0299 inch minimum blades, steel and aluminum with 20 gauge, 0.0359 inch minimum frame, or aluminum extrusions, with factory baked enamel finish.

D. Color: white.

2.09 WALL EXHAUST AND RETURN REGISTERS/GRILLES

A. Type: Streamlined blades, 3/4 inch minimum depth, 3/4 inch maximum spacing, with spring or other device to set blades, horizontal face.

B. Frame: 1 inch margin with concealed mounting.

C. Fabrication: Steel frames and blades, with factory baked enamel finish.

D. Color: white.

2.10 LOUVERS

A. Manufacturers:

1. NCA, a brand of Metal Industries Inc: www.ncamfg.com.
2. Ruskin Company: www.ruskin.com.
3. Greenheck; www.greenheck.com.
4. Substitutions: See Section 01 6000 - Product Requirements.

B. Type: 6 inch deep frame with drainable blades, heavy channel frame, 1/2 inch square mesh screen over intake or exhaust end.

C. Fabrication: 16 gauge, 0.0598 inch (1.52 mm) thick galvanized steel thick galvanized steel welded assembly, with factory prime coat finish.

D. Color: To be selected by Architect from manufacturer's full range.

E. Mounting: Furnish with interior flat flange for installation.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Check location of outlets and inlets and make necessary adjustments in position to comply with architectural features, symmetry, and lighting arrangement.

C. Install diffusers to ductwork with air tight connection.

D. Provide balancing dampers on duct take-off to diffusers and grilles and registers, despite whether dampers are specified as part of diffuser, or grille and register assembly.

E. Paint ductwork visible behind air outlets and inlets matte black, see Section 09 9123.

F. Diffusers and grilles mounted on side of duct shall be connected with a standoff so that it does not reduce free area of duct.

3.02 PROTECTION

A. Protect installed products until completion of project.

B. Replace, repair, or touch-up damaged products before Substantial Completion.

END OF SECTION

This page intentionally left blank

SECTION 23 7416 PACKAGED ROOFTOP AIR-CONDITIONING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Packaged, small-capacity, rooftop air-conditioning units.

B. Packaged, intermediate-capacity, rooftop air-conditioning units.

C. Packaged, large-capacity, rooftop air-conditioning units.

D. Split-system rooftop units.

1.02 RELATED REQUIREMENTS

A. Section 23 0548 - Vibration and Seismic Controls for HVAC.

B. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide capacity and dimensions of manufactured products and assemblies required for this project. Indicate electrical service with electrical characteristics and connection requirements, and duct connections.

C. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements for additional provisions.
   2. Extra Filters: One set for each unit.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect units from physical damage by storing off site until roof mounting curbs are in place and ready for immediate installation of units.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Provide a five year warranty to include coverage for refrigeration compressors.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Johnson Controls International, PLC: www.johnsoncontrols.com/#sle.

B. Trane Technologies, PLC: www.trane.com/#sle.

C. Aaon: www.aaon.com.

D. Daikin: www.daikin.com

E. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PACKAGED, SMALL-CAPACITY, ROOFTOP AIR-CONDITIONING UNITS

A. General: Roof mounted units having gas burner and electric refrigeration that are 6 tons and smaller in capacity.

B. Description: Self-contained, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, heat exchanger and burner, hot gas reheat coil , controls, air filters, refrigerant cooling coil and compressor, condenser coil and condenser fan.

C. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 700.

D. Economizer: Barometric Relief Damper with differential enthalpy controls.

E. Disconnect Switch: Factory mount disconnect switch _____.

2.03 PACKAGED, INTERMEDIATE-CAPACITY, ROOFTOP AIR-CONDITIONING UNITS

A. General: Roof mounted units having gas burner and electric refrigeration that are 7.5 tons to 25 tons in capacity.

B. Description: Self-contained, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, relief fan , heat exchanger and burner, hot gas reheat coil , controls, air filters, refrigerant cooling coil and compressor, condenser coil and condenser fan.

C. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.

D. Economizer: Barometric Relief Damper and Exhaust fan with differential enthalpy controls.

E. Disconnect Switch: Factory mount disconnect switch in control panel.

2.04 PACKAGED, LARGE-CAPACITY, ROOFTOP AIR-CONDITIONING UNITS

A. General: Roof mounted units having gas burner and electric refrigeration that are 25 tons and larger in capacity.

B. Description: Self-contained, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, return fan, heat exchanger and burner, hot gas reheat coil , controls, air filters, refrigerant cooling coil and compressor, condenser coil and condenser fan.

C. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.

D. Economizer: Barometric Relief Damper with differential enthalpy controls.

2.05 SPLIT-SYSTEM ROOFTOP UNITS

A. General: Roof mounted units having gas burner and electric refrigeration that are 3 to 6 tons in capacity.

B. Description: Split-system, packaged, factory assembled and prewired, consisting of cabinet and frame, supply fan, heat exchanger and burner, controls, air filters, refrigerant cooling coil.

C. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.

2.06 CASING

A. Cabinet: Galvanized steel with baked enamel finish, including access doors with piano hinges and locking handle. Structural members to be minimum 18 gauge, 0.0478 inch, with access doors or panels of minimum 20 gauge, 0.0359 inch.

B. Insulation: 2-inch thick, neoprene-coated glass fiber with edges protected from erosion.

2.07 FANS

A. Supply and Exhaust Fan: Forward curved centrifugal type, resiliently mounted with direct drive motor, EC motor or variable speed drive as noted , and rubber isolated hinge mounted. Provide with high efficiency motor. Isolate complete fan assembly. See Section 23 0548.

2.08 BURNERS

A. Gas Burner: Atmospheric type burner with adjustable combustion air supply, pressure regulator, gas valves, manual shut-off, intermittent spark or glow coil ignition, flame-sensing device, and automatic 100 percent shutoff pilot.

1. Construction: Welded stainless steel.

B. Gas Burner Safety Controls: Energize ignition, limit time for establishment of flame, prevent opening of gas valve until pilot flame is proven, stop gas flow on ignition failure, energize blower motor, and after airflow proven and slight delay, allow gas valve to open.

C. Supply Fan Control: Temperature sensor sensing bonnet temperatures and independent of burner controls, with provisions for continuous fan operation.

2.09 EVAPORATOR COIL

A. Provide copper tube aluminum fin coil assembly with galvanized drain pan and connection.

B. Provide capillary tubes or thermostatic expansion valves for units of 6 tons capacity and less, and thermostatic expansion valves and alternate row circuiting for units 7.5 tons cooling capacity and larger.

2.10 CONDENSER COIL

A. Provide copper tube aluminum fin coil assembly with subcooling rows and coil guard.

B. Provide direct drive propeller fans, resiliently mounted with fan guard, motor overload protection, wired to operate with compressor. Provide high efficiency fan motors.

C. Provide refrigerant pressure switches to cycle condenser fans.

2.11 HOT GAS REHEAT COIL

A. A reheat condenser coil shall be factory installed downstream of the unit evaporator coil. Modulating electronic valves shall control the flow of refrigerant between the reheat coil and condensers in response to the unit discharge air temperature in order to dehumidify the space without using additional energy.

B. Include space humidity sensor to control activation of hot gas reheat dehumidification control.

2.12 COMPRESSORS

A. Provide hermetic compressors, 3600 rpm maximum, resiliently mounted with positive lubrication, crankcase heater, high and low pressure safety controls, motor overload protection, suction and discharge service valves and gauge ports, and filter drier.

B. Provide step capacity control by cycling multi-speed compressors.

C. For heat pump units, provide reversing valve, suction line accumulator, discharge muffler, flow control check valve, and solid-state defrost control utilizing thermistors.

2.13 MIXED AIR CASING

A. Dampers: Provide outside, return, and relief dampers with damper operator and control package to automatically vary outside air quantity. Outside air damper to fall to closed position. Relief dampers may be gravity balanced.

B. Gaskets: Provide tight fitting dampers with edge gaskets maximum leakage 5 percent at 2-inch pressure differential.

C. Damper Operator, Units 7.5 Ton Cooling Capacity and Larger: 24 volt with gear train sealed in oil with spring return on.

2.14 AIR FILTERS:

A. 2-inch thick, glass fiber disposable media in metal frames.

2.15 OPERATING CONTROLS

A. Provide low voltage, adjustable room thermostat to control burner operation, compressor and condenser fan, and supply fan to maintain temperature setting.
   1. Include system selector switch heat-off-cool and auto-on fan control switch.

B. Provide remote-mounted auto-on fan control switch.

2.16 ROOF CURBS

A. Roof Mounting Curb: 24 inches high, galvanized steel, channel frame with gaskets, nailer strips.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that roof is ready to receive work and opening dimensions are as required by manufacturer.

B. Verify that proper power supply is available.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Mount units on factory built roof mounting curb providing watertight enclosure to protect ductwork and utility services. Install roof mounting curb level.

3.03 SYSTEM STARTUP

A. Prepare and start equipment. Adjust for proper operation.

3.04 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals for additional submittals.

B. See Section 01 7900 - Demonstration and Training for additional requirements.

C. Demonstrate proper operation of equipment to Owner's designated representative.

END OF SECTION

This page intentionally left blank

SECTION 23 8126.13 SMALL-CAPACITY SPLIT-SYSTEM AIR CONDITIONERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Air-source heat pumps.

B. Air cooled condensing units.

C. Indoor air handling (fan and coil) units for ducted systems.

D. Indoor air handling (fan and coil) units for ductless systems.

E. Controls.

1.02 REFERENCE STANDARDS

A. AHRI 210/240 - Performance Rating of Unitary Air-Conditioning and Air-Source Heat Pump Equipment; 2026.

B. AHRI 270 (SI/I-P) - Sound Performance Rating of Outdoor Unitary Equipment; 2025.

C. AHRI 520 - Performance Rating of Positive Displacement Condensing Units; 2004.

D. ASHRAE Std 15 - Safety Standard for Refrigeration Systems; 2024, with Addendum (2026).

E. ASHRAE Std 23 - Methods for Performance Testing Positive Displacement Refrigerant Compressors and Compressor Units; 2022.

F. ASHRAE Std 23.1 - Methods for Performance Testing Positive Displacement Refrigerant Compressors and Condensing Units that Operate at Subcritical Pressures of the Refrigerant; 2019.

G. NEMA MG 00001 - Motors and Generators; 2024.

H. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2024.

I. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems; 2027.

J. UL 207 - Standard for Refrigerant-Containing Components and Accessories, Nonelectrical; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.

C. Warranty: Submit manufacturers warranty and ensure forms have been filled out in Owner's name and registered with manufacturer.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Filters: One for each unit.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing the work of this section and approved by manufacturer.

1.05 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Carrier Corporation: www.carrier.com/#sle.

B. Trane Inc: www.trane.com/#sle.

C. York International Corporation / Johnson Controls: www.york.com/#sle.

D. Liebert DataMate: www.vertivco.com.

E. Fujitshu: www.fujitsugeneral.com.

F. Mitsubishi: www.mitsubishicomfort.com.

G. Substitutions: See Section 01 6000 - Product Requirements.

2.02 SYSTEM DESIGN

A. Split-System Heating and Cooling Units: Self-contained, packaged, matched factory-engineered and assembled, pre-wired indoor and outdoor units; UL listed.
   1. Heating and Cooling: Air-source electric heat pump located in outdoor unit with evaporator.
   2. Provide refrigerant lines internal to units and between indoor and outdoor units, factory cleaned, dried, pressurized and sealed, with insulated suction line.

B. Performance Requirements: See Schedule for all requirements.

2.03 INDOOR AIR HANDLING UNITS FOR DUCTED SYSTEMS

A. Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, heating and cooling element(s), controls, and accessories; wired for single power connection with control transformer.
   1. Air Flow Configuration: Horizontal.
   2. Cabinet: Steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.

B. Supply Fan: Centrifugal type rubber mounted with direct or belt drive with adjustable variable pitch motor pulley.
   1. Motor: NEMA MG 1; 1750 rpm two-speed, permanently lubricated, hinge mounted.

C. Air Filters: 1 inch thick urethane, washable type arranged for easy replacement.

D. Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.
   1. Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
   2. Manufacturers: System manufacturer.

E. Indoor Units: Self-contained, packaged, factory assembled, pre-wired unit consisting of cabinet, supply fan, evaporator coil, and controls; wired for single power connection with control transformer.
   1. Location: High-wall.
   2. Cabinet: Galvanized steel.
      a. Finish: White.
   3. Fan: Line-flow fan direct driven by a single motor.
   4. Filter return air with washable, antioxidant pre-filter and a pleated anti-allergy enzyme filter.

F. Evaporator Coils: Copper tube aluminum fin assembly, galvanized or polymer drain pan sloped in all directions to drain, drain connection, refrigerant piping connections, restricted distributor or thermostatic expansion valve.
   1. Construction and Ratings: In accordance with AHRI 210/240 and UL 207.
   2. Manufacturer: System manufacturer.

2.04 OUTDOOR UNITS

A. Outdoor Units: Self-contained, packaged, pre-wired unit consisting of cabinet, with compressor and condenser.
   1. Comply with AHRI 210/240.
   2. Refrigerant: Use only refrigerants that have ozone depletion potential (ODP) of zero and global warming potential (GWP) of less than 50.
   3. Cabinet: Galvanized steel with baked enamel finish, easily removed and secured access doors with safety interlock switches, glass fiber insulation with reflective liner.
   4. Construction and Ratings: In accordance with AHRI 210/240 with testing in accordance with ASHRAE Std 23 and UL 207.
   5. Sound Rating: 69 dBA, when measured in accordance with AHRI 270 (SI/I-P).

B. Compressor: Hermetic, two speed 1800 and 3600 rpm, AHRI 520 resiliently mounted integral with condenser, with positive lubrication, crankcase heater, high-pressure control, motor overload protection, service valves and drier. Provide time delay control to prevent short cycling and rapid speed changes.

C. Air Cooled Condenser: Aluminum fin and copper tube coil, AHRI 520 with direct drive axial propeller fan resiliently mounted, galvanized fan guard.
   1. Condenser Fans: Direct-drive propeller type.
   2. Condenser Fan Motor: Enclosed, 1-phase type, permanently lubricated.

D. Coil: Air-cooled, aluminum fins bonded to copper tubes.

E. Accessories: Filter drier, high-pressure switch (manual reset), low pressure switch (automatic reset), service valves and gauge ports, thermometer well (in liquid line).
   1. Provide thermostatic expansion valves.

F. Operating Controls:
   1. Control by room thermostat to maintain room temperature setting.
   2. Low Ambient Kit: Provide refrigerant pressure switch to cycle condenser fan on when condenser refrigerant pressure is above 285 psig and off when pressure drops below 140 psig for operation to -10 degrees F.

2.05 ACCESSORY EQUIPMENT

A. Room Thermostat: Wall-mounted, electric solid state microcomputer based room thermostat with remote sensor to maintain temperature setting; low-voltage; with following features:
   1. System selector switch (heat-off-cool) and fan control switch (auto-on).
   2. Automatic switching from heating to cooling.
   3. Preferential rate control to minimize overshoot and deviation from setpoint.
   4. Set-up for four separate temperatures per day.
   5. Instant override of setpoint for continuous or timed period from one hour to 31 days.
   6. Short cycle protection.
   7. Programming based on weekdays, Saturday and Sunday.
   8. Selection features including degree F or degree C display, 12 or 24 hour clock, keyboard disable, remote sensor, fan on-auto.
   9. Battery replacement without program loss.
   10. Thermostat Display:
      a. Time of day.
      b. Actual room temperature.
      c. Programmed temperature.
      d. Programmed time.
      e. Duration of timed override.
      f. Day of week.
      g. System Mode Indication: Heating, Cooling, Fan Auto, Off, and On, Auto or On, Off.

B. Provide crankcase heater.

C. Provide wind baffle.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrates are ready for installation of units and openings are as indicated on shop drawings.

B. Verify that proper power supply is available and in correct location.

C. Verify that proper fuel supply is available for connection.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions and requirements of local authorities having jurisdiction.

B. Install in accordance with NFPA 90A and NFPA 90B.

C. Install refrigeration systems in accordance with ASHRAE Std 15.

D. Pipe drain from cooling coils to nearest floor drain.

E. Install on supports as described on drawings and in Section 23 0529 - Hangers and Supports for HVAC Piping and Equipment.

END OF SECTION

This page intentionally left blank

SECTION 23 8200 CONVECTION HEATING AND COOLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electric cabinet unit heaters.

1.02 RELATED REQUIREMENTS

A. Section 26 0583 - Wiring Connections: Electrical characteristics and wiring connections. Installation of room thermostats. Electrical supply to units.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide typical catalog of information including arrangements.

C. Warranty: Submit manufacturer's warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements for additional provisions.
   2. Extra Filters: One set of each type and size.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 ELECTRIC CABINET UNIT HEATERS

A. Manufacturers:
   1. INDEECO (Industrial Engineering and Equipment Company): www.indeeco.com.
   2. Marley Engineered Products: www.marleymep.com.
   3. Trane, a brand of Ingersoll Rand: www.trane.com.
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Provide products listed, classified, and labeled by Underwriters Laboratories Inc. (UL), Intertek (ETL), or testing firm acceptable to authority having jurisdiction as suitable for purpose indicated.

C. Heating Elements: Provide open-wire, finned tubular, or resistance wire enclosed in steel sheath.

D. Cabinet:
   1. Minimum 18 gauge, 0.0478 inch thick steel front panel with exposed corners and edges rounded, easily removed panels, glass fiber insulation and integral air outlet, and inlet grilles.
   2. Provide required hardware accessories for ceiling, duct, recessed, semi-recessed, surface, or wall mounting.

E. Finish:
   1. Factory applied, painted finish.
   2. Color: As indicated on drawings.

F. Fan: Factory balanced, direct drive, axial type with fan guard connected to totally enclosed, thermally protected motor with permanently lubricated bearings, and thermal cutout switch with automatic reset to de-energize electric heating elements in the event of overheating.

G. Controls:
   1. Built-in line-voltage thermostat.

H. Filter: Easily removed, 1 inch thick glass fiber throw-away type, located to filter air before coil.

I. Electrical Characteristics: Provide factory disconnect.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are suitable for installation.

3.02 INSTALLATION

A. Install in accordance with manufacturer's recommendations.

B. Install equipment exposed to finished areas after walls and ceilings are finished and painted.

C. Do not damage equipment or finishes.

D. Unit Heaters:
   1. Hang from building structure, with pipe hangers anchored to building, not from piping or electrical conduit.
   2. Mount as high as possible to maintain greatest headroom unless otherwise indicated.

E. Cabinet Unit Heaters:
   1. Coordinate to ensure correct recess size for recessed units.

F. Units with Electric Heating Elements:
   1. Install as indicated including electrical devices furnished by manufacturer but not factory installed.

3.03 CLEANING

A. After construction and painting is completed, clean exposed surfaces of units.

B. Vacuum clean coils and inside of units.

C. Touch-up marred or scratched surfaces of factory-finished cabinets using finish materials furnished by the manufacturer.

D. Install new filters.

END OF SECTION

SECTION 26 0505 SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical demolition.

1.02 RELATED REQUIREMENTS

A. Section 01 7000 - Execution and Closeout Requirements: Additional requirements for alterations work.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify field measurements and circuiting arrangements are as indicated.

B. Verify that abandoned wiring and equipment serve only abandoned facilities.

C. Demolition drawings are based on casual field observation and existing record documents.

D. Report discrepancies to Architect/Engineer before disturbing existing installation.

E. Beginning of demolition means installer accepts existing conditions.

3.02 PREPARATION

A. Disconnect electrical systems in walls, floors, and ceilings to be removed.

B. Coordinate utility service outages with utility company and owner.

C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Obtain permission from Owner at minium (2) weeks prior and provide a reminder 24 hours before partially or completely disabling system.
   2. Make temporary connections to maintain service in areas adjacent to work area.

E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Notify Owner minium (1) weeks prior and provide a reminder 24hours before partially or completely disabling system.
   2. Notify local fire service if applicable.

F. Existing Telephone System: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
   1. Notify Owner at minium (1) weeks prior and provide a reminder least 24 hours before partially or completely disabling system.
   2. Notify telephone utility company at least 24 hours before partially or completely disabling system.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

A. Remove, relocate, and extend existing installations to accommodate new construction.

B. Remove abandoned wiring to source of supply.

C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.

D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.

E. Disconnect and remove abandoned panelboards and distribution equipment.

F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.

G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.

H. Repair adjacent construction and finishes damaged during demolition and extension work.

I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.

J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

K. Remove exposed abandoned grounding and bonding components, fasteners and supports, and electrical identification components, including abandoned components above accessible ceiling finishes. Cut embedded support elements flush with walls and floors.

L. Protect and retain power to existing active equipment remaining.

M. Cap abandoned empty conduit at both ends.

N. Remove existing cable tray from ceilings to be replaced unless in space with minimal demolition and cable tray is adequate size and routing for new system in new floor plan.

3.04 CLEANING AND REPAIR

A. Clean and repair existing materials and equipment that remain or that are to be reused.

B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

C. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts and broken electrical parts.

3.05 SALVAGE ITEMS

A. Remove and protect items to be salvaged and turn over to Owner. In particular the light fixtures are to be carefully removed and turned over to the owner for spare inventory.

B. Items of salvageable value may be removed as work progresses. Transport salvaged items from site as they are removed.

3.06 REUSABLE ELECTRICAL EQUIPMENT

A. Carefully remove equipment, materials, or fixtures which are to be reused.

B. Disconnect, remove, or relocate existing electrical material and equipment interfering with new installation.

C. Relocate existing lighting fixtures as indicated on Drawings. Clean fixtures and re-lamp. Test fixture to see if it is in good working condition before installation at new location.

3.07 EXISTING PANELBOARDS

A. Ring out circuits in existing panel affected by the Work. Where additional circuits are needed, reuse circuits available for reuse. Install new breakers.

B. Tag unused circuits as spare.

C. Where existing circuits are indicated to be reused, use sensing measuring devices to verify circuits feeding Project area or are not in use.

D. Remove existing wire no longer in use from panel to equipment.

E. Provide new type written updated directories where modified or rewired.

END OF SECTION

SECTION 26 0519 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single conductor building wire.

B. Metal-clad cable.

C. Wiring connectors.

D. Electrical tape.

E. Heat shrink tubing.

F. Oxide inhibiting compound.

G. Wire pulling lubricant.

H. Cable ties.

1.02 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping.

B. Section 26 0505 - Selective Demolition for Electrical: Disconnection, removal, and/or extension of existing electrical conductors and cables.

C. Section 26 0526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.

D. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013 (Reapproved 2024).

B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2023.

C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010, with Editorial Revision (2020).

D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2020).

E. ASTM B800 - Standard Specification for 8000 Series Aluminum Alloy Wire for Electrical Purposes - Annealed and Intermediate Tempers; 2005 (Reapproved 2021).

F. ASTM B801 - Standard Specification for Concentric-Lay-Stranded Conductors of 8000 Series Aluminum Alloy for Subsequent Covering or Insulation; 2018 (Reapproved 2023).

G. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2024.

H. ASTM D4388 - Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes; 2020.

I. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

J. NECA 104 - Standard for Installing Aluminum Building Wire and Cable; 2012.

K. NECA 120 - Standard for Installing Armored Cable (AC) and Type Metal-Clad (MC) Cable; 2018.

L. NEMA WC 70 - Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy; 2021.

M. NETA ATS - Standard for Acceptance Testing Specifications for Electrical Power Equipment And Systems; 2025.

N. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

O. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.

P. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.

Q. UL 267 - Outline of Investigation for Wire-Pulling Compounds; Current Edition, Including All Revisions.

R. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.

S. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.

T. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.

U. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

V. UL 1569 - Metal-Clad Cables; Current Edition, Including All Revisions.

1.04 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

1.06 FIELD CONDITIONS

A. Do not install or otherwise handle thermoplastic-insulated conductors at temperatures lower than 14 degrees F, unless otherwise permitted by manufacturer's instructions. When installation below this temperature is unavoidable, notify Architect and obtain direction before proceeding with work.

PART 2 PRODUCTS

A. Metal-clad cable is permitted only as follows:
   1. Where not otherwise restricted, may be used:
      a. Where concealed above accessible ceilings for final connections from junction boxes to luminaires.
         1) Maximum Length: 6 feet.
      b. Where concealed in hollow stud walls, above accessible ceilings, and under raised floors for branch circuits up to 20 A.
         1) Exception: Provide single conductor building wire in raceway for circuit homerun from first outlet to panelboard.
   2. In addition to other applicable restrictions, may not be used:
      a. Unless approved by Owner.
      b. Where not approved for use by the authority having jurisdiction.
      c. Where exposed to damage.
      d. For damp, wet, or corrosive locations, unless provided with a PVC jacket listed as suitable for those locations.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

D. Comply with NEMA WC 70.

E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.

F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.

G. Conductor Material:
   1. Provide copper conductors except where aluminum conductors are specifically indicated or permitted for substitution. Conductor sizes indicated are based on copper unless specifically indicated as aluminum. Conductors designated with the abbreviation "AL" indicate aluminum.

a. Substitution of aluminum conductors for copper is permitted, when approved by Owner and authority having jurisdiction, only for the following:
   1) Services: Copper conductors size 1/0 AWG and larger.
   2) Feeders: Copper conductors size 1/0 AWG and larger.
b. Where aluminum conductors are substituted for copper, comply with the following:
   1) Size aluminum conductors to provide, when compared to copper sizes indicated, equivalent or greater ampacity and equivalent or less voltage drop.
   2) Increase size of raceways, boxes, wiring gutters, enclosures, etc. as required to accommodate aluminum conductors.

2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
3. Tinned Copper Conductors: Comply with ASTM B33.
4. Aluminum Conductors (only where specifically indicated or permitted for substitution): AA-8000 series aluminum alloy conductors recognized by ASTM B800 and compact stranded in accordance with ASTM B801 unless otherwise indicated.

H. Minimum Conductor Size:
1. Branch Circuits: 12 AWG.
   a. Exceptions:
      1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
      2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
      3) 20 A, 277 V circuits longer than 150 feet: 10 AWG, for voltage drop.

I. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

J. Conductor Color Coding:
1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
2. Color Coding Method: Integrally colored insulation.
   a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape but it would be preferred to have wiring with solid insulation color thoughout the wiring.
3. Color Code:
   a. 480Y/277 V, 3 Phase, 4 Wire System:
      1) Phase A: Brown.
      2) Phase B: Orange.
      3) Phase C: Yellow.
      4) Neutral/Grounded: Gray.
   b. 208Y/120 V, 3 Phase, 4 Wire System:
      1) Phase A: Black.
      2) Phase B: Red.
      3) Phase C: Blue.
      4) Neutral/Grounded: White.
   c. Equipment Ground, All Systems: Green.
   d. Travelers for 3-Way and 4-Way Switching: Pink.
   e. For modifications or additions to existing wiring systems, comply with existing color code when existing code complies with NFPA 70 and is approved by the authority having jurisdiction.

K. Manufacturers:
1. Copper Building Wire:
   a. Cerro Wire LLC: www.cerrowire.com/#sle.
   b. Encore Wire Corporation: www.encorewire.com/#sle.
   c. General Cable Technologies Corporation: www.generalcable.com/#sle.
   d. Service Wire Co: www.servicewire.com/#sle.
   e. Southwire Company: www.southwire.com/#sle.
   f. Substitutions: See Section 01 6000 - Product Requirements.
2. Aluminum Building Wire (only where specifically indicated or permitted for substitution):

a. Encore Wire Corporation: www.encorewire.com/#sle.
b. Southwire Company: www.southwire.com/#sle.
c. Stabiloy, a brand of General Cable Technologies Corporation: www.stabiloy.com/#sle.
d. Substitutions: See Section 01 6000 - Product Requirements.

L. Description: Single conductor insulated wire.

M. Conductor Stranding:
1. Feeders and Branch Circuits: Solid or stranded. .
2. Control Circuits: Stranded.

N. Insulation Voltage Rating: 600 V.

O. Insulation:
1. Copper Building Wire: Type THHN/THWN-2 or XHHW-2, except as indicated below.
a. Size 4 AWG and Larger: Type XHHW-2 or THHN/THWN-2.
b. Installed Underground: Type XHHW-2 or THHN/THWN-2.
2. Aluminum Building Wire (only where specifically indicated or permitted for substitution): Type XHHW-2.

2.03 METAL-CLAD CABLE

A. Manufacturers:
1. AFC Cable Systems Inc: www.afcweb.com/#sle.
2. Encore Wire Corporation: www.encorewire.com/#sle.
3. Service Wire Co: www.servicewire.com/#sle.
4. Southwire Company: www.southwire.com/#sle.
5. Substitutions: See Section 01 6000 - Product Requirements.

B. Description: NFPA 70, Type MC cable listed and labeled as complying with UL 1569, and listed for use in classified firestop systems to be used.

C. Insulation Voltage Rating: 600 V.

D. Insulation: Type THHN/THWN-2 or XHHW-2.

E. Provide dedicated neutral conductor for each phase conductor.

F. Grounding: Full-size integral equipment grounding conductor.
1. Provide additional isolated/insulated grounding conductor.

G. Armor: Steel, interlocked tape.

H. Provide PVC jacket applied over cable armor.

2.04 WIRING CONNECTORS

A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.

B. Wiring Connectors for Splices and Taps:
1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
3. Connectors for Aluminum Conductors: Use compression connectors.

C. Wiring Connectors for Terminations:
1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
2. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
3. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
4. Stranded Conductors Size 10 AWG and Smaller: Use crimped terminals for connections to terminal screws.

D. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.

E. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.

F. Push-in Wire Connectors: Rated 600 V, 221 degrees F.

G. Mechanical Connectors: Provide bolted type or set-screw type.

H. Compression Connectors: Provide circumferential type or hex type crimp configuration.

I. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.

2.05 ACCESSORIES

A. Electrical Tape:
   1. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
   2. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
   3. Rubber Splicing Electrical Tape: Ethylene Propylene Rubber (EPR) tape, complying with ASTM D4388; minimum thickness of 30 mil; suitable for continuous temperature environment up to 194 degrees F and short-term 266 degrees F overload service.
   4. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
   5. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil; suitable for continuous temperature environment up to 221 degrees F.
   6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.

B. Heat Shrink Tubing: Heavy-wall, split-resistant, with factory-applied adhesive; rated 600 V; suitable for direct burial applications; listed as complying with UL 486D.

C. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.

D. Wire Pulling Lubricant:
   1. Listed and labeled as complying with UL 267.
   2. Suitable for use with conductors/cables and associated insulation/jackets to be installed.
   3. Suitable for use at installation temperature.

E. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that interior of building has been protected from weather.

B. Verify that work likely to damage wire and cable has been completed.

C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.

D. Verify that field measurements are as indicated.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

A. Circuiting Requirements:
   1. Unless dimensioned, circuit routing indicated is diagrammatic.
   2. When circuit destination is indicated without specific routing, determine exact routing required.

3. Arrange circuiting to minimize splices.
4. Include circuit lengths required to install connected devices within 10 ft of location indicated.
5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
7. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are indicated as separate, combining them together in a single raceway is permitted, under the following conditions:
   a. Provide no more than six current-carrying conductors in a single raceway. Dedicated neutral conductors are considered current-carrying conductors.
   b. Increase size of conductors as required to account for ampacity derating.
   c. Size raceways, boxes, etc. to accommodate conductors.

B. Install products in accordance with manufacturer's instructions.

C. Perform work in accordance with NECA 1 (general workmanship).

D. Install aluminum conductors in accordance with NECA 104.

E. Install metal-clad cable (Type MC) in accordance with NECA 120.

F. Installation in Raceway:
1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
2. Pull all conductors and cables together into raceway at same time.
3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.

G. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.

H. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.

I. Terminate cables using suitable fittings.
1. Metal-Clad Cable (Type MC):
   a. Use listed fittings.
   b. Cut cable armor only using specialized tools to prevent damaging conductors or insulation. Do not use hacksaw or wire cutters to cut armor.

J. Install conductors with a minimum of 12 inches of slack at each outlet.

K. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.

L. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.

M. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.

N. Make wiring connections using specified wiring connectors.
1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
3. Do not remove conductor strands to facilitate insertion into connector.
4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminates. Do not use wire brush on plated connector surfaces.
5. Connections for Aluminum Conductors: Fill connectors with oxide inhibiting compound where not pre-filled by manufacturer.

6. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
7. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

O. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors.
1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
b. For taped connections likely to require re-entering, including motor leads, first apply varnished cambric electrical tape, followed by adequate amount of rubber splicing electrical tape, followed by outer covering of vinyl insulating electrical tape.
2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
3. Wet Locations: Use heat shrink tubing.

P. Insulate ends of spare conductors using vinyl insulating electrical tape.

Q. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.

R. Identify conductors and cables in accordance with Section 26 0553.

S. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

T. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.

D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

This page intentionally left blank

SECTION 26 0526 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Grounding and bonding requirements.

B. Conductors for grounding and bonding.

C. Connectors for grounding and bonding.

D. Ground bars.

E. Ground rod electrodes.

1.02 RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.

B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2025.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

C. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2022.

D. NETA ATS - Standard for Acceptance Testing Specifications for Electrical Power Equipment And Systems; 2025.

E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

G. IEEE 837 – Standard for Qualifying Permanent Connections Used on Substation Grounding.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify exact locations of underground metal water service pipe entrances to building.
   2. Coordinate the work with other trades to provide steel reinforcement complying with specified requirements for concrete-encased electrode.
   3. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittals procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GROUNDING AND BONDING REQUIREMENTS

A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.

B. Do not use products for applications other than as permitted by NFPA 70 and product listing.

C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.

D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

E. Grounding System Resistance:
   1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.

F. Grounding Electrode System:
   1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
      a. Provide continuous grounding electrode conductors without splice or joint.
      b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
   2. Metal Underground Water Pipe(s):
      a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet at an accessible location not more than 5 feet from the point of entrance to the building.
      b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
      c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
   3. Metal In-Ground Support Structure:
      a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.
   4. Concrete-Encased Electrode:
      a. Provide connection to concrete-encased electrode consisting of not less than 20 feet of either steel reinforcing bars or bare copper conductor not smaller than 4 AWG embedded within concrete foundation or footing that is in direct contact with earth in accordance with NFPA 70.
   5. Ground Rod Electrode(s):
      a. Provide three electrodes in an equilateral triangle configuration unless otherwise indicated or required.
      b. Space electrodes not less than 10 feet from each other and any other ground electrode.
      c. Where location is not indicated, locate electrode(s) at least 5 feet outside building perimeter foundation as near as possible to electrical service entrance; where possible, locate in softscape (uncovered) area.
   6. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
      a. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
      b. Where ground bar location is not indicated, locate in accessible location as near as possible to service disconnect enclosure.
      c. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.

G. Service-Supplied System Grounding:
   1. For each service disconnect, provide grounding electrode conductor to connect neutral (grounded) service conductor to grounding electrode system. Unless otherwise indicated, make connection at neutral (grounded) bus in service disconnect enclosure.
   2. For each service disconnect, provide main bonding jumper to connect neutral (grounded) bus to equipment ground bus where not factory-installed. Do not make any other connections between neutral (grounded) conductors and ground on load side of service disconnect.

H. Separately Derived System Grounding:
   1. Separately derived systems include, but are not limited to:
      a. Transformers (except autotransformers such as buck-boost transformers).
   2. Provide grounding electrode conductor to connect derived system grounded conductor to nearest effectively grounded metal building frame. Unless otherwise indicated, make connection at neutral (grounded) bus in source enclosure.
   3. Provide bonding jumper to connect derived system grounded conductor to nearest metal building frame and nearest metal water piping in the area served by the derived system, where not already used as a grounding electrode for the derived system. Make connection at same location as grounding electrode conductor connection.
   4. Provide system bonding jumper to connect system grounded conductor to equipment ground bus. Make connection at same location as grounding electrode conductor connection. Do not make any other connections between neutral (grounded) conductors and ground on load side of separately derived system disconnect.
   5. Where the source and first disconnecting means are in separate enclosures, provide supply-side bonding jumper between source and first disconnecting means.

I. Bonding and Equipment Grounding:
   1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
   2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
   3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
   4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
   5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
   6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
   7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
      a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
      b. Metal gas piping.
   8. Provide bonding for metal building frame.

J. Communications Systems Grounding and Bonding:
   1. Provide intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with NFPA 70.
   2. Provide bonding jumper in raceway from intersystem bonding termination to each communications room or backboard and provide ground bar for termination.
      a. Bonding Jumper Size: 6 AWG, unless otherwise indicated or required.
      b. Raceway Size: 3/4 inch trade size unless otherwise indicated or required.
      c. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
      d. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.

2.02 GROUNDING AND BONDING COMPONENTS

A. General Requirements:
   1. Provide products listed, classified, and labeled as suitable for the purpose intended.
   2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in addition to requirements of Section 26 0519:
   1. Use insulated copper conductors unless otherwise indicated.
      a. Exceptions:
         1) Use bare copper conductors where installed underground in direct contact with earth.
         2) Use bare copper conductors where directly encased in concrete (not in raceway).

C. Connectors for Grounding and Bonding:
   1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
   2. Unless otherwise indicated, use exothermic welded connections or compression connectors for underground, concealed and other inaccessible connections.
   3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
   4. Manufacturers - Mechanical and Compression Connectors:
      a. allG Fabrication: www.allgfab.com/#sle.
      b. Burndy LLC: www.burndy.com.
      c. Harger Lightning & Grounding: www.harger.com/#sle.
      d. nVent ERICO: www.nvent.com/#sle.
      e. Thomas & Betts Corporation: www.tnb.com/#sle.
      f. Substitutions: See Section 01 6000 - Product Requirements.
   5. Manufacturers - Exothermic Welded Connections:
      a. Burndy LLC: www.burndy.com/#sle.
      b. nVent ERICO; Cadweld: www.nvent.com/#sle.
      c. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.
      d. Harger Lightning & Grounding[<>]: www.harger.com.
      e. Substitutions: See Section 01 6000 - Product Requirements.

D. Ground Bars:
   1. Description: Copper rectangular ground bars with mounting brackets and insulators.
   2. Size: As indicated.
   3. Holes for Connections: As indicated or as required for connections to be made.
   4. Manufacturers:
      a. allG Fabrication: www.allgfab.com/#sle.
      b. Harger Lightning & Grounding: www.harger.com/#sle.
      c. nVent ERICO: www.nvent.com/#sle.
      d. thermOweld, subsidiary of Continental Industries; division of Burndy LLC: www.thermoweld.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

E. Ground Rod Electrodes:
   1. Comply with NEMA GR 1.
   2. Material: Copper-bonded (copper-clad) steel.
   3. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated.
   4. Where rod lengths of greater than 10 feet are indicated or otherwise required, sectionalized ground rods may be used.
   5. Manufacturers:
      a. allG Fabrication: www.allgfab.com/#sle.
      b. Galvan Industries, Inc: www.galvanelectrical.com/#sle.
      c. Harger Lightning & Grounding: www.harger.com/#sle.
      d. nVent ERICO: www.nvent.com/#sle.
      e. Substitutions: See Section 01 6000 - Product Requirements.

2.03 EXAMINATION

A. Verify that work likely to damage grounding and bonding system components has been completed.

B. Verify that field measurements are as indicated.

C. Verify that conditions are satisfactory for installation prior to starting work.

2.04 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70.

D. Make grounding and bonding connections using specified connectors.
   1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
   2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
   3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
   4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
   5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.

E. Identify grounding and bonding system components in accordance with Section 26 0553.

F. Permanently attach equipment and grounding conductors prior to energizing equipment.

G. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.

H. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed conductor to grounding bus.

2.05 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.13.

D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.

E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.

END OF SECTION

This page intentionally left blank

SECTION 26 0529 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Support and attachment requirements and components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Concrete equipment pads.

B. Section 26 0533.13 - Conduit for Electrical Systems: Additional support and attachment requirements for conduits.

C. Section 26 0533.16 - Boxes for Electrical Systems: Additional support and attachment requirements for boxes.

D. Section 26 5100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2024.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.

C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2023.

D. MFMA-4 - Metal Framing Standards Publication; 2004.

E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate sizes and arrangement of supports and bases with actual equipment and components to be installed.
   2. Coordinate work to provide additional framing and materials required for installation.
   3. Coordinate compatibility of support and attachment components with mounting surfaces at installed locations.
   4. Coordinate arrangement of supports with ductwork, piping, equipment and other potential conflicts.
   5. Notify Architect of conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:
   1. Do not install products on or provide attachment to concrete surfaces until concrete has cured; see Section 03 3000.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for channel/strut framing systems, nonpenetrating rooftop supports, and post-installed concrete/masonry anchors.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

D. Product Data:
   1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
   2. Firestopping: Submit data on product characteristics, performance and limitation criteria.

E. Engineering Judgements: For conditions not covered by UL or WH listed designs, submit judgements by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

A. General Requirements:
   1. Comply with the following. Where requirements differ, comply with most stringent.
      a. NFPA 70.
      b. Requirements of authorities having jurisdiction.
   2. Provide required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for complete installation of electrical work.
   3. Provide products listed, classified, and labeled as suitable for purpose intended, where applicable.
   4. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
   5. Do not use products for applications other than as permitted by NFPA 70 and product listing.
   6. Steel Components: Use corrosion-resistant materials suitable for environment where installed.
      a. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
      b. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.

B. Conduit and Cable Supports: Straps and clamps suitable for conduit or cable to be supported.
   1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
   2. Conduit Clamps: Bolted type unless otherwise indicated.

C. Outlet Box Supports: Hangers and brackets suitable for boxes to be supported.

D. Metal Channel/Strut Framing Systems:
   1. Description: Factory-fabricated, continuous-slot, metal channel/strut and associated fittings, accessories, and hardware required for field assembly of supports.
   2. Comply with MFMA-4.

E. Hanger Rods: Threaded, zinc-plated steel unless otherwise indicated.

F. Anchors and Fasteners:
   1. Unless otherwise indicated and where not otherwise restricted, use anchor and fastener types indicated for specified applications.
   2. Concrete Structural Elements: Use preset concrete inserts, expansion anchors, or screw anchors.
   3. Concrete Surfaces: Use self-drilling anchors or expansion anchors.
   4. Solid or Grout-Filled Masonry: Use expansion anchors.
   5. Hollow Masonry, Plaster, and Gypsum Board Partions: Use toggle bolts or hollow wall fasteners.
   6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
   7. Sheet Metal: Use sheet metal screws.
   8. Wood: Use wood screws.
   9. Powder-actuated fasteners are not permitted.
   10. Preset Concrete Inserts: Continuous metal channel/strut and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.
      a. Manufacturer: Same as manufacturer of metal channel/strut framing system.
      b. Comply with MFMA-4.
      c. Channel Material: Use galvanized steel.

G. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.
   1. SYSTEM DESCRIPTION
      a. Firestopping Materials: UL 263 and UL 1479 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.

b. Surface Burning: ASTM E84 and UL 723 with maximum flame spread / smoke developed rating of 25/450.
c. Firestop interruptions to fire rated assemblies, materials, and components.

2. Mechanical Firestopping Sleeve
   a. Manufacturers:
      1) Specified Technologies (EZ-Path)
      2) Substitutions: Section 01 60 00 - Product Requirements.
   b. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
3. FIRESTOPPING ACCESSORIES
   a. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.
   b. Dam Material: Permanent:
      1) Plywood or particle board.
   c. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.
   d. General:
      1) Furnish UL listed products or products tested by independent testing laboratory.
      2) Select products with rating not less than rating of wall or floor being penetrated.
   e. Non-Rated Surfaces:
      1) Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.
      2) For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install hangers and supports in accordance with NECA 1.

C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.

E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.

F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

G. Equipment Support and Attachment:
   1. Use metal, fabricated supports or supports assembled from metal channel/strut to support equipment as required.
   2. Use metal channel/strut secured to studs to support equipment surface mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
   3. Use metal channel/strut to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
   4. Unless otherwise indicated, mount floor-mounted equipment on properly sized concrete pad 4 inches in height; see Section 03 3000.
   5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

H. Preset Concrete Inserts: Use manufacturer provided closure strips to inhibit concrete seepage during concrete pour.

I. Secure fasteners in accordance with manufacturer's recommended torque settings.

J. Remove temporary supports.

3.02 FIRESTOPPING

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating, to uniform density and texture.

D. Remove dam material after firestopping material has cured.

E. Fire Rated Surface:
   1. Seal opening at floor, wall, and roof as follows:
      a. Install sleeve through opening and extending beyond minimum of 2 inches on both sides of building element.
      b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
      c. Pack void with backing material.
      d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.
   2. Where cable tray and conduit penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions. Coordinate with Architectural drawings for fire rated walls.

F. Non-Rated Surfaces:
   1. Seal opening through non-fire rated floor and roof opening as follows:
      a. Install sleeve through opening and extending beyond minimum of 2 inches on both sides of building element.
      b. Size sleeve allowing minimum of 1 inch void between sleeve and building element.
      c. Install type of firestopping material recommended by manufacturer.
   2. Install escutcheons floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.
   3. Exterior wall openings below grade: Assemble rubber links of mechanical seal to size of conduit and tighten in place, in accordance with manufacturer's instructions.
   4. Interior partitions: Seal pipe penetrations at telecommunication rooms and data rooms. Apply sealant to both sides of penetration to completely fill annular space between sleeve and conduit.

3.03 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 4 inches thick and extending 6 inches beyond supported equipment. Refer to Section 03 30 00.

B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports of steel members. Brace and fasten with flanges bolted to structure.

3.04 INSTALLATION - SLEEVES

A. Exterior watertight entries: Seal with adjustable interlocking rubber links.

B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.

C. Set sleeves in position in forms. Provide reinforcing around sleeves.

D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

E. Extend sleeves through floors minimum of 2 inches above finished floor level. Caulk sleeves.

F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with stuffing fire stopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration. Also furnish 10% extra sleeves for future.

G. Install stainless steel escutcheons at finished surfaces.

END OF SECTION

SECTION 26 0533.13 CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Galvanized steel rigid metal conduit (RMC).

B. Galvanized steel intermediate metal conduit (IMC).

C. Flexible metal conduit (FMC).

D. Liquidtight flexible metal conduit (LFMC).

E. Galvanized steel electrical metallic tubing (EMT).

1.02 RELATED REQUIREMENTS

A. Section 07 8400 - Firestopping.

B. Section 26 0526 - Grounding and Bonding for Electrical Systems.

C. Section 26 0529 - Hangers and Supports for Electrical Systems.

D. Section 26 0533.16 - Boxes for Electrical Systems.

E. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2025.

B. ANSI C80.3 - American National Standard for Electrical Metallic Tubing -- Steel (EMT-S); 2020.

C. ANSI C80.6 - American National Standard for Electrical Intermediate Metal Conduit; 2025.

D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

E. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2020.

F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.

I. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.

J. UL 360 - Liquid-Tight Flexible Metal Conduit; Current Edition, Including All Revisions.

K. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.

L. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

M. UL 1242 - Electrical Intermediate Metal Conduit-Steel; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittals procedures.

1.05 QUALITY ASSURANCE

A. Product Listing Organization Qualifications: Organization recognized by OSHA as Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70, manufacturer's instructions, and product listing.

B. Unless otherwise indicated and where not otherwise restricted, use conduit types indicated for specified applications. Where more than one listed application applies, comply with most restrictive requirements. Where conduit type for particular application is not specified, use galvanized steel rigid metal conduit.

2.02 CONDUIT - GENERAL REQUIREMENTS

A. Comply with NFPA 70.

B. Provide conduit, fittings, supports, and accessories required for complete raceway system.

C. Provide products listed, classified, and labeled as suitable for purpose intended.

D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

A. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.

B. Fittings:
   1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 6.
   2. Material: Use steel or malleable iron.
   3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.04 GALVANIZED STEEL INTERMEDIATE METAL CONDUIT (IMC)

A. Description: NFPA 70, Type IMC galvanized steel intermediate metal conduit complying with ANSI C80.6 and listed and labeled as complying with UL 1242.

B. Fittings:
   1. Nonhazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B or UL 1242.
   2. Material: Use steel or malleable iron.
   3. Connectors and Couplings: Use threaded type fittings only. Threadless fittings, including set screw and compression/gland types, are not permitted.

2.05 FLEXIBLE METAL CONDUIT (FMC)

A. Description: NFPA 70, Type FMC standard-wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems.

B. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.

2.06 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.

B. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.

2.07 GALVANIZED STEEL ELECTRICAL METALLIC TUBING (EMT)

A. Manufacturers:

B. Description: NFPA 70, Type EMT galvanized steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.

C. Fittings:
   1. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
   2. Material: Use steel or malleable iron.
   3. Connectors and Couplings: Use compression/gland or set-screw type.
      a. Do not use indenter type connectors and couplings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive conduits.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install conduit in accordance with NECA 1.

C. Galvanized Steel Rigid Metal Conduit (RMC): Install in accordance with NECA 101.

D. Intermediate Metal Conduit (IMC): Install in accordance with NECA 101.

E. Conduit Routing:
   1. Unless dimensioned, conduit routing indicated is diagrammatic.
   2. When conduit destination is indicated without specific routing, determine exact routing required.
   3. Conceal conduits unless specifically indicated to be exposed.
   4. Conduits in the following areas may be exposed, unless otherwise indicated:
      a. Electrical rooms.
      b. Mechanical equipment rooms.
      c. Within joists in areas with no ceiling.
   5. Unless otherwise approved, do not route exposed conduits:
      a. Across floors.
      b. Across roofs.
      c. Across top of parapet walls.
      d. Across building exterior surfaces.
   6. Arrange conduit to maintain adequate headroom, clearances, and access.
   7. Arrange conduit to provide no more than equivalent of four 90-degree bends between pull points.

F. Conduit Support:
   1. Secure and support conduits in accordance with NFPA 70 using suitable supports and methods approved by authorities having jurisdiction; see Section 26 0529.
   2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.

G. Connections and Terminations:
   1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
   2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
   3. Use suitable adapters where required to transition from one type of conduit to another.
   4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
   5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
   6. Provide insulating bushings, insulated throats, or listed metal fittings with smooth, rounded edges at conduit terminations to protect conductors.
   7. Secure joints and connections to provide mechanical strength and electrical continuity.

H. Penetrations:
   1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
   2. Make penetrations perpendicular to surfaces unless otherwise indicated.
   3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
   4. Conceal bends for conduit risers emerging above ground.
   5. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
   6. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty.
   7. Install firestopping to preserve fire resistance rating of partitions and other elements; see Section 07 8400.

I. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
   1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
   2. Where conduits are subject to earth movement by settlement or frost.

J. Conduit Sealing:
   1. Use foam conduit sealant to prevent entry of moisture and gases. This includes, but is not limited to:
      a. Where conduits enter building from outside.
      b. Where service conduits enter building from underground distribution system.
      c. Where conduits enter building from underground.
      d. Where conduits may transport moisture to contact live parts.
   2. Where conduits cross barriers between areas of potential substantial temperature differential, use foam conduit sealant at accessible point near penetration to prevent condensation. This includes, but is not limited to:
      a. Where conduits pass from outdoors into conditioned interior spaces.
      b. Where conduits pass from unconditioned interior spaces into conditioned interior spaces.

K. Provide grounding and bonding; see Section 26 0526.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

C. Correct deficiencies and replace damaged or defective conduits.

3.04 CLEANING

A. Clean interior of conduits to remove moisture and foreign matter.

3.05 PROTECTION

A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 26 0533.16 BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.

B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.

C. Boxes and enclosures for integrated power, data, and audio/video.

D. Floor boxes.

E. Underground boxes/enclosures.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete.

B. Section 07 8400 - Firestopping.

C. Section 08 3100 - Access Doors and Panels: Panels for maintaining access to concealed boxes.

D. Section 26 0529 - Hangers and Supports for Electrical Systems.

E. Section 26 0533.13 - Conduit for Electrical Systems:
   1. Conduit bodies and other fittings.
   2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.

F. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

G. Section 26 2726 - Wiring Devices:
   1. Wall plates.
   2. Floor box service fittings.
   3. Poke-through assemblies.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.

C. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

D. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2014.

E. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013 (Reaffirmed 2020).

F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

G. SCTE 77 - Specifications for Underground Enclosure Integrity; 2023.

H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

J. UL 508A - Industrial Control Panels; Current Edition, Including All Revisions.

K. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
   2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
   3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.

4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures, boxes for hazardous (classified) locations, floor boxes, and underground boxes/enclosures.

C. Project Record Documents: Record actual locations for outlet and device boxes, pull boxes, cabinets and enclosures, floor boxes, and underground boxes/enclosures.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:
1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
3. Provide products listed, classified, and labeled as suitable for the purpose intended.
4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
5. Provide grounding terminals within boxes where equipment grounding conductors terminate.

B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
2. Use cast iron boxes or cast aluminum boxes for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
3. Use suitable concrete type boxes where flush-mounted in concrete.
4. Use suitable masonry type boxes where flush-mounted in masonry walls.
5. Use raised covers suitable for the type of wall construction and device configuration where required.
6. Use shallow boxes where required by the type of wall construction.
7. Do not use "through-wall" boxes designed for access from both sides of wall.
8. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
9. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A; furnish with threaded hubs.
10. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
11. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.

12. Minimum Box Size, Unless Otherwise Indicated:
    a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
    b. Communications Systems Outlets: 4 inch square by 2-1/8 inch (100 by 54 mm) trade size or as specified in Division 27 (whichever is larger)
    c. Ceiling Outlets: 4 inch octagonal or square by 1-1/2 inch deep (100 by 38 mm) trade size.
13. Wall Plates: Comply with Section 26 2726.
14. Manufacturers:
    a. Cooper Crouse-Hinds, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. E-Lids LLC: www.e-lids.com/#sle.
    c. Hubbell Incorporated; Bell Products: www.hubbell-rtb.com/#sle.
    d. Hubbell Incorporated; RACO Products: www.hubbell-rtb.com/#sle.
    e. O-Z/Gedney, a brand of Emerson Electric Co: www.emerson.com/#sle.
    f. Thomas & Betts Corporation: www.tnb.com/#sle.
    g. Substitutions: See Section 01 6000 - Product Requirements.

C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA EN 10250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA EN 10250 Environment Type, Unless Otherwise Indicated:
3. Junction and Pull Boxes Larger Than 100 cubic inches:
    a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
    b. Boxes 6 square feet and Larger: Provide sectionalized screw-cover or hinged-cover enclosures.
4. Manufacturers:
    a. Cooper B-Line, a division of Eaton Corporation: www.cooperindustries.com/#sle.
    b. Hoffman, a brand of Pentair Technical Products: www.hoffmanonline.com/#sle.
    c. Hubbell Incorporated; Wiegmann Products: www.hubbell-wiegmann.com/#sle.
    d. Substitutions: See Section 01 6000 - Product Requirements.

D. Boxes and Enclosures for Integrated Power, Data, and Audio/Video: Size and configuration as indicated or as required with partitions to separate services; field-connected gangable boxes may be used.
1. Manufacturers:
    a. Hubbell Incorporated: www.hubbell.com/#sle.
    b. Chief.
    c. Substitutions: See Section 01 6000 - Product Requirements.

E. Floor Boxes:
1. Description: Floor boxes compatible with floor box service fittings provided in accordance with Section 26 2726; with partitions to separate multiple services; furnished with all components, adapters, and trims required for complete installation.
2. Use cast iron or nonmetallic floor boxes within slab on grade.
3. Metallic Floor Boxes: Fully adjustable (with integral means for leveling adjustment prior to and after concrete pour).
4. Manufacturer: Same as manufacturer of floor box service fittings.

F. Underground Boxes/Enclosures:
1. Description: In-ground, open bottom boxes furnished with flush, non-skid covers with legend indicating type of service and stainless steel tamper resistant cover bolts.
2. Size: As indicated on drawings.
3. Depth: As required to extend below frost line to prevent frost upheaval, but not less than 12 inches.
4. Applications:
    a. Sidewalks and Landscaped Areas Subject Only to Occasional Nondeliberate Vehicular Traffic: Use polymer concrete enclosures, with minimum SCTE 77 Tier 8 load rating.

b. Parking Lots, in Areas Subject Only To Occasional Nondeliberate Vehicular Traffic: Use polymer concrete enclosures, with minimum SCTE 77 Tier 15 load rating.
c. Do not use polymer concrete enclosures in areas subject to deliberate vehicular traffic.

5. Polymer Concrete Underground Boxes/Enclosures: Comply with SCTE 77.
   a. Manufacturers:
      1) Hubbell Incorporated; Quazite Products: www.hubbellpowersystems.com/#sle.
      2) MacLean Highline: www.macleanhighline.com/#sle.
      3) Oldcastle Precast, Inc: www.oldcastleprecast.com/#sle.
      4) Substitutions: See Section 01 6000 - Product Requirements.
   b. Combination fiberglass/polymer concrete boxes/enclosures are acceptable.
   c. Product(s):
      1) MacLean Highline PHA Series: Straight wall, all-polymer concrete splice box/pull box; available Tier 8, Tier 15, and Tier 22 load ratings.
      2) MacLean Highline CHA Series: Fiberglass/polymer concrete splice box/pull box; available Tier 8 and Tier 15 load ratings.
      3) MacLean Highline CVA Series: Fiberglass/polymer concrete splice vault; available Tier 8, Tier 15, and Tier 22 load ratings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive boxes.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install boxes in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards where mounting heights are not indicated.

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide separate boxes for emergency power and normal power systems.

E. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.

F. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.

G. Unless otherwise indicated, boxes may be surface-mounted where exposed conduits are indicated or permitted.

H. Box Locations:
   1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 3100 as required where approved by the Architect.
   2. Unless dimensioned, box locations indicated are approximate.
   3. Locate boxes so that wall plates do not span different building finishes.
   4. Locate boxes so that wall plates do not cross masonry joints.
   5. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
   6. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
   7. Acoustic-Rated Walls: Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches horizontal separation.
   8. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
      a. Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches separation where wall is constructed with individual noncommunicating stud cavities or protect both boxes with listed putty pads.

b. Do not install flush-mounted boxes with area larger than 16 square inches or such that the total aggregate area of openings exceeds 100 square inches for any 100 square feet of wall area.

9. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 0533.13.
10. Locate junction and pull boxes in the following areas, unless otherwise indicated or approved by the Architect:
    a. Concealed above accessible suspended ceilings.
    b. Within joists in areas with no ceiling.
    c. Electrical rooms.
    d. Mechanical equipment rooms.

I. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
4. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.

J. Install boxes plumb and level.

K. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.

L. Install boxes as required to preserve insulation integrity.

M. Metallic Floor Boxes: Install box level at the proper elevation to be flush with finished floor.

N. Nonmetallic Floor Boxes: Cut box flush with finished floor after concrete pour.

O. Underground Boxes/Enclosures:
1. Install enclosure on gravel base, minimum 6 inches deep.
2. Flush-mount enclosures located in concrete or paved areas.
3. Mount enclosures located in landscaped areas with top at 1 inch above finished grade.
4. Provide cast-in-place concrete collar constructed in accordance with Section 03 3000, minimum 10 inches wide by 12 inches deep, around enclosures that are not located in concrete areas.
5. Install additional bracing inside enclosures in accordance with manufacturer's instructions to minimize box sidewall deflections during backfilling. Backfill with cover bolted in place.

P. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.

Q. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.

R. Close unused box openings.

S. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

T. Provide grounding and bonding in accordance with Section 26 0526.

3.03 CLEANING

A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical identification requirements.

B. Identification nameplates and labels.

C. Underground warning tape.

1.02 RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.

B. Section 26 2726 - Wiring Devices - Lutron: Device and wallplate finishes; factory pre-marked wallplates.

1.03 REFERENCE STANDARDS

A. ANSI Z535.2 - American National Standard for Environmental and Facility Safety Signs; 2023.

B. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels; 2023.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Verify final designations for equipment, systems, and components to be identified prior to fabrication of identification products.

B. Sequencing:
   1. Do not conceal items to be identified, in locations such as above suspended ceilings, until identification products have been installed.
   2. Do not install identification products until final surface finishes and painting are complete.

1.05 FIELD CONDITIONS

A. Do not install adhesive products when ambient temperature is lower than recommended by manufacturer.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

A. Identification for Equipment:
   1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
      a. Panelboards:
         1) Identify ampere rating.
         2) Identify voltage and phase.
         3) Identify power source and circuit number. Include location when not within sight of equipment.
         4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
         5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
         6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
      b. Enclosed switches, circuit breakers, and motor controllers:
         1) Identify voltage and phase.
         2) Identify power source and circuit number. Include location when not within sight of equipment.
         3) Identify load(s) served. Include location when not within sight of equipment.
      c. Centralized Emergency Lighting Inverters:
         1) Identify input and output voltage and phase.
         2) Identify power source and circuit number for normal power source. Include location when not within sight of equipment.
         3) Identify load(s) served. Include location.
      d. Electricity Meters:

1) Identify load(s) metered.

2. Service Equipment:
   a. Use identification nameplate to identify each service disconnecting means.
   b. For buildings or structures supplied by more than one service, or any combination of branch circuits, feeders, and services, use identification nameplate or means of identification acceptable to authority having jurisdiction at each service disconnecting means to identify all other services, feeders, and branch circuits supplying that building or structure. Verify format and descriptions with authority having jurisdiction.
3. Emergency System Equipment:
   a. Use identification nameplate or voltage marker to identify emergency system equipment in accordance with NFPA 70.
   b. Use identification nameplate at each piece of service equipment to identify type and location of on-site emergency power sources.
4. Use identification nameplate to identify disconnect location for equipment with remote disconnecting means.
5. Use identification label or handwritten text using indelible marker on inside of door at each fused switch to identify required NEMA fuse class and size.
6. Use identification label to identify overcurrent protective devices for branch circuits serving fire alarm circuits. Identify with text "FIRE ALARM CIRCUIT".
7. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited to the following.
   a. Service equipment.
   b. Elevator control panels.

B. Identification for Conductors and Cables:
   1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
   2. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.

C. Identification for Boxes:
   1. Use voltage markers to identify highest voltage present.
   2. Use identification labels or handwritten text using indelible marker to identify circuits enclosed.

D. Identification for Devices:
   1. Wiring Device and Wallplate Finishes: Comply with Section 26 2726.
   2. Factory Pre-Marked Wallplates: Comply with Section 26 2726.
   3. Use identification label or engraved wallplate to identify load controlled for wall-mounted control devices controlling loads that are not visible from the control location and for multiple wall-mounted control devices installed at one location.
   4. Use identification label to identify receptacles protected by upstream GFI protection, where permitted.

E. Identification for Luminaires:
   1. Use permanent red dot on luminaire frame to identify luminaires connected to emergency power system.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

A. Identification Nameplates:
   1. Materials:
      a. Indoor Clean, Dry Locations: Use plastic nameplates.
      b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
   2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
   3. Stainless Steel Nameplates: Minimum thickness of 1/32 inch; engraved or laser-etched text.

4. Aluminum Nameplates: Anodized; minimum thickness of 1/32 inch; engraved or laser-etched text.
5. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.

B. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.

C. Format for Equipment Identification:
1. Minimum Size: 1 inch by 2.5 inches.
2. Legend:
a. Equipment designation or other approved description.
3. Text: All capitalized unless otherwise indicated.
4. Minimum Text Height:
a. System Designation: 1 inch.
b. Equipment Designation: 1/2 inch.
5. Color:
a. Normal Power System: Black text on white background.
b. Emergency Power System: White text on red background.

2.03 UNDERGROUND WARNING TAPE

A. Materials: Use non-detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.

B. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, unless otherwise required for proper detection.

C. Legend: Type of service, continuously repeated over full length of tape.

D. Color:

PART 3 EXECUTION

3.01 PREPARATION

A. Clean surfaces to receive adhesive products according to manufacturer's instructions.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
1. Surface-Mounted Equipment: Enclosure front.
2. Flush-Mounted Equipment: Inside of equipment door.
3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
4. Elevated Equipment: Legible from the floor or working platform.
5. Branch Devices: Adjacent to device.
6. Interior Components: Legible from the point of access.
7. Boxes: Outside face of cover.
8. Conductors and Cables: Legible from the point of access.
9. Devices: Outside face of cover.

C. Install identification products centered, level, and parallel with lines of item being identified.

D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
1. Do not use adhesives on exterior surfaces except where substrate cannot be penetrated.

E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.

F. Install underground warning tape above buried lines with one tape per trench at 3 inches below finished grade.

G. Mark all handwritten text, where permitted, to be neat and legible.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Replace self-adhesive labels and markers that exhibit bubbles, wrinkles, curling or other signs of improper adhesion.

END OF SECTION

SECTION 26 0583 WIRING CONNECTIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Electrical connections to equipment.

1.02 RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.

B. Section 26 0533.13 - Conduit for Electrical Systems.

C. Section 26 0533.16 - Boxes for Electrical Systems.

D. Section 26 2726 - Wiring Devices.

E. Section 26 2816.16 - Enclosed Switches.

1.03 REFERENCE STANDARDS

A. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).

B. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.

C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
   1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
   2. Determine connection locations and requirements.

B. Sequencing:
   1. Install rough-in of electrical connections before installation of equipment is required.
   2. Make electrical connections before required start-up of equipment.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Products: Listed, classified, and labeled as suitable for the purpose intended.

PART 2 PRODUCTS

2.01 MATERIALS

A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
   1. Colors: Comply with NEMA WD 1.
   2. Cord Construction: NFPA 70, Type SO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
   3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

B. Disconnect Switches: As specified in Section 26 2816.16 and in individual equipment sections.

C. Wiring Devices: As specified in Section 26 2726.

D. Flexible Conduit: As specified in Section 26 0533.13.

E. Wire and Cable: As specified in Section 26 0519.

F. Boxes: As specified in Section 26 0533.16.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

A. Make electrical connections in accordance with equipment manufacturer's instructions.

B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

D. Provide receptacle outlet to accommodate connection with attachment plug.

E. Provide cord and cap where field-supplied attachment plug is required.

F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

H. Install terminal block jumpers to complete equipment wiring requirements.

I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

SECTION 26 0923 LIGHTING CONTROL DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Occupancy sensors.

B. Digital load controllers.

C. Emergency lighting control devices.

1.02 RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.

B. Section 26 0526 - Grounding and Bonding for Electrical Systems.

C. Section 26 0529 - Hangers and Supports for Electrical Systems

D. Section 26 0533.16 - Boxes for Electrical Systems.

E. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

F. Section 26 2726 - Wiring Devices: Devices for manual control of lighting, including wall switches, wall dimmers, and fan speed controllers.

G. Section 26 5100 - Interior Lighting.

1.03 REFERENCE STANDARDS

A. 47 CFR 15 - Radio Frequency Devices; current edition.

B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

C. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.

D. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.

G. UL 1008 - Transfer Switch Equipment; Current Edition, Including All Revisions.

H. UL 2043 - Fire Test for Heat and Visible Smoke Release for Discrete Products and Their Accessories Installed in Air-Handling Spaces; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate placement of lighting control devices with millwork, furniture, equipment and other potential conflicts.
2. Coordinate placement of wall switch occupancy sensors with installed door swings.
3. Coordinate placement of occupancy sensors with millwork, furniture, equipment and other potential obstructions to motion detection coverage.
4. Coordinate lighting control device product selections with luminaire characteristics; see Section 26 5100 and lighting fixture schedule.
5. Notify Architect of conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Include ratings, operating modes or sequence of functions, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.

C. Shop Drawings:

1. Occupancy Sensors: Provide lighting plan indicating location, model number, and orientation of each occupancy sensor and associated system component.

D. Field quality control reports.

E. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

F. Operation and Maintenance Data: Include detailed information on device programming and setup.

G. Project Record Documents: Record actual installed locations and settings for lighting control devices.

1.06 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Store products in clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.08 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Manufacturer Warranty: Provide manufacturer warranty for defects in material and workmanship for duration below. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS

A. Provide products listed, classified, and labeled as suitable for purpose intended.

B. Unless specifically indicated as excluded, provide components necessary for complete operating system including, but not limited to, conduit, wiring, connectors, hardware, and accessories.

2.02 OCCUPANCY SENSORS

A. Manufacturers:
   1. Acuity Brands, Inc: www.acuitybrands.com/#sle.
   2. Hubbell Incorporated: www.hubbell.com/#sle.
   3. Steinel, Professional: www.steinel.net
   4. Lutron Electronics Company, Inc: www.lutron.com/#sle.
   5. WattStopper: www.wattstopper.com/#sle.
   6. Substitutions: See Section 01 6000 - Product Requirements.
   7. Source Limitations: Furnish products produced by single manufacturer and obtained from single supplier.

B. General Requirements:
   1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.
   2. Sensor Technology:
      a. Passive Infrared (PIR) Occupancy Sensors: Designed to detect occupancy by sensing movement of thermal energy between zones.
      b. Ultrasonic Occupancy Sensors: Designed to detect occupancy by sensing frequency shifts in emitted and reflected inaudible sound waves.
      c. Passive Infrared/Ultrasonic Dual Technology Occupancy Sensors: Designed to detect occupancy using combination of both passive infrared and ultrasonic technologies.
      d. Passive Infrared/Acoustic Dual Technology Occupancy Sensors: Designed to detect occupancy using combination of both passive infrared and audible sound sensing technologies.
   3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.

4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during adjustable turn-off delay time interval.
5. Dual Technology Occupancy Sensors: Field configurable turn-on and hold-on activation with settings for activation by either or both sensing technologies.
6. Passive Infrared Lens Field of View: Field customizable by addition of factory masking material, adjustment of integral blinders, or similar means to block motion detection in selected areas.
7. Turn-Off Delay: Field adjustable, with time delay settings up to 30 minutes.
8. Sensitivity: Field adjustable.
9. Adaptive Technology: Field selectable; capable of self-adjusting sensitivity and time delay according to conditions.
10. Integral Photocell: For field selectable and adjustable inhibition of automatic turn-on of load when ambient lighting is above selected level.
11. Compatibility (Non-Dimming Sensors): Suitable for controlling incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
12. Load Rating for Line Voltage Occupancy Sensors: As required to control load indicated on drawings.
13. Isolated Relay for Low Voltage Occupancy Sensors: SPDT dry contacts, ratings as required for interface with system indicated.
14. Where wired sensors are indicated, wireless sensors are acceptable provided that components and wiring modifications necessary for proper operation are included.
15. Wireless Sensors:
    a. RF Range: 30 feet through typical construction materials.
    b. Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) Limits: Comply with FCC requirements of 47 CFR 15, for Class B application.
    c. Power: Battery-operated with minimum ten-year battery life.

C. Power Packs for Low-Voltage Occupancy Sensors:
1. Description: Plenum rated, self-contained low-voltage class 2 transformer and relay compatible with specified low-voltage occupancy sensors for switching of line-voltage loads.
2. Provide quantity and configuration of power and slave packs with associated wiring and accessories as required to control load indicated on drawings.
3. Input Supply Voltage: Dual rated for 120/277 V ac.
4. Load Rating: As required to control load indicated on drawings.

D. Power Packs for Wireless Occupancy Sensors:
1. Description: Plenum rated, self-contained relay compatible with specified wireless occupancy sensors for switching of line-voltage loads.
2. Input Supply Voltage: Dual rated for 120/277 V ac.
3. Load Rating: As required to control load indicated on drawings.

2.03 EMERGENCY LIGHTING CONTROL DEVICES

A. Devices Installed in Spaces Used for Environmental Air: Plenum rated, suitable for use in air-handling spaces; listed and labeled as complying with UL 2043.

B. Provide integral fire alarm interface to activate emergency mode via signal from fire alarm panel.

C. Provide compatible listed accessory remote test switch where indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.

C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.

D. Verify that final surface finishes are complete, including painting.

E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.

F. Verify that service voltage and ratings of lighting control devices are appropriate for service voltage and load requirements at location to be installed.

G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

A. Install lighting control devices in accordance with NECA 1 (general workmanship) and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

B. Coordinate locations of outlet boxes as required for installation of lighting control devices; see Section 26 0533.16.
   1. Mounting Heights: Unless otherwise indicated, as follows:
      a. Wall Switch Occupancy Sensors: 48 inches above finished floor.
   2. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
   3. Locate wall switch occupancy sensors on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.

C. Maintain separation of remote-control, signaling, and power-limited circuits.
   1. See manufacturer instructions and Section 26 0519 for control wiring conductors, wiring methods, and identification requirements.

D. Install lighting control devices in accordance with manufacturer's instructions.

E. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.

F. Install lighting control devices plumb and level, and held securely in place.

G. Where required and not furnished with lighting control device, provide wall plate; see Section 26 2726.

H. Provide required supports; see Section 26 0529.

I. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.

J. Occupancy Sensor Locations:

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Inspect each lighting control device for damage and defects.

C. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area. Record test results in written report to be included with submittals.

D. Test time switches to verify proper operation.

E. Correct wiring deficiencies and replace damaged or defective conductors, cables, and lighting control devices.

3.05 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.

3.06 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.07 COMMISSIONING

A. See Section 01 9113 - General Commissioning Requirements for commissioning requirements.

3.08 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

B. Demonstration: Demonstrate proper operation of lighting control devices to Architect, and correct deficiencies or make adjustments as directed.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wall switches.

B. Receptacles.

C. Wall plates and covers.

1.02 RELATED REQUIREMENTS

A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Manufactured wiring systems for use with access floor boxes with compatible pre-wired connectors.

B. Section 26 0526 - Grounding and Bonding for Electrical Systems.

C. Section 26 0533.16 - Boxes for Electrical Systems.

D. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

E. Section 26 0923 - Lighting Control Devices: Devices for automatic control of lighting, including occupancy sensors, in-wall time switches, and in-wall interval timers.

1.03 REFERENCE STANDARDS

A. FS W-C-596 - Connector, Electrical, Power, General Specification for; 2014h (Validated 2022).

B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush Mounted (General Specification); 2017g (Validated 2023).

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

D. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2016.

E. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (Reaffirmed 2020).

F. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2021.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.

I. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.

J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.

K. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

L. UL 1449 - Standard for Surge Protective Devices; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.
3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.
4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
5. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.

C. Certificates for Surge Protection Receptacles: Manufacturer's documentation of listing for compliance with UL 1449.

D. Project Record Documents: Record actual installed locations of wiring devices.

E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Wall Plates: Two of each style, size, and finish.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Products: Listed, classified, and labeled as suitable for the purpose intended.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Store in a clean, dry space in original manufacturer's packaging until ready for installation.

PART 2 PRODUCTS

2.01 WIRING DEVICES - GENERAL REQUIREMENTS

A. Provide wiring devices suitable for intended use with ratings adequate for load served.

B. Except where explicitly permitted, substitution of combination switch-and-receptacle devices for separate switches and receptacles is not permitted.

C. Prewired Wiring Device and Outlet Box Assemblies: Factory-assembled products complying with requirements for wiring devices, boxes, and wiring methods may be used in lieu of field-assembled products.
   1. Wiring: See Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.
   2. Boxes: See Section 26 0533.16 - Boxes for Electrical Systems.

D. Wiring Device Applications:
   1. Receptacles Installed Outdoors or in Damp or Wet Locations: Use weather-resistant GFCI receptacles with weatherproof covers.
   2. Receptacles Installed in Dwelling Units: Use tamper-resistant receptacles.
   3. Provide GFCI protection for:
      a. Receptacles installed within 6 feet of sinks.
      b. Receptacles installed in kitchens.
      c. Receptacles serving electric drinking fountains.
   4. Single Receptacles Installed on Individual Branch Circuits: Provide receptacle ampere rating equal to branch circuit rating.
   5. Flush Floor Service Fittings in Tile Floors: Use tile rings.
   6. Flush Floor Service Fittings in Carpeted Floors: Use carpet flanges.

E. Wiring Device Finishes:
   1. Provide wiring device finishes as described below, unless otherwise indicated.
   2. Wiring Devices, Unless Otherwise Indicated: White with white nylon wall plate.
   3. Wiring Devices Installed in Finished Spaces: White with white nylon wall plate.
   4. Wiring Devices Installed in Unfinished Spaces: Gray with galvanized steel wall plate.
   5. Above-Floor Service Fittings: Gray wiring devices with satin aluminum housing.
   6. Flush Floor Box Service Fittings: Gray wiring devices with aluminum cover and ring/flange.

2.02 WALL SWITCHES

A. Manufacturers:
   1. Hubbell Incorporated: www.hubbell.com/#sle.
   2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.

B. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.

C. Standard Wall Switches: Industrial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.

2.03 RECEPTACLES

A. Manufacturers:
   1. Hubbell Incorporated: www.hubbell.com/#sle.
   2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
   3. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.

B. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
   1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
   2. NEMA configurations specified are according to NEMA WD 6.

C. Convenience Receptacles:
   1. Standard Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
   2. Automatically Controlled Convenience Receptacles: Commercial specification grade 20A, 125V, NEMA 5-20R; controlled receptacle marking on device face per NFPA 70; single or duplex as indicated on the drawings.

D. GFCI Receptacles:
   1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
      a. Provide test and reset buttons of same color as device.
   2. Standard GFCI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.

2.04 WALL PLATES AND COVERS

A. Manufacturers:
   1. Hubbell Incorporated: www.hubbell-wiring.com/#sle.
   2. Leviton Manufacturing Company, Inc: www.leviton.com/#sle.
   3. Lutron Electronics Company, Inc: www.lutron.com/#sle.
   4. Pass & Seymour, a brand of Legrand North America, Inc: www.legrand.us/#sle.
   5. Substitutions: See Section 01 6000 - Product Requirements.
   6. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.

B. Wall Plates: Comply with UL 514D.
   1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
   2. Size: Standard.
   3. Screws: Metal with slotted heads finished to match wall plate finish.

C. Nylon Wall Plates: Smooth finish, high-impact thermoplastic.

2.05 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.

C. Verify that wall openings are neatly cut and will be completely covered by wall plates.

D. Verify that final surface finishes are complete, including painting.

E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

F. Verify that conditions are satisfactory for installation prior to starting work.

2.06 PREPARATION

A. Provide extension rings to bring outlet boxes flush with finished surface.

B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.
   1. Mounting Heights: As indicated on the drawings.

2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
3. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
4. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
5. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.

C. Unless otherwise indicated, GFCI receptacles may be connected to provide feed-through protection to downstream devices. Label such devices to indicate they are protected by upstream GFCI protection.

D. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.

2.07 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Inspect each wiring device for damage and defects.

C. Operate each wall switch, wall dimmer, and fan speed controller with circuit energized to verify proper operation.

D. Test each receptacle to verify operation and proper polarity.

E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.

F. Inspect each surge protection receptacle to verify surge protection is active.

G. Correct wiring deficiencies and replace damaged or defective wiring devices.

2.08 ADJUSTING

A. Adjust devices and wall plates to be flush and level.

B. Adjust presets for wall dimmers according to manufacturer's instructions as directed by Architect.

2.09 CLEANING

A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

SECTION 26 2816.16 ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Enclosed safety switches.

1.02 RELATED REQUIREMENTS

A. Section 26 0526 - Grounding and Bonding for Electrical Systems.

B. Section 26 0529 - Hangers and Supports for Electrical Systems.

C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

B. NEMA BS 31047 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum); 2013 (Reaffirmed 2023).

C. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.

D. NETA ATS - Standard for Acceptance Testing Specifications for Electrical Power Equipment And Systems; 2025.

E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

F. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

G. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

H. UL 98 - Enclosed and Dead-Front Switches; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

C. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

D. Field Quality Control Test Reports.

E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.

F. Project Record Documents: Record actual locations of enclosed switches.

G. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.

1.05 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.

B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed switch internal components, enclosure, and finish.

1.07 FIELD CONDITIONS

A. Maintain ambient temperature between -22 degrees F and 104 degrees F during and after installation of enclosed switches.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Eaton Corporation: www.eaton.com/#sle.

B. Schneider Electric: www.se.com/#sle.

C. Substitutions: See Section 01 6000 - Product Requirements.

D. Source Limitations: Provide enclosed switches and associated components produced by same manufacturer as other electrical distribution equipment used for project and obtained from single supplier.

2.02 ENCLOSED SAFETY SWITCHES

A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
   1. Altitude: Less than 6,600 feet.
   2. Ambient Temperature: Between -22 degrees F and 104 degrees F.

D. Horsepower Rating: Suitable for connected load.

E. Voltage Rating: Suitable for circuit voltage.

F. Short Circuit Current Rating:
   1. Provide enclosed safety switches, when protected by the fuses or supply side overcurrent protective devices to be installed, with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.

G. Provide with switch blade contact position that is visible when the cover is open.

H. Conductor Terminations: Suitable for use with the conductors to be installed.

I. Provide insulated, groundable fully rated solid neutral assembly where a neutral connection is required, with a suitable lug for terminating each neutral conductor.

J. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.

K. Enclosures: Comply with NEMA EN 10250, and list and label as complying with UL 50 and UL 50E.
   1. Environment Type per NEMA EN 10250: Unless otherwise indicated, as specified for the following installation locations:

L. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.

M. Heavy Duty Switches:
   1. Comply with NEMA BS 31047.
   2. Conductor Terminations:
      a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
   3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that the ratings of the enclosed switches are consistent with the indicated requirements.

C. Verify that mounting surfaces are ready to receive enclosed safety switches.

D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

D. Provide required support and attachment in accordance with Section 26 0529.

E. Install enclosed switches plumb.

F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.

G. Provide grounding and bonding in accordance with Section 26 0526.

H. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.

I. Identify enclosed switches in accordance with Section 26 0553.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.5.1.1.

D. Correct deficiencies and replace damaged or defective enclosed safety switches or associated components.

3.04 ADJUSTING

A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

A. Clean dirt and debris from switch enclosures and components according to manufacturer's instructions.

B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Interior luminaires.

B. Emergency lighting units.

C. Exit signs.

D. Ballasts and drivers.

E. Emergency power supply units.

1.02 RELATED REQUIREMENTS

A. Section 26 0529 - Hangers and Supports for Electrical Systems.

B. Section 26 0533.16 - Boxes for Electrical Systems.

C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. IES LM-79 - Approved Method: Optical and Electrical Measurements of Solid-State Lighting Products; 2024.

B. IES LM-80 - Approved Method: Measuring Maintenance of Light Output Characteristics of Solid-State Light Sources; 2021.

C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

D. NECA/IESNA 500 - Standard for Installing Indoor Lighting Systems; 2006.

E. NECA/IESNA 502 - Standard for Installing Industrial Lighting Systems; 2006.

F. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility; 2023.

G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

H. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

I. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.

J. UL 1598 - Luminaires; Current Edition, Including All Revisions.

K. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.
5. Submission of "equal" fixtures from alternate manufacturers is required to be a minimum of 10 days prior to bid. This submission should be done via a substitution requeset submitted throught the bidding process.
6. Coordinate the placement of emergency battery packs in locations where accessible along with test switches. If fixtures are accessible from above or via the fixture opening then batteries can be located at the fixtures. In locations where batteries aren't readily accessible via the fixture opening, remote batteries are to be located above accessilbe ceilings nearby. As a last resort, access panels are to be installed (style and exact locations are to be confirmed by architect & engineer) for ease of access.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings:
   1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
   2. Provide photometric calculations where luminaires are proposed for substitution upon request.

C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
   1. LED Luminaires:
      a. Include estimated useful life, calculated based on IES LM-80 test data.
      b. Include IES LM-79 test report upon request.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

E. Operation and Maintenance Data: Instructions for each product including information on replacement parts.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Drivers: Two percent of total quantity installed for each type, but not less than one of each type.

G. Project Record Documents: Record actual connections and locations of luminaires and any associated remote components.

1.06 QUALITY ASSURANCE

A. Comply with requirements of NFPA 70.

B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.

C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting), NECA/IESNA 502 (industrial lighting), and manufacturer's written instructions.

B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.08 FIELD CONDITIONS

A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide 5-year manufacturer warranty for LED luminaires, including drivers.

C. Provide 5-year pro-rata warranty for batteries for emergency lighting units.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

A. Furnish products as indicated in luminaire schedule included on the drawings.

B. Substitutions: See Section 01 6000 - Product Requirements.

2.02 LUMINAIRES

A. Provide products that comply with requirements of NFPA 70.

B. Provide products that are listed and labeled as complying with UL 1598, where applicable.

C. Provide products listed, classified, and labeled as suitable for the purpose intended.

D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.

F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.

G. Recessed Luminaires:
   1. Ceiling Compatibility: Comply with NEMA LE 4.
   2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
   3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.

H. LED Luminaires:
   1. Components: UL 8750 recognized or listed as applicable.
   2. Tested in accordance with IES LM-79 and IES LM-80.
   3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

I. LED Tape Lighting Systems: Provide all power supplies, drivers, cables, connectors, channels, covers, mounting accessories, and interfaces as necessary to complete installation.
   1. LED Tape - General Requirements:
      a. Listed.
      b. Designed for field cutting in accordance with listing.

J. Track Lighting Systems: Provide track compatible with specified track heads, with all connectors, power feed fittings, dead ends, hangers and canopies as necessary to complete installation.

K. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.

2.03 EMERGENCY LIGHTING UNITS

A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.

B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.

C. Battery:
   1. Sealed maintenance-free lead calcium unless otherwise indicated.
   2. Size battery to supply all connected lamps, including emergency remote heads where indicated.

D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.

E. Provide low-voltage disconnect to prevent battery damage from deep discharge.

F. Accessories:
   1. Provide compatible accessory mounting brackets where indicated or required to complete installation.
   2. Provide compatible accessory high impact polycarbonate vandal shields where indicated.

2.04 EXIT SIGNS

A. Description: Exit signs complying with NFPA 101 and applicable state and local codes, and listed and labeled as complying with UL 924.
   1. Number of Faces: Single- or double-face as indicated or as required for installed location.
   2. Directional Arrows: As indicated or as required for installed location.

2.05 BALLASTS AND DRIVERS

A. Ballasts/Drivers - General Requirements:
   1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
   2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.

B. Dimmable LED Drivers:
   1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
   2. Control Compatibility: Fully compatible with the dimming controls to be installed.

2.06 EMERGENCY POWER SUPPLY UNITS

A. Description: Self-contained emergency power supply units suitable for use with indicated luminaires, complying with NFPA 101 and applicable state and local codes, and listed and labeled as complying with UL 924.

B. Compatibility:
   1. Drivers: Compatible standard, energy saving, and dimming AC LED drivers, including those with end of lamp life shutdown circuits.

C. Operation: Upon interruption of normal power source, solid-state control automatically switches connected lamps to emergency power supply for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.

D. Diagnostics: Provide accessible and visible multi-chromatic combination test switch/indicator light to display charge, test, and diagnostic status and to manually activate emergency operation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.

C. Verify that suitable support frames are installed where required.

D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.

E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.

B. Perform work in accordance with NECA 1 (general workmanship).

C. Install products in accordance with manufacturer's instructions.

D. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).

E. Provide required support and attachment in accordance with Section 26 0529.

F. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.

G. Recessed Luminaires:
   1. Install trims tight to mounting surface with no visible light leakage.
   2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
   3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.

H. Suspended Luminaires:
   1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
   2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.

I. Install accessories furnished with each luminaire.

J. Bond products and metal accessories to branch circuit equipment grounding conductor.

K. Emergency Lighting Units:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
   2. Coordinate the placement of emergency battery packs in locations where accessible along with test switches. If fixtures are accessible from above or via the fixture opening then batteries can be located at the fixtures. In locations where batteries aren't readily accessible via the fixture opening, remote batteries are to be located above accessilbe ceilings nearby. As a last resort, access panels are to be installed (style and exact locations are to be confirmed by architect & engineer) for ease of access.

L. Exit Signs:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.

M. Emergency Power Supply Units:
   1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal ballast(s) in luminaire. Bypass local switches, contactors, or other lighting controls.

N. Remote Driver/Ballasts: Install in accessible location as indicated or as required to complete installation, using conductors per manufacturer's recommendations not exceeding manufacturer's recommended maximum conductor length to luminaire.

O. Identify luminaires connected to emergency power system in accordance with Section 26 0553.

P. Install lamps in each luminaire.

3.03 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Inspect each product for damage and defects.

C. Operate each luminaire after installation and connection to verify proper operation.

D. Test self-powered exit signs, emergency lighting units, and fluorescent emergency power supply units to verify proper operation upon loss of normal power supply.

E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.04 ADJUSTING

A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.

B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.

C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

3.05 CLEANING

A. Clean surfaces according to NECA 500 (commercial lighting), NECA 502 (industrial lighting), and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.06 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

B. Just prior to Substantial Completion, replace all lamps that have failed.

3.07 PROTECTION

A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Access control system requirements.

B. Access control units and software.

C. Access control point peripherals, including readers and keypads.

1.02 RELATED REQUIREMENTS

A. Section 08 7100 - Door Hardware: Electrically operated door hardware, for interface with access control system.

B. Section 26 0526 - Grounding and Bonding for Electrical Systems.

C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.

1.03 REFERENCE STANDARDS

A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.

B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

C. UL 294 - Access Control System Units; Current Edition, Including All Revisions.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Include plan views indicating locations of system components and proposed size, type, and routing of conduits and/or cables. Include elevations and details of proposed equipment arrangements. Include system interconnection schematic diagrams. Include requirements for interface with other systems.

C. Product Data: Provide manufacturer's standard catalog pages and data sheets for each system component. Include ratings, configurations, standard wiring diagrams, dimensions, finishes, service condition requirements, and installed features.

D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.

E. Manufacturer’s detailed field testing procedures.

F. Project Record Documents: Record actual locations of system components and installed wiring arrangements and routing.

1.05 QUALITY ASSURANCE

A. Comply with the following:
   1. NFPA 70.
   2. The requirements of the local authorities having jurisdiction.
   3. Applicable TIA/EIA standards.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years documented experience with access control systems of similar size, type, and complexity and providing contract maintenance service as a regular part of their business; authorized manufacturer's representative.

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 ACCESS CONTROL SYSTEM REQUIREMENTS

A. Provide new access control system consisting of required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the functional intent indicated.

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

1. Access Control Units and Readers: Listed and labeled as complying with UL 294.

2.03 ACCESS CONTROL UNITS AND SOFTWARE

A. Provide access control units and software compatible with readers to be connected.

B. Unless otherwise indicated, provide software and licenses required for fully operational system.

2.04 ACCESS CONTROL POINT PERIPHERALS

A. Provide devices compatible with control units and software.

B. Provide devices suitable for operation under the service conditions at the installed location.

C. Door Locking Devices (Electric Strikes and Magnetic Locks): Comply with Section 08 7100.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install access control system in accordance with NECA 1 (general workmanship).

B. Install products in accordance with manufacturer's instructions.

C. Provide grounding and bonding in accordance with Section 26 0526.

D. Identify system wiring and components in accordance with Section 26 0553.

3.02 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for additional requirements.

B. Provide services of a manufacturer's authorized representative to observe installation and assist in inspection and testing. Include manufacturer's detailed testing procedures and field reports with submittals.

C. Prepare and start system in accordance with manufacturer's instructions.

D. Program system parameters according to requirements of Owner.

E. Test for proper interface with other systems.

F. Correct defective work, adjust for proper operation, and retest until entire system complies with Contract Documents.

3.03 CLOSEOUT ACTIVITIES

A. See Section 01 7800 - Closeout Submittals, for closeout submittals.

B. Demonstration: Demonstrate proper operation of system to Owner, and correct deficiencies or make adjustments as directed.

3.04 MAINTENANCE

A. See Section 01 7000 - Execution and Closeout Requirements, for additional requirements relating to maintenance service.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clearing and grubbing.

B. Selective removal and trimming.

C. Debris removal.

D. Salvaged items.

1.02 RELATED REQUIREMENTS

A. Section 01 5713 - Temporary Erosion and Sediment Control.

B. Section 02 4100 - Demolition: Removal of built elements and utilities.

1.03 REFERENCE STANDARDS

A. 29 CFR 1910.266 - Logging Operations; Current Edition.

B. ANSI A300 Part 1 - American National Standard for Tree Care Operations - Tree, Shrub, and Other Woody Plant Management - Standard Practices (Pruning); 2017.

C. ANSI A300 Part 6 - Tree, Shrub, and Other Woody Plant Management--Standard Practices (Planting and Transplanting); 2012 (Reapproved 2018).

D. ANSI Z133 - American National Standard for Arboricultural Operations - Safety Requirements; 2017.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 EXAMINATION

A. Ensure all temporary soil erosion and sedimentation control measures and tree protection fencing are installed prior to site clearing.

B. Comply with additional requirements specified in Section 01 7000 - Execution and Closeout Requirements.

3.02 PREPARATION

A. Coordinate work with utility companies; notify before starting work and comply with local requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Protect existing structures and other elements that are to remain.

3.03 CLEARING AND GRUBBING

A. Scope: Remove trees, shrubs, brush, and stumps in areas to be covered by building structure, paving, playing fields, lawns, and planting beds as indicated on the drawings.

B. Clear site after relocating vegetation in accordance with ANSI A300 Part 6.

C. Tree protection fencing: Install highly visible fences at least 3 feet high to prevent inadvertent damage to vegetation to remain:

1. Around trees to remain within vegetation removal limits; locate no closer to tree than at the drip line.
2. Around other vegetation to remain within vegetation removal limits.

D. In areas where vegetation must be removed but no construction will occur other than pervious paving, remove vegetation with minimum subsoil disturbance.

3.04 SELECTIVE REMOVAL AND TRIMMING

A. Selective Removal: Individual tree and shrub identified for removal as indicated on drawings according to 29 CFR 1910.266.

B. Selective Trimming: Individual limbs and branches cut back according to ANSI A300 Part 1 identified for removal as indicated on drawings. Follow recommendations of ANSI Z133 and best local practices for species involved.

3.05 REMOVED VEGETATION PROCESSING

A. Do not burn, bury, landfill, or leave on-site, except as indicated on drawings.

B. Trees: Sell if marketable.

3.06 SALVAGE

A. Salvage items: Signs, light fixtures, and miscellaneous site furnishings as indicated on the drawings.

3.07 DEBRIS REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and windblown debris from public and private lands.

3.08 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove unused stockpiled subsoil. Grade stockpile area to prevent standing water.

C. Leave site clean and ready to receive work.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of topsoil.

B. Rough grading the site for site structures, building pads, and pavement.

C. Fine grading.

1.02 RELATED REQUIREMENTS

A. Section 31 2316 - Excavation.

B. Section 31 2323 - Fill.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: See Section 31 2323.

B. Other Fill Materials: See Section 31 2323.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify survey bench mark and intended elevations for grading areas are as indicated.

B. Verify the absence of standing or ponding water.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. At least three working days prior to the start of construction contact www.call811.com.

D. Locate, identify, and protect above- and below-grade utilities to remain.

E. Notify utility company to remove and relocate utilities.

F. Provide temporary means and methods to remove standing or ponding water from areas prior to grading.

G. Protect site features to remain, including but not limited to bench marks, survey control points, and fences.

3.03 ROUGH GRADING

A. Excavate and fill subgrade material to elevations indicated on plans.

B. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

C. Do not remove topsoil when wet.

D. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

E. Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.

F. When excavating through roots, perform work by hand and cut roots with sharp axe.

G. Replace displaced subgrade in accordance with Section 31 2323.

H. Remove and replace unsuitable materials as specified fill.

3.04 FINE GRADING

A. Scrape and spread subgrade material uniformly smooth and without disruptions as indicated on drawings.

3.05 SOIL REMOVAL AND STOCKPILING

A. Stockpile topsoil to be re-used on site; remove remainder from site.

B. Stockpile subsoil to be re-used on site; remove remainder from site.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; protect from erosion.

E. Place topsoil in areas where seeding are indicated.

F. Place topsoil where required to level finish grade.

G. Place topsoil to thickness as indicated in Section 32 9300.

H. Place topsoil during dry weather.

I. Remove roots, weeds, rocks, and foreign material while spreading.

J. Near plants spread topsoil manually to prevent damage.

K. Lightly compact placed topsoil.

3.06 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.

B. Top Surface: Plus or minus 1/2 inch.

3.07 REPAIR AND RESTORATION

A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.

C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 FIELD QUALITY CONTROL

A. See Section 31 2323 for compaction density testing.

B. All excavated or cut areas shall be proof rolled and the top 12 inches of finished subgrade shall be compacted to 95 percent of maximum density in accordance with ASTM D1557

3.09 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove unused stockpiled subsoil. Grade stockpile area to prevent standing water.

C. Leave site clean and raked, ready to receive work.

END OF SECTION

SECTION 31 2316 EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavating for building volume below grade, footings, slabs-on-grade, paving, site structures, and utilities within the building.

B. Trenching for utilities outside the building to utility main connections.

C. Temporary excavation support and protection systems.

1.02 RELATED REQUIREMENTS

A. Section 01 5713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.

B. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring. General requirements for dewatering of excavations and water control.

C. Section 31 2200 - Grading: Soil removal from surface of site.

D. Section 31 2200 - Grading: Grading.

E. Section 31 2323 - Fill: Fill materials, backfilling, and compacting.

1.03 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction; Current Edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Project Record Documents: Record drawings at project closeout according to 01 7000 - Execution and Closeout Requirements. Show locations of installed support materials left in place, including referenced locations and depths, on drawings.

C. Field Quality Control Submittals: Document visual inspection of load-bearing excavated surfaces.

1.05 QUALITY ASSURANCE

A. Temporary Support and Excavation Protection Plan:
   1. Indicate sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property.
   2. Bracing and shoring design to meet requirements of OSHA’s Excavation Standard, 29 CFR 1926, Subpart P.

PART 2 PRODUCTS

2.01 MATERIALS

A. Bedding and Fill to Correct Over-Excavation:
   1. See Section 31 2323 for bedding and corrective fill materials at general excavations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the work are as indicated.

B. Determine the prevailing groundwater level prior to excavation. If dewatering is necessary, submit dewatering plan to control groundwater intrusion with comprehensive dewatering procedures for review by Architect.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. See Section 31 1000 for clearing, grubbing, and removal of existing debris.

C. See Section 31 2200 for topsoil removal.

D. Locate, identify, and protect utilities that remain and protect from damage.

E. Notify utility company to remove and relocate utilities.

F. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

G. Protect plants, lawns, and other features to remain.

H. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by Architect.

3.03 TEMPORARY EXCAVATION SUPPORT AND PROTECTION

A. Excavation Safety: Comply with OSHA's Excavation Standard, 29 CFR 1926, Subpart P.
   1. Excavations in stable rock or in less than 5 feet in depth in ground judged as having no cave-in potential do not require excavation support and protection systems.
   2. Depending upon excavation depth, time that excavation is open, soil classification, configuration and slope of excavation sidewalls, design and provide an excavation support and protection system that meets the requirements of 29 CFR 1926, Subpart P:
      a. Sloping and benching systems.
      b. Support systems, shield systems, and other protective systems.

B. Excavation support and protection systems not required to remain in place may be removed subject to approval of Owner or Owner's Representative.
   1. Remove temporary shoring and bracing in a manner to avoid harmful disturbance to underlying soils and damage to buildings, structures, pavements, facilities and utilities.

3.04 EXCAVATING

A. Excavate to accommodate new structures, construction operations, and utilities.
   1. Excavate to the specified elevations.
   2. Excavate to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work.
   3. Cut utility trenches wide enough to allow inspection of installed utilities.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Do not interfere with 45 degree bearing splay of foundations.

D. Provide temporary means and methods, as required, to remove all water from excavations until directed by Architect. Remove and replace soils deemed suitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.05 TRENCHING

A. Trenching operations to be conducted in a safe, orderly manner. Comply with regulations or law governing the protection and/or safety of persons or property.

B. Use of mechanical equipment will be permitted except in locations where its operation would cause damage to trees, buildings, culverts, or other existing property utilities, or structures above or below ground; in all such locations, hand excavating tools and methods to be used.

C. Mechanical equipment used for trench excavation shall be of a type, design, and construction, and be operated so that:
   1. Uniform trench widths and vertical side walls are obtained within the pipe embedment zone.
   2. Sufficient trench width is provided to allow free working space and to permit compacting the backfill around the pipe.
   3. Width of trench within the pipe embedment zone (twelve inches above top of pipe to four inches below the bottom of pipe) is a minimum width of 18 inches or equal to the width of the outside pipe diameter plus 6 inches on either side of the pipe.
   4. Trench alignment is such that the pipe when accurately laid to specific alignment will be centered in the trench with adequate clearance between the pipe and the side walls of the trench.

D. Undercutting of the trench side wall to obtain trench sidewall clearance will not be permitted.

E. Where necessary to reduce the earth load on trench banks to prevent sliding and caving, the banks may be cut back on slopes which shall not extend lower than 1 foot above the top of the pipe (top of pipe embedment zone).

3.06 SUBGRADE PREPARATION

A. See Section 31 2323 for subgrade preparation at general excavations.

3.07 FILLING AND BACKFILLING

A. Do not fill or backfill until all debris, water, unsatisfactory soil materials, obstructions, and deleterious materials have been removed from excavation.

B. See Section 31 2323 for fill, backfill, and compaction requirements at general excavations.

C. See Section 31 2200 for rough and final grading and topsoil replacement requirements.

3.08 REPAIR

A. Correct areas that are over-excavated and load-bearing surfaces that are disturbed; see Section 31 2323.

3.09 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

B. Provide for visual inspection of load-bearing excavated surfaces by Architect before placement of foundations.

3.10 CLEANING

A. Stockpile excavated material to be re-used in area designated on site in accordance with Section 31 2200.

B. Remove excavated material that is unsuitable for re-use from site.

C. Remove excess excavated material from site.

3.11 PROTECTION

A. Divert surface flow from rains or water discharges from the excavation.

B. Prevent displacement of banks and keep loose soil from falling into excavation; maintain soil stability.

C. Protect open excavations from rainfall, runoff, freezing groundwater, or excessive drying so as to maintain foundation subgrade in satisfactory, undisturbed condition.

D. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

E. Keep excavations free of standing water and completely free of water during concrete placement.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Filling, backfilling, and compacting for building volume below grade, slabs-on-grade, paving, site structures, and utilities within the building.

B. Backfilling and compacting for utilities outside the building to utility main connections.

C. Filling holes, pits, and excavations generated as a result of removal (demolition) operations.

D. Topsoil

1.02 RELATED REQUIREMENTS

A. Section 01 5713 - Temporary Erosion and Sediment Control: Slope protection and erosion control.

B. Section 31 2200 - Grading: Removal and handling of soil to be re-used.

C. Section 31 2200 - Grading: Site grading.

D. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.

1.03 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

B. Subgrade Elevations: Indicated on drawings.

1.04 REFERENCE STANDARDS

A. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2021, with Errata (2022).

B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012 (Reapproved 2021).

C. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).

D. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).

E. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.

F. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017 (Reapproved 2025).

G. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used, including manufactured fill.

C. Compaction Density Test Reports.

1.06 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where designated.
   1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
   2. Prevent contamination.
   3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. General Fill: Subsoil excavated on-site and approved by the Geotechnical Engineer for use as fill.
   1. Graded.

2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
3. Conforming to ASTM D2487 Group Symbol SP or SP-SM.

B. Sand- Fill Type Class II: Conforming to State of Michigan Highway Department standard.

C. Topsoil: Topsoil excavated on-site.
1. Graded.
2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
3. Acidity range (pH) of 5.5 to 7.0.
4. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.

C. If tests indicate materials do not meet specified requirements, change material and retest.

D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the Work are as indicated.

B. Identify required lines, levels, contours, and datum locations.

C. See Section 31 2200 for additional requirements.

D. Verify areas to be filled are not compromised with surface or ground water.

3.02 PREPARATION

A. Scarify and proof roll subgrade surface to a depth of 6 inches to identify soft spots. Proof rolling to be observed by Geotechnical Engineer, and approved prior to final compaction.

B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with material recommended and approved by the Geotechnical Engineer..

C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

A. Fill to contours and elevations indicated using unfrozen materials.

B. Employ a placement method that does not disturb or damage other work.

C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Granular Fill: Place and compact materials in equal continuous layers not exceeding 8 inches compacted depth.

F. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.

G. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

H. Correct areas that are over-excavated.
1. Load-bearing foundation surfaces: Use material recommended and approved by the Geotechnical Engineer, flush to required elevation, compacted to 98 percent of maximum dry density.
2. Other areas: For non load bearing areas, use general fill, flush to required elevation, compacted to minimum 95 percent of maximum dry density.

I. Compaction Density Unless Otherwise Specified or Indicated:
1. Under paving, slabs-on-grade, and similar construction: 98 percent of maximum dry density.
2. At non load bearing locations: 95 percent of maximum modified proctor, dry density.

J. Reshape and re-compact fills subjected to vehicular traffic.

K. Maintain temporary means and methods, as required, to remove all water while fill is being placed as required, or until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

3.04 FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

3.05 TOLERANCES

A. Top Surface of General Filling: Plus or minus 1/2 inch from required elevations.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

B. Perform compaction density testing on compacted fill in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.

D. If tests indicate work does not meet specified requirements, remove work, replace and retest.

E. Proof roll compacted fill at surfaces that will be under slabs-on-grade and paving.

3.07 CLEANING

A. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

END OF SECTION

This page intentionally left blank

SECTION 32 1120 SUBBASE AND AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Subbase course.

B. Aggregate base course.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading.

B. Section 31 2323 - Fill.

C. Section 32 1313 - Concrete Paving.

1.03 REFERENCE STANDARDS

A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil–Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).

B. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop; 2021, with Errata (2022).

C. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2025.

D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012 (Reapproved 2021).

E. ASTM D1241 - Standard Specification for Materials for Soil-Aggregate Subbase, Base, and Surface Courses; 2015.

F. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2015, with Editorial Revision (2016).

G. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).

H. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.

I. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2017 (Reapproved 2025).

J. ASTM D3665 - Standard Practice for Random Sampling of Construction Materials; 2024.

K. ASTM D4318 - Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils; 2017, with Editorial Revision (2018).

L. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Test Reports:
   1. Aggregate Composition: Results of laboratory tests on proposed and actual materials used.
      a. Test reports provided are to be done within 12 months prior to the project bid date.

C. Source Quality Control Submittals: Submit name of imported materials source.

D. Field Quality Control Submittals: Submit compaction density testing results.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of type specified in this section.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Aggregate Storage:
   1. Prevent material intermixing, contamination, and deterioration.
   2. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 MATERIALS

A. Subbase Course:

1. Granular Materials, Class II sand complying with State of Michigan Department of Transportation standard specifications for construction, latest edition.
2. Graded in accordance with ASTM C136/C136M, within the following limits:
   a. 3 inch sieve: 100 percent passing.
   b. 1 inch sieve: 60 to 100 percent passing.
   c. No.4 sieve: 50 to 100 percent passing.
   d. No. 100 sieve: 0 to 30 percent passing.
   e. No.200: 0 to 7 percent passing.

B. Aggregate Base Course:
1. Dense Aggregate, Type 21AA, Modified : Comply with State of Michigan Department of Transportation standard specification for construction, latest edition.
2. Graded in accordance with ASTM C136/C136M, within the following limits:
   a. 1 1/2 inch sieve: 100 percent passing.
   b. 1 inch sieve: 85 to 100 percent passing.
   c. 1/2 inch sieve: 50 to 70 percent passing.
   d. No. 8 sieve: 20 to 35 percent passing.
   e. No. 30 sieve: 8 to 22 percent passing.
   f. Loss by Wash: 0 to 7 percent passing.
3. Crushed material: 95% minimum.
4. Loss, Los Angeles Abrasion (MTM 102): 50% maximum.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. If tests indicate materials do not meet specified requirements, change material and retest.

C. Provide materials of each type from same source throughout the Work.

D. For aggregate materials using classification complying with ASTM D2487, provide testing before delivery to site.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

B. Verify substrate has been inspected, and gradients and elevations are correct and dry.

3.02 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and recompacting.

B. Do not place aggregate on soft, muddy, or frozen surfaces.

C. Grade excavated and filled substrate; see Section 31 2200.

D. Backfill and compact subgrade fill; see Section 31 2323.

3.03 PLACEMENT

A. Under Bituminous Concrete Paving:
1. Subbase Compacted Thickness: According to design drawings.
2. Aggregate Base Compacted Thickness: According to design drawings.
3. Compact to 95 percent of maximum dry density.

B. Under Portland Cement Concrete Paving:
1. Subbase Compacted Thickness: According to design drawings.
2. Aggregate Base Compacted Thickness: According to design drawings.
3. Compact to 95 percent of maximum dry density.

C. Level and contour surfaces to elevations and gradients indicated.

D. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

A. Variation From Design Elevation: Within 1/2 inch.

B. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

C. Scheduled Compacted Thickness: Within 1/4 inch.

3.05 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Subbase Compaction Density Testing: In accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.

C. Aggregate Base Compaction Density Testing: In accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.

D. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor"), or ASTM D1557 ("modified Proctor").

E. Frequency of Tests: In accordance with ASTM D3665.

F. Remove, replace, and retest work that does not meet specified requirements.

G. Proof roll compacted aggregate at surfaces going underneath flexible paving.

3.06 CLEANING

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Remove unused materials and grade areas to prevent standing surface water.

END OF SECTION

This page intentionally left blank

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Double course bituminous concrete paving.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Preparation of site for paving and base.

B. Section 31 2323 - Fill: Compacted subgrade for paving.

C. Section 32 1120 - Subbase and Aggregate Base Courses

1.03 REFERENCE STANDARDS

A. AI MS-2 - Asphalt Mix Design Methods; 2015.

B. MDOT Standard Specifications for Construction; 2012.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Design Mix: Submit actual design mix to the Engineer for review and/or approval. Do not place any asphaltic concrete paving until receipt of Engineer's approval.
   1. Design mix submittal shall follow the format as indicated in the Asphalt Institute Manual MS-2, Marshall Stability Method.
   2. Include the type/name of the mix, gradation analysis, asphalt cement grade used, Marshall Stability (lbs.), flow, effective asphalt content (percent), and direct references to the applicable highway department specification sections for each material.
   3. Design shall be for a mixture listed in the most recent edition of roadway specifications of the state in which the project is to be constructed.

C. Written Warranty.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with Michigan Department of Transportation standards.

B. Mixing Plant: Complying with Michigan Department of Transportation standards.

C. Obtain materials from same source throughout.

1.06 FIELD CONDITIONS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

B. Applicable weather and seasonal limitation of MDOT standards apply.

1.07 WARRANTY

A. Furnish written warranty, executed by Contractor, for quality of paving. Contractor shall make necessary repairs to asphalt due to defects or faulty materials or workmanship, which may appear within the warranty period. This shall include but is not limited to asphalt cracking, water ponding, subgrade failures, and separation of longitudinal construction joints.

B. Warranty Period: 2 years from date of Substantial Completion. The Owner, Engineer and Paving Contractor, prior to the expiration of the warranty, shall make a review of the asphalt areas.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Comply with applicable code for paving work on public property.

2.02 MATERIALS

A. Sand Subbase: Class II sand conforming to MDOT standard.

B. Aggregate Base: Per Section 32 1123.

C. Aggregate for Binder Course: State of Michigan Department of Transportation standards.

D. Aggregate for Wearing Course: State of Michigan Department of Transportation standards.

E. Tack Coat: In accordance with State of Michigan Highways standards.

F. Hot Poured Rubber Joint Sealer: Provide one of the following or approved equal.
   1. Roadsaver 221: Crafco Inc.
   2. Product #9005 or #9030: Koch Material Company
   3. Sealtight Hi-SpecL W.R. Meadows, Inc.

2.03 ASPHALT PAVING MIXES AND MIX DESIGN

Criteria	minimum	maximum	minimum	maximum	MDOT Mixture Type	Leveling Course	Leveling Course	Wearing Course	Wearing Course
Asphalt Content (%)	4.5	8.0	5.0	8.0					
Air Void Content Target (%)	3.0	3.5	3.0	3.0					
VMA (%)	15.0	15.5	15.5	16.5					
RAP (%)	0	17	0	17					
Crushed Aggregate (%)	60	90	60	---					

A. Parking Lot:
   1. Asphalt Binder Course: State of Michigan Highways standards.
   2. Leveling Course Gradation: Michigan DOT EL
   3. Wearing Course Gradation: Michigan DOT EL

B. Asphalt Wearing Course: 5 to 7 percent of asphalt cement by weight in mixture in accordance with AI MS-2.

C. Performance Grade Binder: PG 58-28

D. Submit proposed mix design for review prior to beginning of work.

2.04 SOURCE QUALITY CONTROL

A. Test mix design and samples in accordance with current Michigan Department of Transportation Standards.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that compacted subgrade is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.02 AGGREGATE BASE COURSE

A. See Section 32 1123.

B. Proof-Rolling and Inspection.
   1. Examine subgrade, surface, and elevations to which base materials and hot mix asphalt pavement will be installed. Proof-rolling will be required for acceptance of final structural sub-grade, prior to start of pavement operations.
   2. Notify the Engineer in writing of the conditions detrimental to the completion of the work.
   3. Do not proceed with the work until unsatisfactory conditions have been corrected, and acceptable to the Engineer.

C. Surface Preparation.
   1. Schedule paving operations so that aggregate base is not exposed longer than a maximum of 7 days. Contractor responsible for any rework required due to exposure to weather.
      a. Application of bituminous materials shall avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

3.03 PREPARATION - TACK COAT

A. Apply tack coat in accordance with manufacturer's instructions.

B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/10 gal/sq yd.

C. Apply tack coat to contact surfaces of curbs and gutters.

D. Coat surfaces of manhole frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.04 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

A. General: Place hot mix asphalt mixture on prepared surface, spread and strike off. Spread mixture at a minimum temperature of 275 degrees F. Maximum temperature shall not exceed 325 degrees F.
   1. Loads will be rejected that have a temperature either below 250 degrees F or greater than 20 degrees F above the recommended maximum mixing temperature specified by the binder producer at time of discharge.
   2. Place each course to required grade, cross section, and compacted thickness.

B. Pavement Placement: Place in strips not less than 10 feet wide, unless otherwise acceptable to the Engineer. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.

C. Joints: Make joints between old and new pavements, or between successive days' work, to insure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of hot mix asphalt course. Clean contact surfaces and apply tack coat.
   1. Ensure a smooth transition where asphalt pavement abuts building concrete, with special attention at front building sidewalks. Asphalt pavement must be flush with concrete.

D. Place asphalt binder course within 24 hours of applying primer or tack coat.

E. Place asphalt wearing course within two hours of placing and compacting binder course.

F. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

G. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.05 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Variation from True Elevation: Within 1/2 inch.

C. Check surface areas at intervals as directed by Engineer. Areas of ponding or standing water in excess of 1/8 inch will not be acceptable. Defective portions of the pavement will be removed and replaced as directed by the Engineer.

3.06 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for quality control.

B. Provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.

C. All bituminous material shall be compacted to a density of 94 to 97 percent of the theoretical maximum density as determined by the Rice Method.

3.07 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for 2 days or until surface temperature is less than 140 degrees F.

3.08 REPAIR AND REPLACEMENT

A. Sawcutting and Patching:
   1. Remove and replace leveling and/or wearing course areas mixed with foreign materials and defective areas.
   2. Sawcut full depth of existing pavement in perpendicular and parallel directions to adjoining surfaces to ensure a quality and aesthetically pleasing repair. Replacement may need to extend beyond the area of repair.
   3. Cut out areas and fill with fresh, hot mix asphalt.
   4. Compact by rolling to specified density and smoothness.
   5. Sawcut or route new joint and fill with hot poured rubber joint sealer.

3.09 CLEAN-UP

A. For duration of work, maintain work area free from waste material, debris, and the similar items.

B. Remove all excess material, debris and equipment.

END OF SECTION

SECTION 32 1313 CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete sidewalks, stair steps, integral curbs, gutters, parking areas, and roads.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Preparation of site for paving and base and preparation of subsoil at pavement perimeter for planting.

B. Section 31 2323 - Fill: Compacted subbase for paving.

1.03 REFERENCE STANDARDS

A. ACI 211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

B. ACI 301 - Specifications for Concrete Construction; 2020.

C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

D. ACI 305R - Guide to Hot Weather Concreting; 2020.

E. ACI 306R - Guide to Cold Weather Concreting; 2016.

F. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.

G. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).

H. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.

I. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.

J. ACI SPEC-301 - Specifications for Concrete Construction; 2020.

K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2026.

L. ASTM C1260 - Aggregate Test for Alkali Siliica Reactivity (ASR)

M. ASTM C1567- Blended Material Test for Alkali Silica Reactivity (ASR)

N. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2018.

O. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2018.

P. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2026a.

Q. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.

R. ASTM C595/C595M - Standard Specification for Blended Hydraulic Cements.

S. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2026.

T. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2025.

U. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2025a.

V. MDOT Standard Specifications for Construction.

W. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types); 2023.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on joint filler, admixtures, and curing compound.

C. Design Data: Indicate pavement thickness, mix design including alkali silica reactivity test results, designed concrete strength, reinforcement, and typical details.

PART 2 PRODUCTS

2.01 PAVING ASSEMBLIES

A. Comply with applicable requirements of ACI SPEC-301.

B. Design paving for parking and light duty commercial vehicles.

2.02 FORM MATERIALS

A. Form Materials: As specified in Section 03 1000, comply with ACI SPEC-301.

B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751).
   1. Thickness: 3/8 inch.

2.03 REINFORCEMENT

A. Reinforcing Steel and Welded Wire Reinforcement: Types specified in Section 03 2000.

B. Dowels: ASTM A615/A615M, Grade 40 - 40,000 psi yield strength; deformed billet steel bars; epoxy coated finish.

2.04 CONCRETE MATERIALS

A. Obtain cementitious materials from same source throughout.

B. Concrete Materials: Provide in accordance with City of Lansing Public Works standards.

C. Cement: ASTM C595/C595M, Type IL(10) - Portland limestone cement

2.05 ACCESSORIES

A. Curing Compound: ASTM C309, Type 1, Class A.

B. Curing Compound at salt guard: Compatible with requirements of salt guard manufacturer.

C. Salt Guard: Water based emulsion of saline/siloxane to penetrate concrete surface at all horizontal concrete surfaces.
   1. Manufacturers:
      a. Dayton Superior; Product: Weather Worker 10% J26WB; www.dayton superior.com
      b. Euclid Chemical; Product Weather-Guard: www.euclidchemical.com
      c. Kryton International Inc.; Product: Hydropel Sealer: www.kryton.com
      d. Prosoco Inc.; Saltguard WB: www.prosoco.com
      e. SpecChem, LLC; Product: SpecShield WB; www.specchemllc.com
      f. Substitutions: See Section 01 6000 - Product Requirements.

2.06 CONCRETE MIX DESIGN

A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.

B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301.
   1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.

C. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended by manufacturer.

D. Concrete Mix: MDOT P1, Modified - Plain concrete with MDOT 6AA coarse aggregate with modified compressive strength per the following Concrete Properties specifications

E. Concrete Properties:
   1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 4,000 psi.
   2. Fly Ash Content: Maximum 25 percent of cementitious materials by weight.
   3. Calcined Pozzolan Content: Maximum 10 percent of cementitious materials by weight.
   4. Total Air Content: 6 percent, determined in accordance with ASTM C173/C173M.

2.07 CONCRETE MATERIALS FOR DRIVEWAY PAVING (HEAVY DUTY)

A. Reinforcing steel shall be as shown on the drawings.

B. Concrete Mix: MDOT P1, Modified - Plain concrete with MDOT 6AA coarse aggregate with modified compressive strength per the following Concrete Properties specifications

C. Concrete Properties:
   1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 4,500 psi.

2.08 MIXING

A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.

B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

A. See Section 32 1123 for construction of base course for work of this Section.

3.03 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

3.04 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

A. Place reinforcement as indicated on drawings.

B. Interrupt reinforcement at contraction joints.

C. Place dowels to achieve pavement and curb alignment as detailed.

3.06 COLD AND HOT WEATHER CONCRETING

A. Follow recommendations of ACI PRC-305 when concreting during hot weather.

B. Follow recommendations of ACI PRC-306 when concreting during cold weather.

C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

A. Place concrete in accordance with ACI PRC-304.

B. Do not place concrete when base surface is wet.

C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

D. Apply surface retarder to all exposed surfaces in accordance with manufacturer's instructions.

3.08 JOINTS

A. Align curb, gutter, and sidewalk joints.

B. Place 3/8 inch wide expansion joints at 20 foot intervals or as indicated on drawings and to separate paving from vertical surfaces and other components.
   1. Form joints with joint filler extending from bottom of pavement to within 1/2 inch of finished surface.
   2. Secure to resist movement by wet concrete.

C. Provide sawn joints.
   1. At 5 feet intervals or as indicated on drawings.

D. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

3.09 FINISHING

A. Area Paving: Light broom, texture perpendicular to pavement direction.

B. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.

C. Curbs and Gutters: Light broom, texture parallel to pavement direction.

D. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.
   1. At locations of salt guard applications, provide curing compatible with salt guard manufacturer requirements.

3.10 TOLERANCES

A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

B. Maximum Variation From True Position: 1/4 inch.

3.11 FIELD QUALITY CONTROL

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

B. Compressive Strength Tests: ASTM C39/C39M; for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed.
   1. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

C. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.12 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

END OF SECTION

SECTION 32 1723 PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Painted pavement markings.

B. Raised pavement markings.

C. Plastic pavement markings.

1.02 RELATED REQUIREMENTS

A. Section 32 1216 - Asphalt Paving.

B. Section 32 1313 - Concrete Paving.

1.03 REFERENCE STANDARDS

A. AASHTO M 237 - Standard Specification for Epoxy Resin Adhesives for Bonding Traffic Markers to Hardened Portland Cement and Asphalt Concrete; 2024.

B. AASHTO M 247 - Standard Specification for Glass Beads Used in Pavement Markings; 2013 (Reapproved 2018).

C. AASHTO M 249 - Standard Specification for White and Yellow Reflective Thermoplastic Striping Material (Solid Form); 2012 (Reapproved 2020).

D. AASHTO MP 24 - Standard Specification for Waterborne White and Yellow Traffic Paints; 2015 (Reapproved 2020).

E. ASTM D4505 - Standard Specification for Preformed Retroreflective Pavement Marking Tape for Extended Service Life; 2012 (Reapproved 2022).

F. FHWA MUTCD - Manual on Uniform Traffic Control Devices; 2023, with Editorial Revision (2025).

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.

C. Manufacturer's Instructions:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

D. Manufacturer's qualification statement.

E. Installer's qualification statement.

F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements for additional provisions.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience and approved by manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver paint in containers of at least 5 gallons accompanied by batch certificate.

B. Store products in manufacturer's unopened packaging until ready for installation.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.08 SEQUENCING

A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of markings.

PART 2 PRODUCTS

2.01 PAINTED PAVEMENT MARKINGS

A. Comply with City of City of Lansing Public Works Department standards.

B. Comply with FHWA MUTCD.

C. Painted Pavement Markings: As indicated on drawings.
   1. Marking Paint: In accordance with AASHTO MP 24.
      a. Parking Lots: Yellow.
      b. Symbols and Text: White.
      c. Wheelchair Symbols: Provide blue and white.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that pavement is dry and ready for installation.

B. Notify Architect of unsatisfactory conditions before proceeding.

3.02 PREPARATION

A. Clean surfaces prior to installation.
   1. Remove dust, dirt, and other debris.

B. Apply paint stencils by type and color at necessary intervals.

3.03 INSTALLATION

A. General:
   1. Position pavement markings as indicated on drawings.
   2. Field location adjustments require approval of Architect.

B. Painted Pavement Markings:
   1. Apply in accordance with manufacturer's instructions.
   2. Apply in accordance with State of Michigan Highway Department standards.
   3. Apply in accordance with FHWA MUTCD standards.
   4. Marking Paint: Apply uniformly, with sharp edges.
      a. Applications: One coat at manufacturer's recommended rates.
      b. Wet Film Thickness: 0.015 inch, minimum.
      c. Stencils: Lay flat against pavement, align with striping, remove after application.
      d. Length Tolerance: Plus or minus 2 inches.
      e. Width Tolerance: Plus or minus 1/4 inch.

C. Plastic Pavement Markings:
   1. Install in accordance with manufacturer's instructions in manner necessary to maintain manufacturer's warranty.
   2. Install in accordance with State of Michigan Highway Department standards.
   3. Install in accordance with FHWA MUTCD standards.
   4. Thermoplastic Markings: Preheat pavement surface to 275 degrees F (135 degrees C). Place markings on pavement smooth and without wrinkles. 1/4 inch (6 mm) maximum gap between adjacent markings. Uniformly heat markings between 400 degrees F (204 degrees C) to 440 degrees F (227 degrees C). Do not overheat, scorch, or disperse embedded glass beads.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Protect newly painted markings so that paint is not picked up by tires, smeared, or tracked.

C. Provide barricades, warning signs, and flags as necessary to prevent traffic crossing newly painted markings.

D. If inspections indicate work does not meet specified requirements, rework and reinspect at no cost to Owner.

E. Allow the pavement marking to set at least the minimum time recommended by manufacturer.

3.05 PROTECTION

A. Replace damaged or removed markings at no additional cost to Owner.

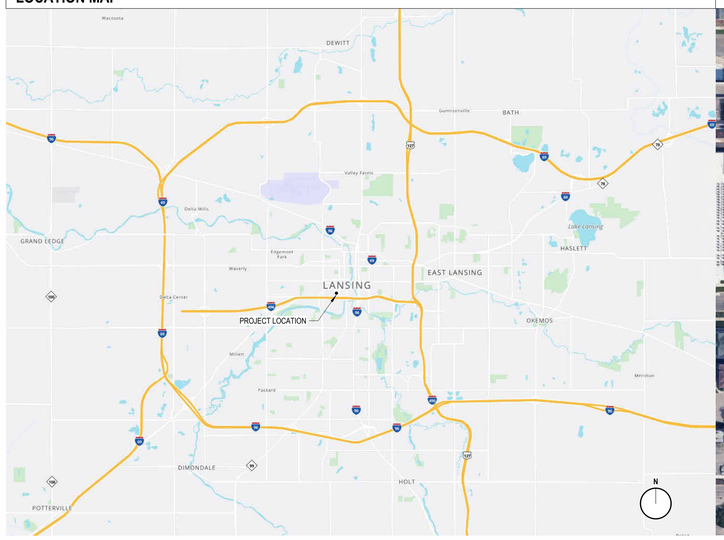
END OF SECTION

CAPITAL AREA TRANSPORTATION AUTHORITY

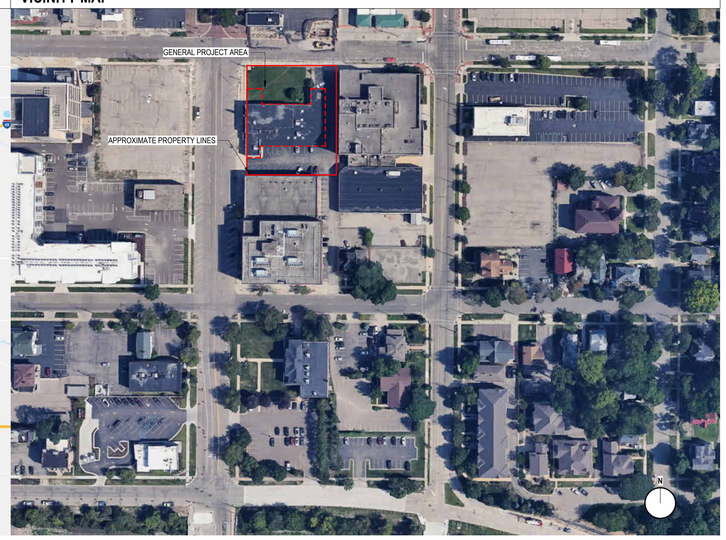
CATA RENOVATION

511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

LOCATION MAP



VICINITY MAP



DRAWING INDEX

GENERAL
TD001 TITLE DRAWING
G001 PROJECT INFORMATION AND TYPICAL DETAILS
G101 CODE COMPLIANCE PLANS (BASE BID)
G102 CODE COMPLIANCE PLANS (W/ BID ALTERNATE #1)

CIVIL
C101 EXISTING CONDITIONS PLAN
C102 DEMOLITION AND SESC PLAN
C201 SITE LAYOUT PLAN
C301 GRADING AND UTILITIES PLAN
C501 SITE DETAILS

STRUCTURAL
S001 GENERAL NOTES
S002 DESIGN CRITERIA AND SCHEDULES
S003 SPECIAL INSPECTIONS
S100 STRUCTURAL PLANS
S301 TYPICAL CONCRETE DETAILS
S302 CONCRETE DETAILS
S401 MASONRY DETAILS
S501 STEEL DETAILS

ARCHITECTURAL
AD101 DEMOLITION FLOOR PLANS & REFLECTED CEILING PLANS
AD201 EXTERIOR DEMOLITION ELEVATIONS
A101 BASEMENT AND FIRST FLOOR PLANS
A102 SECOND FLOOR PLAN
A103 ENLARGED FLOOR PLANS
A104 ROOF PLAN
A111 REFLECTED CEILING PLANS
A121 FINISH PLAN
A201 EXTERIOR ELEVATIONS
A301 BUILDING SECTIONS
A311 WALL SECTIONS AND DETAILS
A312 WALL SECTIONS AND DETAILS
A313 WALL SECTIONS AND DETAILS
A401 INTERIOR ELEVATIONS
A501 INTERIOR DETAILS
A601 DOOR SCHEDULE, ELEVATIONS, AND DETAILS
A611 WINDOWS AND STOREFRONT ELEVATIONS AND DETAILS
A801 STAIRCASE VERTICAL CIRCULATION
A802 ELEVATOR VERTICAL CIRCULATION

PLUMBING
P001 GENERAL PLUMBING INFORMATION
PD101 FIRST FLOOR PLUMBING DEMOLITION PLAN
PD102 ROOF PLUMBING DEMOLITION PLAN
P100 BASEMENT PLUMBING PLAN
P101 FIRST FLOOR PLUMBING PLAN
P102 SECOND FLOOR AND ROOF PLUMBING PLAN

MECHANICAL
M001 GENERAL MECHANICAL INFORMATION
MD101 FIRST FLOOR MECHANICAL DEMOLITION PLAN
MD102 SECOND FLOOR AND ROOF MECHANICAL DEMOLITION PLAN
M101 FIRST FLOOR HVAC PLAN
M102 SECOND FLOOR AND ROOF HVAC PLAN
M501 MECHANICAL DETAILS

ELECTRICAL
E001 ELECTRICAL NOTES AND ABBREVIATIONS
ED101 FIRST FLOOR DEMOLITION PLAN
ED102 SECOND FLOOR DEMOLITION PLAN
ED103 ROOF DEMOLITION PLAN
EP101 FIRST FLOOR POWER PLAN
EP102 SECOND FLOOR POWER PLAN
EP103 ROOF POWER PLAN
EL101 FIRST FLOOR LIGHTING PLAN
EL102 SECOND FLOOR LIGHTING PLAN
E501 ELECTRICAL ONE-LINE DIAGRAMS
E601 ELECTRICAL SCHEDULES
E602 ELECTRICAL PANEL SCHEDULES

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

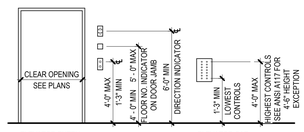
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

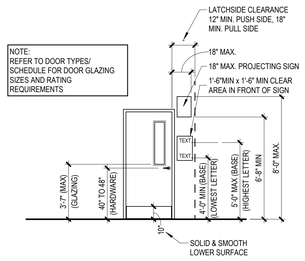
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J. CANGRO
DRAWN BY
R. VACA
CHECKED BY
J.COATS

TITLE DRAWING
TD001

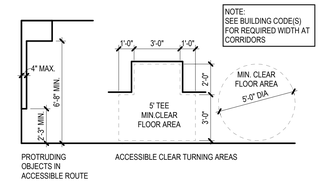
7/24/2026 11:22:52 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
TD001
TITLE DRAWING
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND IS PROTECTED BY COPYRIGHT LAWS AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO



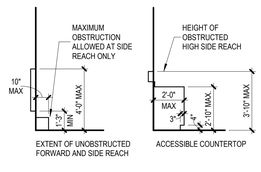
A6 ELEVATOR CONTROLS
NOT TO SCALE

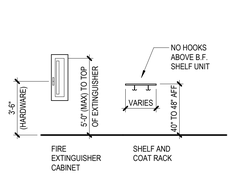


A5 DOORWAY FEATURES
NOT TO SCALE

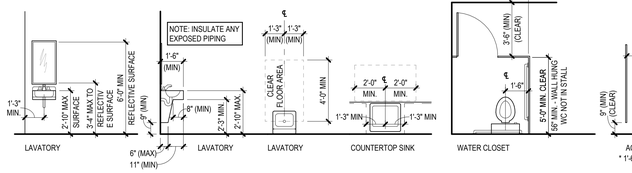


A4 ACCESSIBLE CLEARANCES (EXISTING BUILDING)
NOT TO SCALE

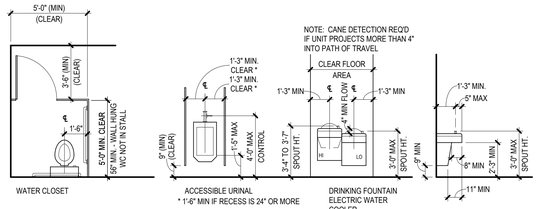


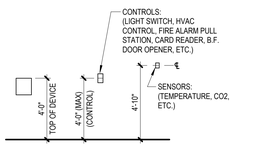


B6 MISC. ACCESSORIES
NOT TO SCALE

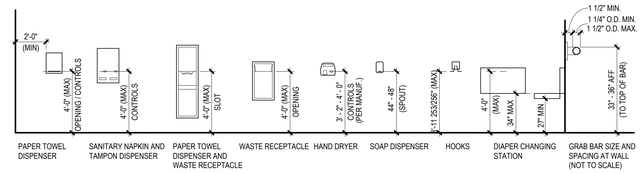


B5 PLUMBING FIXTURES
NOT TO SCALE

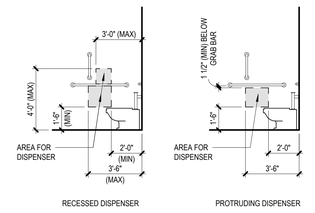




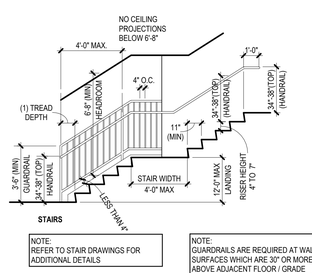
C6 MISCELLANEOUS DEVICES
NOT TO SCALE

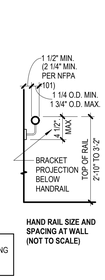


C5 TOILET ROOM ACCESSORIES
NOT TO SCALE

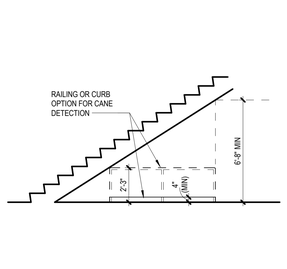


C3 TOILET STALL ACCESSORIES
NOT TO SCALE

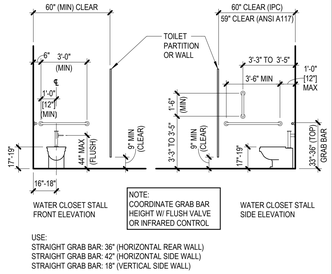




E7 STAIRS AND RAMPS
NOT TO SCALE



E5 REDUCED VERTICAL CLEARANCE
NOT TO SCALE



D4 FLOOR MOUNTED WATER CLOSET
NOT TO SCALE

PROGRESSIVE AE GENERAL SYMBOLOGY

DRAWING TITLES

PLAN TITLE

PLAN NORTH

DRAWING TITLE
1/8" = 1'-0"
DRAWING SCALE

PLAN CALLOUT / SECTION / ELEVATION TITLE

DRAWING NUMBER

A5 DRAWING TITLE
1/8" = 1'-0"
DRAWING SCALE

REVISION SYMBOLS

PREVIOUS REVISION NUMBER (CLOUD HIDDEN) — #

ACTIVE REVISION NUMBER (MAY NOT MATCH BULLETIN #) — #

CLOUDED AREA OF REVISION

LOCATION SYMBOLS

BUILDING SECTION
DIRECTION OF SECTION
DRAWING NUMBER — A#
SHEET NUMBER — A###

WALL SECTION
DIRECTION OF SECTION
DRAWING NUMBER — A#
SHEET NUMBER — A###
END OF SECTION INDICATOR

DETAIL SECTION
DRAWING NUMBER — A#
SHEET NUMBER — A###
DIRECTION OF SECTION, END OF SECTION INDICATOR

EXTERIOR ELEVATION
DIRECTION OF ELEVATION
A# / A###
SHEET NUMBER
DETAIL NUMBER

INTERIOR ELEVATION
A#
DETAIL NUMBER(S)
A# A#/## A#
SHEET NUMBER
A#
DIRECTION OF ELEVATION

CALLOUT REFERENCE
DRAWING NUMBER — A#
SHEET NUMBER — A###
REF — REFERENCE (SIM, OPP)
DRAWING EXTENTS

MATCHLINE
MATCHLINE
SEE A# / A###
DRAWING REFERENCE FOR CONTINUATION

3D VIEW REFERENCE
DRAWING NUMBER
A# / A###
SHEET NUMBER

DATUM SYMBOLS

NEW COLUMN GRID — #

EXISTING COLUMN GRID — #

LEVEL
NAME
FLOOR LEVEL
100' - 0"
HEIGHT

SPOT ELEVATION
100' - 0"

TAGS

ROOM TAG
Room name
101A
150 SF
NAME
NUMBER
AREA

DOOR TAG
101
MARK

RESTROOM ACCESSORY TAG
A1
MARK

WINDOW TAG
A
MARK

CEILING TAG
NOTE — NOTE (AS REQUIRED)
9'-0" — HEIGHT AFF

SYMBOLS

BREAK LINE

PROGRESSIVE AE GENERAL ABBREVIATIONS

A/C	AIR CONDITIONING	MATL	MATERIAL(S)
A/V	AUDIO / VIDEO, AUDIO / VISUAL	MAX	MAXIMUM
ACC	ACCESSIBLE, ACCESSIBILITY	MCM	METAL COMPOSITE MATERIAL
ACM	ALUMINUM COMPOSITE PANELS	MECH	MECHANICAL
ACP	ACOUSTICAL CEILING PANELS	MFR	MANUFACTURER, MANUFACTURED
ACT	ACOUSTICAL CEILING TILE	MIN	MINIMUM
ADA	AMERICANS WITH DISABILITIES ACT	MISC	MISCELLANEOUS
		MO	MASONRY OPENING
AFF	ABOVE FINISHED FLOOR	MTD	MOUNTED
ALT	ALTERNATE	MTL	METAL
ALUM	ALUMINUM		
ANOD	ANODIZED	NEC	NATIONAL ELECTRIC CODE
ARCH	ARCHITECT, ARCHITECTURAL	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
AUTO	AUTOMATIC		
		NIC	NOT IN CONTRACT
BIT	BITUMINOUS	NOM	NOMINAL
BLDG	BUILDING	NRC	NOISE REDUCTION COEFFICIENT
BLKG	BLOCKING	NTS	NOT TO SCALE
BO	BOTTOM OF		
BRG	BEARING	OC	ON CENTER
		OD	OUTSIDE DIAMETER
CAB	CABINET, CABINETRY	OF/CI	OWNER FURNISHED, CONTRACTOR INSTALLED
CCTV	CLOSED-CIRCUIT TELEVISION		
CF/CI	CONTRACTOR FURNISHED / CONTRACTOR INSTALLED	OF/OI	OWNER FURNISHED, OWNER INSTALLED
CF/OI	CONTRACTOR FURNISHED / OWNER INSTALLED	OH	OVERHEAD
		OHD	OVERHEAD DOOR
CFMF	COLD FORMED METAL FRAMING	OPP	OPPOSITE
CG	CORNER GUARD	ORD	OVERFLOW ROOF DRAIN
CJ	CONTROL JOINT		
CL	CENTERLINE	PERF	PERFORATE, PERFORATED
CLG	CEILING	PERP	PERPENDICULAR
CLR	CLEAR, CLEARANCE	PLAM	PLASTIC LAMINATE
CMU	CONCRETE MASONRY UNIT	PLBG	PLUMBING
COL	COLUMN	PNT	PAINT, PAINTED
CONC	CONCRETE	PREFIN	PREFINISHED
CONST	CONSTRUCTION	PRELIM	PRELIMINARY
CONT	CONTINUOUS, CONTINUATION		
COORD	COORDINATE	QT	QUARRY TILE
CPT	CARPET	QTY	QUANTITY
CR	CARD READER		
CSMT	CASEMENT	R	RISER
CTR	CENTER	RD	ROOF DRAIN, ROAD
CTV	CABLE TELEVISION	REF	REFRIGERATOR
		REQ	REQUIRED, REQUIREMENT
D	DEEP, DEPTH	REV	REVISE, REVISION
DEFS	DIRECT-APPLIED EXTERIOR FINISH SYSTEM	RH	RIGHT HAND, RIGHT HANDED
		RO	ROUGH OPENING
DEG	DEGREE(S)	ROW	RIGHT OF WAY
DEMO	DEMOLISH, DEMOLITION	RTU	ROOF TOP UNIT
DF	DRINKING FOUNTAIN		
DH	DOUBLE HUNG	SCHED	SCHEDULE
DIA	DIAMETER	SH	SHOWER
DIAG	DIAGONAL	SIM	SIMILAR
DIM	DIMENSION, DIMENSIONAL	SIP	STRUCTURAL INSULATED PANEL
DIST	DISTANCE	SOG	SLAB ON GRADE
DIV	DIVISION, DIVIDE	SPEC	SPECIFICATION
DN	DOWN	SPKLR	SPRINKLER
DR	DOOR, DRIVE	SQ	SQUARE
DTL	DETAIL	STC	SOUND TRANSMISSION COEFFICIENT
DW	DISHWASHER		
DWG	DRAWING(S)	STD	STANDARD
		STOR	STORAGE
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM	STR	STRUCTURAL
EJ	EXPANSION JOINT	T	TREAD
EL	ELEVATION	T&G	TONGUE AND GROOVED
ELEC	ELECTRIC, ELECTRICAL	TEMP	TEMPORARY
ELEV	ELEVATOR	THK	THICK, THICKNESS
EMER	EMERGENCY	TO	TOP OF
ENG	ENGINEER	TYP	TYPICAL
EO	EDGE OF		
EQ	EQUAL	UC	UNDER COUNTER
EQUIP	EQUIPMENT	UL	UNDERWRITERS LABORATORY
EST	ESTIMATE(D)	UNO	UNLESS NOTED OTHERWISE
EWC	ELECTRIC WATER COOLER	UR	URINAL
EX	EXISTING		
EXT	EXTERIOR	VCT	VINYL COMPOSITION TILE
		VERT	VERTICAL, VERTICALLY
FD	FLOOR DRAIN	VTR	VENT THROUGH ROOF
FDC	FIRE DEPARTMENT CONNECTION		
FDN	FOUNDATION	WC	WATER CLOSET
FE	FIRE EXTINGUISHER	WD	WOOD
FEC	FIRE EXTINGUISHER CABINET	WDW	WINDOW
FFE	FINISHED FLOOR ELEVATION	WP	WORK POINT, WORKING POINT
FO	FACE OF	WT	WEIGHT
FRT	FIRE RETARDANT TREATED		
FT, '	FOOT, FEET		
FTG	FOOTING		
FURN	FURNITURE		
FV	FIELD VERIFY		
GA	GAUGE, GAGE		
GALV	GALVANIZED		
GC	GENERAL CONTRACTOR, GENERAL CONTRACT		
GYP	GYPSUM		
HD	HEAVY DUTY		
HDW	HARDWARE		
HM	HOLLOW METAL		
HORZ	HORIZONTAL		
HT	HEIGHT		
HVAC	HEATING / VENTILATION / AIR CONDITIONING		
ID	INSIDE DIAMETER		
IMP	INSULATED METAL PANEL		
IN, "	INCH		
INS	INSULATE, INSULATION		
INT	INTERIOR		
J-BOX	JUNCTION BOX		
LAV	LAVATORY		
LEED	LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN		
LH	LEFT HAND, LEFT HANDED		
LT	LITE, LIGHT		
LVL	LAMINATED VENEER LUMER		
LVT	LUXURY VINYL TILE		

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

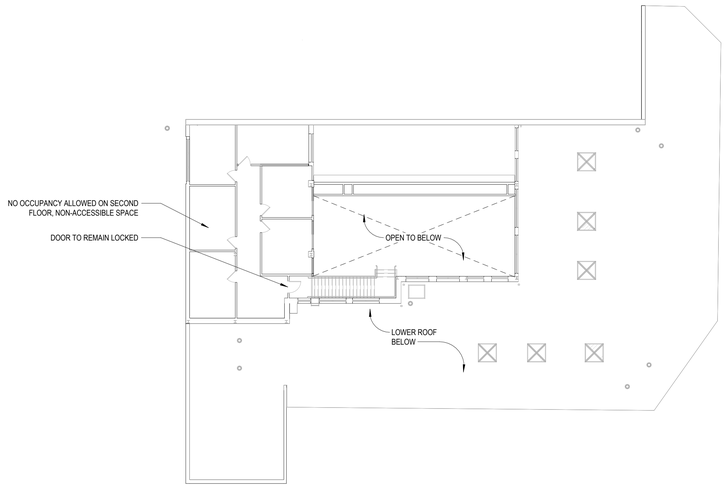
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
N.JAMES
CHECKED BY
J.COATS

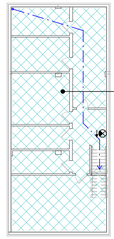
PROJECT INFORMATION AND TYPICAL DETAILS

G001

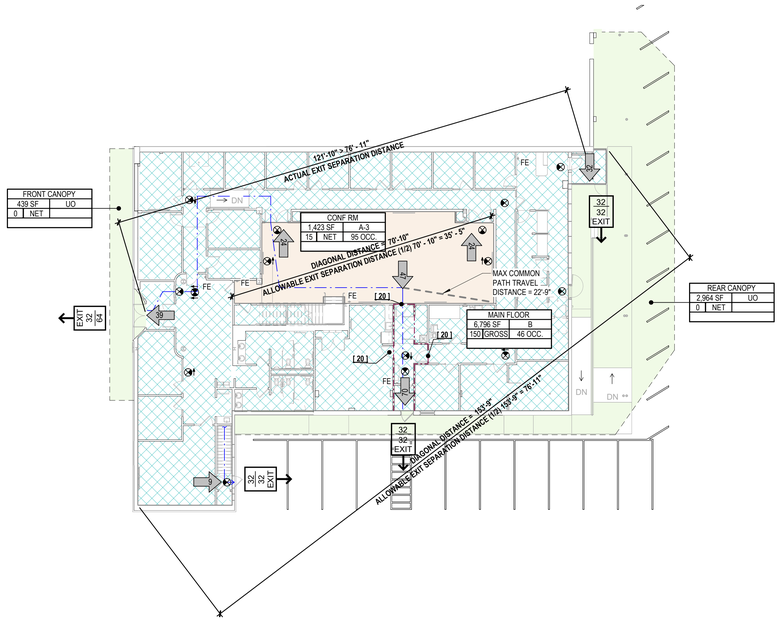
7/24/2026 11:22:35 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
PROJECT INFORMATION AND TYPICAL DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE. ALL IDEAS, DESIGNS, ARRANGEMENTS AND PLANS INDICATED OR REPRESENTED BY THIS DOCUMENT ARE OWNED BY AND ARE THE PROPERTY OF PROGRESSIVE AE INC. AND WERE CREATED, EVOLVED AND DEVELOPED FOR USE ON AND IN CONNECTION WITH THE SPECIFIED PROJECT. NONE OF SUCH IDEAS, DESIGNS, ARRANGEMENTS OR PLANS SHALL BE USED BY OR DISCLOSED TO ANY PERSON, FIRM OR CORPORATION FOR ANY PURPOSE WHATSOEVER WITHOUT THE PRIOR WRITTEN PERMISSION OF PROGRESSIVE AE INC. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



SECOND FLOOR CODE COMPLIANCE PLAN
1/16" = 1'-0"



BASEMENT CODE COMPLIANCE PLAN
1/16" = 1'-0"



FIRST FLOOR CODE COMPLIANCE PLAN
1/16" = 1'-0"

CODE SUMMARY

A. APPLICABLE CODES:
  1. BUILDING CODES:
    A. MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS (MRCEB) 2021
    B. MICHIGAN BUILDING CODE (MBC) 2021
    C. MICHIGAN UNIFORM ENERGY CODE 2021
    D. MICHIGAN BARRIER FREE DESIGN LAW P.A. 1 OF 1966 AND 2009 ICC/ANSI A117.1
  2. MECHANICAL CODES:
    A. MICHIGAN MECHANICAL CODE 2021
    B. MICHIGAN PLUMBING CODE (MPC) 2021
  3. ELECTRICAL CODE:
    A. MICHIGAN ELECTRICAL CODE 2023 (MICHIGAN ELECTRICAL CODE PART 8 INCORPORATING NATIONAL ELECTRICAL CODE 2023)

B. EXISTING AND/OR PROPOSED BUILDING DATA:
  1. NON-SEPARATED MIXED USE:
    A. OFFICE BUILDING, USE BUSINESS GROUP B (MBC 304.1)
    B. BOARD ROOM, ASSEMBLY GROUP (A-3) (MBC 303.1); CHANGED FROM BUSINESS GROUP (B)
    C. BUILDING ADDITION (ALTERNATIVE #1), USE BUSINESS GROUP (B) (MBC 304.1)
  2. CONSTRUCTION: TYPE II-B (MBC 602.5)
  3. CLASSIFICATION OF WORK: ALTERATION - LEVEL 2 (MRCEB 504.1)
  4. AUTOMATIC FIRE SUPPRESSION:
    A. FACILITY NOT SPRINKLED (MBC 903.2.1.3)
      a. FIRE AREA OF FLOOR CONTAINING A-3 OCCUPANCY IS LESS THAN 12,000 SF
      b. OCCUPANCY LOAD OF FIRE AREA IS LESS THAN 300.
      c. FIRE AREA CONTAINING A-3 OCCUPANCY IS LOCATED ON LEVEL OF EXIT DISCHARGE.
    B. FIRE ALARM: NOT REQUIRED (MBC 907.2)
    C. FIRE EXTINGUISHERS: REQUIRED (MBC 906.1, NO. 1)
  5. BUILDING HEIGHT:
    A. ALLOWABLE HEIGHT: A-3: 40 FEET, B: 40 FEET (MBC 504.3, T-504.3)
    B. ALLOWABLE STORIES: A-3: 1, B: 2 (MBC 504.4, T-504.4)
    C. ACTUAL (W/O BASEMENT): 2 STORY (A-3 ON FIRST FLOOR)
  6. BUILDING AREA:
    A. ALLOWABLE: A-3: 9,500 SF, B: 23,000 SF (MBC 506.2.1)
    B. FRONTAGE INCREASE FACTOR: 0.75 (MBC 506.3.3, MBC T-506.3.3)
      a. PERCENTAGE OF BUILDING PERIMETER = 75-100
      b. OPEN SPACE = 30' OR GREATER
      c. A-3: 9,500 + (9,500 X 0.75) = 16,625 SF ALLOWED (MOST RESTRICTIVE)

C. OCCUPANT LOAD FOR EGRESS PURPOSES (MBC T-1004.5) :
  a. BUSINESS (B): 150 GSF/OCC.
  b. ASSEMBLY (A-3) : 15 NETSF/OCC.

D. MEANS OF EGRESS REQUIREMENTS (MRCEB 805):
  a. MAX TRAVEL DISTANCE: 200 FEET (MBC 1017.2)
  b. MAX COMMON PATH OF TRAVEL: B: 75 FEET A-3: 75 FEET(MBC T-1006.2.1)
  c. EGRESS WIDTH (PER OCCUPANT):
    - STAIR: 0.3" (MBC1005.3.1)
    - OTHER COMPONENTS - DOORS: 0.2" (MBC1005.3.2)
  d. MIN STAIR WIDTH: 36" (MBC 1011.2-EX-1)
  e. MIN CORRIDOR WIDTH: 44" (MBC T-1020.3)
    - ON BASEMENT AND SECOND FLOOR WITH OCCUPANT LOAD LESS THAN 50: 36" (MBC T-1020.3)
  f. MAX DEAD END CORRIDOR: 20 FT. (MRCEB 804.7; MBC 1020.5)
  g. REMOTENESS OF EXITS: 1/2 DIAGONAL (MBC 1007.1.1)

E. ACCESSIBILITY (MRCEB 306):
  1. BASEMENT IS ACCESSORY STORAGE OCCUPANCY AT 300 SF PER OCCUPANT. 5 OCCUPANTS TOTAL SO NO ACCESSIBLE ROUTE REQUIRED PER (MBC 1104.4)
  2. SCOPE OF ALTERATION SHALL NOT REDUCE THE ACCESSIBILITY OF THE EXISTING FACILITY (MRCEB 306.3.1)
  3. ALL WORK IN ALTERED AREA(S) SHALL MEET STATE ACCESSIBILITY REQUIREMENTS TO THE MAXIMUM AMOUNT FEASIBLE (MRCEB 306.7)
  4. ALTERATION OF AREA(S) CONTAINING PRIMARY FUNCTION:
    A. ACCESSIBLE ROUTE TO PRIMARY FUNCTION SHALL BE PROVIDED
    B. ACCESSIBLE ROUTE FROM PRIMARY FUNCTION TO TOILET FACILITIES AND DRINKING FOUNTAINS SHALL BE PROVIDED.

F. PLUMBING FIXTURE REQUIREMENTS (MPC T-403.1):
  1. PLUMBING FIXTURE: (SEE TABLE BELOW)
  2. MAX TRAVEL DISTANCE TO TOILET ROOMS: 1 STORY, 500 FT (MPC 403.3.3)
  3. MAX SUBSTITUTION OF U FOR WC IN ANY ONE TOILET ROOM: 50% (MPC 419.2)

OCC	OCC. LOAD	WC RATIO		WC REQ'D		LAV RATIO		LAV REQ'D		URIN ALS	DF RATIO	DF REQ'D	SERVICE SINK REQ'D
		M	W	M	W	M	W	M	W				
BUSINESS (B)	77	1/30 FOR FIRST 30, THEN 1/50		1.17	1.17	1/40 FOR FIRST 80, THEN 1/80		0.96	0.96	-	1/1000	0.077	1
ASSEMBLY (A-3)	95	1 PER 125 1 PER 65		0.38	0.73	1 PER 200		0.48	0.48		1/500	0.19	
TOTAL REQ'D				1.55 (2)	1.9 (2)			1.45 (2)	1.45 (2)			1	1
PROVIDED				2+1*	3			2	2	1*		2	1

*URINALS PROVIDED PER 419.2

CODE LEGEND

- 100 — EXIT/EXIT ACCESS WITH CAPACITY SERVED
- DIRECTION OF EGRESS INCLUDING SECONDARY EXIT/EXIT ACCESS
- # XXX/XX SF — OCCUPANT LOAD OF SPACE AND BASIS FOR CALCULATION
- 1-HR RATED WALL UL DESIGN NO: U419
- 1-HR FIRE PARTITION UL DESIGN NO: U419

NOTE: PROVIDE IDENTIFICATION FOR RATED/SMOKE TIGHT WALLS AS REQUIRED BY MBC 703.7 IN ACCESSIBLE CONCEALED SPACES. REFER TO SPECIFICATION SECTION 07 0553 FOR ADDITIONAL INFORMATION

- 20 — DOOR RATING
- EXIT XXX XXX — REQUIRED (CLEAR) EGRESS WIDTH (32" MIN) / PROVIDED (CLEAR) EGRESS WIDTH
- FE — FIRE EXTINGUISHER LOCATION
- TRAVEL DISTANCE - DISTANCE NOTED ON PLAN
- COMMON PATH OF TRAVEL - DISTANCE NOTED ON PLAN

CODE PLAN AREA TYPES

- A-3 — POCHE INDICATES EXTENT OF ASSEMBLY OCCUPANT LOAD (NET SF)/15
- B — POCHE INDICATES EXTENT OF BUSINESS OCCUPANT LOAD (GROSS SF)/150
- UO — UNOCCUPIED SPACE UNDER BUILDING CANOPIES

AREA TAG

AREA	NAME	OCCUPANCY DESIGNATION
OCCUPANCY LOAD FACTOR	150 SF X-0 / 0 GROSS 0000 OCC. (DIFFERENT) USE	MAXIMUM OCCUPANCY

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

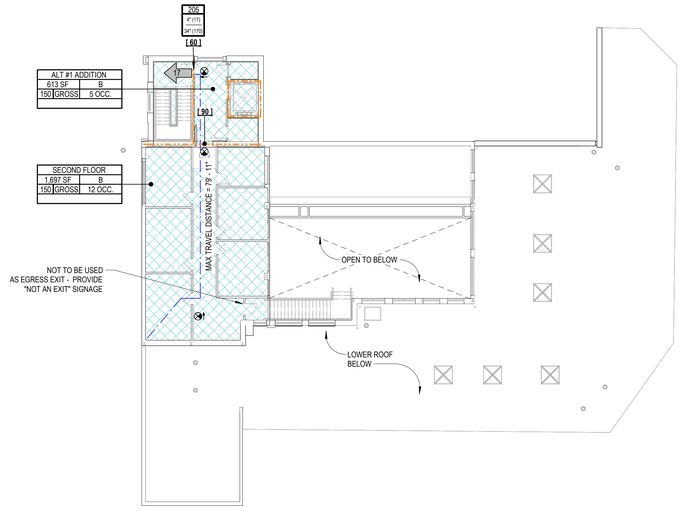
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER 75820023
PROJECT MANAGER G. RUNIONS
PROFESSIONAL J.CANGRO
DRAWN BY R.VACA
CHECKED BY J.COATS

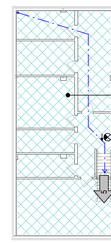
CODE COMPLIANCE PLANS (BASE BID)
G101

7/24/2026 1:52:31 PM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington_ARCH.rvt
CODE COMPLIANCE PLANS (BASE BID)
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS A INSTRUMENT OF SERVICE. ALL INFORMATION CONTAINED HEREIN IS PROPRIETARY TO PROGRESSIVE AE INC. AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



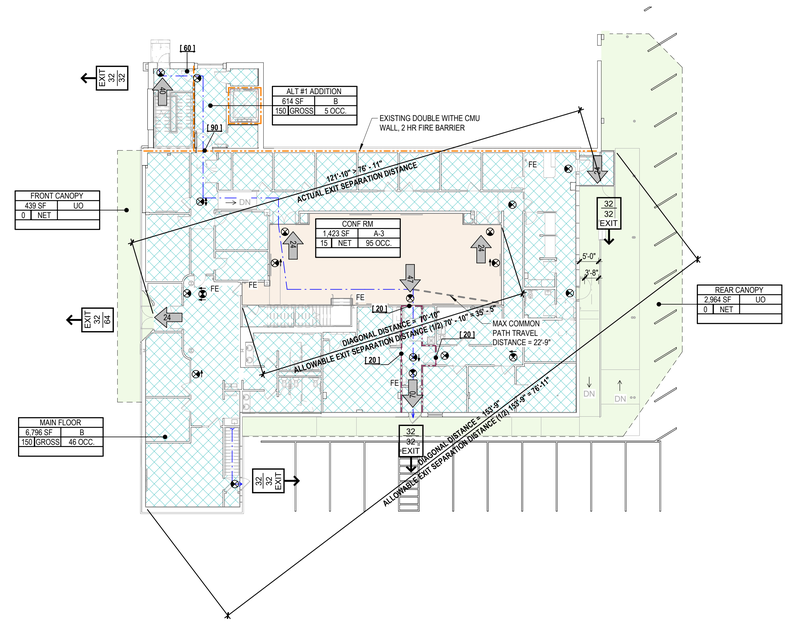
SECOND FLOOR CODE COMPLIANCE PLAN

1/16" = 1'-0"



BASEMENT CODE COMPLIANCE PLAN

1/16" = 1'-0"



FIRST FLOOR CODE COMPLIANCE PLAN

1/16" = 1'-0"

CODE SUMMARY

A. APPLICABLE CODES:
1. BUILDING CODES:
   A. MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS (MRCEB) 2021
   B. MICHIGAN BUILDING CODE (MBC) 2021
   C. MICHIGAN UNIFORM ENERGY CODE 2021
   D. MICHIGAN BARRIER FREE DESIGN LAW P.A. 1 OF 1966 AND 2009 ICC/ANSI A117.1
2. MECHANICAL CODES:
   A. MICHIGAN MECHANICAL CODE 2021
   B. MICHIGAN PLUMBING CODE (MPC) 2021
3. ELECTRICAL CODE:
   A. MICHIGAN ELECTRICAL CODE 2023 (MICHIGAN ELECTRICAL CODE PART 8 INCORPORATING NATIONAL ELECTRICAL CODE 2023)

B. EXISTING AND/OR PROPOSED BUILDING DATA:
1. NON-SEPARATED MIXED USE:
   A. OFFICE BUILDING, USE BUSINESS GROUP B (MBC 304.1)
   B. BOARD ROOM, ASSEMBLY GROUP (A-3) (MBC 303.1); CHANGED FROM BUSINESS GROUP (B)
   C. BUILDING ADDITION (ALTERNATIVE #1), USE BUSINESS GROUP (B) (MBC 304.1)
2. CONSTRUCTION: TYPE II-B (MBC 602.5)
3. CLASSIFICATION OF WORK: ALTERATION - LEVEL 2 (MRCEB 504.1)
4. AUTOMATIC FIRE SUPPRESSION:
   A. FACILITY NOT SPRINKLED (MBC 903.2.1.3)
      a. FIRE AREA OF FLOOR CONTAINING A-3 OCCUPANCY IS LESS THAN 12,000 SF
      b. OCCUPANCY LOAD OF FIRE AREA IS LESS THAN 300.
      c. FIRE AREA CONTAINING A-3 OCCUPANCY IS LOCATED ON LEVEL OF EXIT DISCHARGE.
   B. FIRE ALARM: NOT REQUIRED (MBC 907.2)
   C. FIRE EXTINGUISHERS: REQUIRED (MBC 906.1, NO. 1)
5. BUILDING HEIGHT:
   A. ALLOWABLE HEIGHT: A-3: 40 FEET, B: 40 FEET (MBC 504.3, T-504.3)
   B. ALLOWABLE STORIES: A-3: 1, B: 2 (MBC 504.4, T-504.4)
   C. ACTUAL (W/O BASEMENT): 2 STORY (A-3 ON FIRST FLOOR)
6. BUILDING AREA:
   A. ALLOWABLE: A-3: 9,500 SF, B: 23,000 SF (MBC 506.2.1)
   B. FRONTAGE INCREASE FACTOR: 0.75 (MBC 506.3.3, MBC T-506.3.3)
      a. PERCENTAGE OF BUILDING PERIMETER = 75-100
      b. OPEN SPACE = 30' OR GREATER
      c. A-3: 9,500 + (9,500 X 0.75) = 16,625 SF ALLOWED (MOST RESTRICTIVE)

C. OCCUPANT LOAD FOR EGRESS PURPOSES (MBC T-1004.5) :
a. BUSINESS (B): 150 GSF/OCC.
b. ASSEMBLY (A-3) : 15 NETSF/OCC.

D. MEANS OF EGRESS REQUIREMENTS (MRCEB 805):
a. MAX TRAVEL DISTANCE: 200 FEET (MBC 1017.2)
b. MAX COMMON PATH OF TRAVEL: B: 75 FEET A-3: 75 FEET(MBC T-1006.2.1)
c. EGRESS WIDTH (PER OCCUPANT):
   - STAIR: 0.3" (MBC1005.3.1)
   - OTHER COMPONENTS - DOORS: 0.2" (MBC1005.3.2)
d. MIN STAIR WIDTH: 36" (MBC 1011.2-EX-1)
e. MIN CORRIDOR WIDTH: 44" (MBC T-1020.3)
   - ON BASEMENT AND SECOND FLOOR WITH OCCUPANT LOAD LESS THAN 50: 36" (MBC T-1020.3)
f. MAX DEAD END CORRIDOR: 20 FT. (MRCEB 804.7; MBC 1020.5)
g. REMOTENESS OF EXITS: 1/2 DIAGONAL (MBC 1007.1.1)

E. ACCESSIBILITY (MRCEB 306):
1. BASEMENT IS ACCESSORY STORAGE OCCUPANCY AT 300 SF PER OCCUPANT. 5 OCCUPANTS TOTAL SO NO ACCESSIBLE ROUTE REQUIRED PER (MBC 1104.4)
2. SCOPE OF ALTERATION SHALL NOT REDUCE THE ACCESSIBILITY OF THE EXISTING FACILITY (MRCEB 306.3.1)
3. ALL WORK IN ALTERED AREA(S) SHALL MEET STATE ACCESSIBILITY REQUIREMENTS TO THE MAXIMUM AMOUNT FEASIBLE (MRCEB 306.7)
4. ALTERATION OF AREA(S) CONTAINING PRIMARY FUNCTION:
   A. ACCESSIBLE ROUTE TO PRIMARY FUNCTION SHALL BE PROVIDED
   B. ACCESSIBLE ROUTE FROM PRIMARY FUNCTION TO TOILET FACILITIES AND DRINKING FOUNTAINS SHALL BE PROVIDED.

F. PLUMBING FIXTURE REQUIREMENTS (MPC T-403.1):
1. PLUMBING FIXTURE: (SEE TABLE BELOW)
2. MAX TRAVEL DISTANCE TO TOILET ROOMS: 1 STORY, 500 FT (MPC 403.3.3)
3. MAX SUBSTITUTION OF U FOR WC IN ANY ONE TOILET ROOM: 50% (MPC 419.2)

OCC	OCC. LOAD	WC RATIO		WC REQ'D		LAV RATIO		LAV REQ'D		URIN ALS	DF RATIO	DF REQ'D	SERVICE SINK
		M	W	M	W	M	W	M	W				REQ'D
BUSINESS (B)	77	1/30 FOR FIRST 30, THEN 1/50		1.17	1.17	1/40 FOR FIRST 80, THEN 1/80		0.96 (2)	0.96 (2)	-	1/1000	0.077	1
ASSEMBLY (A-3)	95	1 PER 125	1 PER 65	0.38	0.73	1 PER 200		0.48	0.48		1/500	0.19	
TOTAL REQ'D				1.55 (2)	1.9 (2)			1.45 (2)	1.45 (2)			1	1
PROVIDED				2+1*	3			2	2	1*		2	1

*URINALS PROVIDED PER 419.2

CODE LEGEND

- 100 — EXIT/EXIT ACCESS WITH CAPACITY SERVED
- DIRECTION OF EGRESS INCLUDING SECONDARY EXIT/EXIT ACCESS
- # XXX/XX SF — OCCUPANT LOAD OF SPACE AND BASIS FOR CALCULATION
- 1-HR RATED WALL UL DESIGN NO: U419
- 1-HR FIRE PARTITION UL DESIGN NO: U419

NOTE: PROVIDE IDENTIFICATION FOR RATED/SMOKE TIGHT WALLS AS REQUIRED BY MBC 703.7 IN ACCESSIBLE CONCEALED SPACES. REFER TO SPECIFICATION SECTION 07 0553 FOR ADDITIONAL INFORMATION

- 20 — DOOR RATING
- EXIT XXX XXX — REQUIRED (CLEAR) EGRESS WIDTH (32" MIN) / PROVIDED (CLEAR) EGRESS WIDTH
- FE — FIRE EXTINGUISHER LOCATION
- TRAVEL DISTANCE - DISTANCE NOTED ON PLAN
- COMMON PATH OF TRAVEL - DISTANCE NOTED ON PLAN

CODE PLAN AREA TYPES

- A-3 — POCHE INDICATES EXTENT OF ASSEMBLY OCCUPANT LOAD (NET SF)/15
- B — POCHE INDICATES EXTENT OF BUSINESS OCCUPANT LOAD (GROSS SF)/150
- UO — UNOCCUPIED SPACE UNDER BUILDING CANOPIES

AREA TAG

NAME	
150 SF	X-0
0 GROSS	0000 OCC.
(DIFFERENT) USE	

AREA — OCCUPANCY DESIGNATION
OCCUPANCY LOAD FACTOR — MAXIMUM OCCUPANCY

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE
07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J.COATS

CODE COMPLIANCE PLANS (W/ BID ALTERNATE #1)
G102

7/24/2026 1:53:43 PM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington_ARCH.rvt
CODE COMPLIANCE PLANS (W/ BID ALTERNATE #1)
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE. ALL INFORMATION CONTAINED HEREIN IS THE PROPERTY OF PROGRESSIVE AE INC. AND IS PROTECTED BY COPYRIGHT AND OTHER RELATED RIGHTS, INCLUDING THE COPYRIGHT THERETO.

GENERAL NOTES

1. VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION.
2. PROTECT AND MAINTAIN CROSSINGS OF OTHER UTILITIES.
3. REFER TO DRAWING C101 FOR BENCHMARK INFORMATION.
4. ALL MATERIAL, SPECIFICATIONS AND CONSTRUCTION METHODS SHALL BE IN CONFORMANCE WITH ALL APPLICABLE MUNICIPAL AGENCIES.
5. RESTORE ALL STREET SURFACES, DRIVEWAYS, CULVERTS, ROADSIDE DRAINAGE DITCHES, AND OTHER PUBLIC OR PRIVATE STRUCTURES THAT ARE DISTURBED OR DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO MATCH AT A MINIMUM EXISTING CONDITIONS.
6. CONTRACTOR'S MANNER AND METHOD OF INGRESS AND EGRESS WITH RESPECT TO THE PROJECT AREAS SHALL IN NO WAY PROHIBIT OR DISTURB NORMAL PEDESTRIAN OR VEHICULAR TRAFFIC IN THE VICINITY AND IS SUBJECT TO REGULATION AND WRITTEN APPROVAL OF APPROPRIATE GOVERNING AGENCIES.
7. EXISTING TREES TO REMAIN - CONTRACTOR TO PROTECT ROOT SYSTEMS BY MAINTAINING TREE PROTECTION FENCE AT TREE DRIPLINE TO ELIMINATE MATERIAL STORAGE, PARKING OR CONSTRUCTION TRAFFIC WITHIN THE TREE DRIPLINE.

811 Know what's below. Call before you dig. www.CALL811.com

CALL 811 NOTE:
CONTRACTOR TO CONTACT 811 SERVICE AT LEAST 3 WORKING DAYS PRIOR TO CONSTRUCTION, TO CONFIRM LOCATION OF EXISTING UTILITIES. DIAL 811.

ALTA/NSPS LAND TITLE SURVEY

"VACANT & 511 S. WASHINGTON AVENUE; VACANT– E. LENAWEE STREET, LANSING, MI 48933"

SEWER INVENTORIES

CATCH BASIN #100
RIM – 846.30
8" METAL W – 843.49 (TOP OF PIPE)– DROP PIPE

CATCH BASIN #101
RIM – 846.71
8" METAL S – 844.98 (TOP OF PIPE)– DROP PIPE

CATCH BASIN #102
RIM – 847.36
12" RCP N – 844.20

SANITARY MANHOLE #200
RIM – 847.98
12" VCP S – 835.01
12" VCP W – 834.93

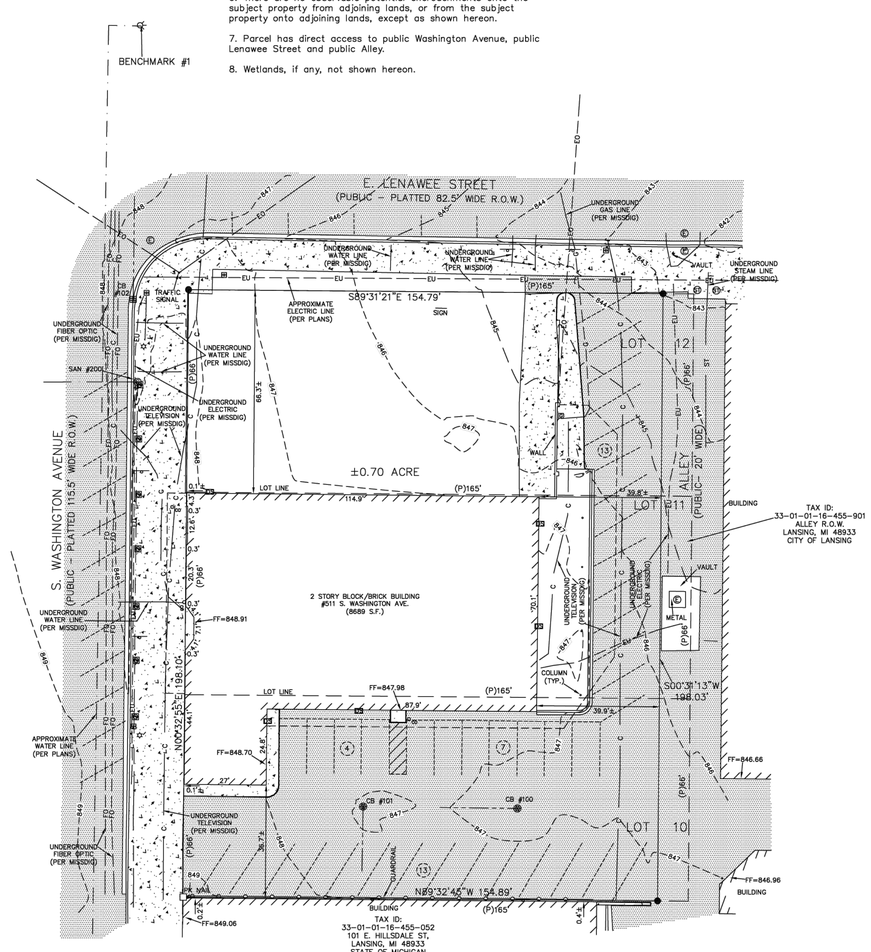
BENCHMARKS

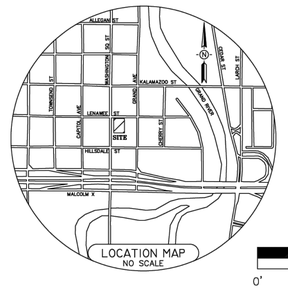
BENCHMARK #1 ELEV. = 848.66 (NAVD88)
TOP NORTHEAST FLANGE BOLT OF HYDRANT UNDER 'A' IN 'TRAVERSE CITY', IN NORTHEAST QUADRANT OF WASHINGTON & LENAWEE

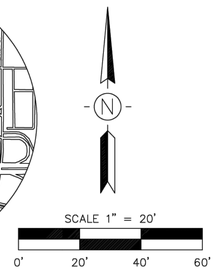
BENCHMARK #2 ELEV. = 841.39 (NAVD88)
SET PK NAIL IN WEST SIDE OF UTILITY POLE IN NORTHWEST QUADRANT OF GRAND & LENAWEE

SURVEYOR'S NOTES:

1. This plan was made at the direction of the parties named hereon and is intended solely for their immediate use.
2. All bearings are Michigan State Plane South Zone grid bearings obtained from GPS observations using corrections obtained from the nearest National Geodetic Survey C.O.R.S. station.
3. All dimensions shown are as–measured unless otherwise noted.
4. All dimensions are in feet and decimals thereof.
5. No building tie dimensions are to be used for establishing the property lines.
6. There are no observable potential encroachments onto the subject property from adjoining lands, or from the subject property onto adjoining lands, except as shown hereon.
7. Parcel has direct access to public Washington Avenue, public Lenawee Street and public Alley.
8. Wetlands, if any, not shown hereon.







LEGEND

(M)	= MEASURED DIMENSION	S	= SANITARY MANHOLE
(R)	= RECORDED DIMENSION	D	= DRAINAGE MANHOLE
●	= SET PK NAIL & TAG #53497	E	= ELECTRIC MANHOLE
□	= FOUND IRON AS NOTED	T	= TELEPHONE MANHOLE
	= DEED LINE		= CATCH BASIN
	= DISTANCE NOT TO SCALE		= LAWN BASIN
	= FENCE	G	= GAS MANHOLE
	= A.D.A RAMP	ST	= STEAM MANHOLE
	= ASPHALT	UM	= UNKNOWN MANHOLE
	= BRICK	W	= WATER MANHOLE
	= CONCRETE		= GAS METER
	= DECK		= GAS VALVE
	= GRAVEL	CO	= CLEANOUT
	= LANDSCAPING		= DOWN SPOUT
860	= EXISTING SPOT ELEVATION		= FIRE HYDRANT
860	= EXISTING CONTOUR ELEVATION	FP	= FIRE PROTECTION
	= BUILDING OVERHANG		= VALVE
	= SANITARY SEWER		= WATER SPRINKLER
	= STORM SEWER		= WATER PIV
	= WATER LINE		= WALK MANIFOLD
—G—	= GAS LINE		= WATER METER
—TU—	= UNDERGROUND TELEPHONE		= WELL
C	= UNDERGROUND TELEVISION		= SOIL BORING
—EU—	= UNDERGROUND ELECTRIC		= SIGN
—EO—	= OVERHEAD WIRES		= POST
—FO—	= UNDERGROUND FIBER OPTIC		= AIR CONDITIONING UNIT
	= EDGE OF WOODS		= FLAG POLE
	= DECIDUOUS TREE		= PARKING METER
	= CONIFEROUS TREE		= UTILITY POLE
	= BUSH		= LIGHT POLE
	= TREE STUMP		= GUY POLE
			= GUY WIRE
			= UTILITY PEDESTAL
			= TRANSFORMER
			= HANDHOLE
			= ELECTRIC METER
			= GROUND LIGHT

ALTA/NSPS LAND TITLE SURVEY – TABLE "A" REQUIREMENTS:

Item 1: Shown on the survey map.

Item 2: Addresses of the surveyed property: 501 & Vacant S. Washington Avenue; Vacant– Lenawee Street, Lansing, Michigan 48933.

Item 3: By scaled map location and graphic plotting only, this property lies entirely within Flood Zone "X", areas outside the 0.2% annual chance floodplain, according to the National Flood Insurance Program, Flood Insurance Rate Map for the City of Lansing, Ingham County, Michigan, Community Panel No. 260090 0131 D, dated August 16, 2011.

Item 4: ±0.70 Acre (30668 square feet)

Item 5: Shown on the survey map. All elevations are North American Vertical Datum of 1988 (NAVD88).

Item 7a: Shown on the survey map.

Item 7b1: Shown on the survey map.

Item 9: Parking:
Regular Parking Spaces: 37
Disabled Parking Spaces: 0
Total on–site Parking Spaces: 0

Item 11b: Utility information as shown was obtained from available public records and from supporting field observations, where possible, and is subject to verification in the field by the appropriate authorities prior to use for construction. In addition, this parcel was marked by MISS DIG Ticket Nos. 20258200349S–000, 20258200350S–000, and 20258203515–000. MISS DIG positive response shows markings were completed by 123.NET, Inc. for fiber optics, AT&T for telephone, Consumers Energy for gas, State of Michigan DTMN for fiber optics. Utility markings actually found on site by the field crew were: gas, water, electric, steam, fiber optic, cable, and television lines.

Item 13: Shown on the survey map.

Item 18: There are no offsite easements or restrictions of record for this parcel. No offsite easement or servitudes that benefit the subject property were provided to this surveyor or observed in the process of conducting this survey.

LEGAL DESCRIPTION:

(As provided by XXXXXXXXXXXXX Title Insurance Company, Commitment No. xxxxx, dated xxxx, 2025)

Lots 10, 11, and 12 except the East 10.00 feet of each lot thereof, Block 150, Original Plat of the City of Lansing, Ingham County, Michigan, according to the recorded plat thereof, as recorded in Liber 2 of Plats, Page 36, Ingham County Records.

SCHEDULE B, SECTION II, EXCEPTIONS:

(As provided by xxxxxx Title Insurance Company, Commitment No. xxxxx, dated xxxxx, 2025)

CERTIFICATION:

To Capital Area Transportation Authority; [Title Company]; & [Lender]:

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 "Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys," jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 3, 4, 5, 7a, 7b1, 8, 9, 11b, 13, and 18 of Table A thereof. The fieldwork was completed on August 30, 2025.

PRELIMINARY

Erick R. Friestrom Date of Plat or Map:
Professional Surveyor No. 53497
efriestrom@kebs.com

REVISIONS	COMMENTS
09/10/2025	PRELIMINARY

KEBS, INC. ENGINEERING AND LAND SURVEYING
2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517–339–1014 FAX 517–339–8047
WWW.KEBS.COM
Marshall Office – Ph. 269–781–9800

DRAWN BY AN | SECTION 16, T4N, R2W
FIELD WORK BY NW/HS | JOB NUMBER: 104545.ALT
SHEET 1 OF 1

PROGRESSIVE COMPANIES
PROGRESSIVE A/E, INC.
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHROITY
CATA RENOVATION
511 SOUTH WASHINGTON AVE, LANSING, MI 48933

NOT FOR CONSTRUCTION

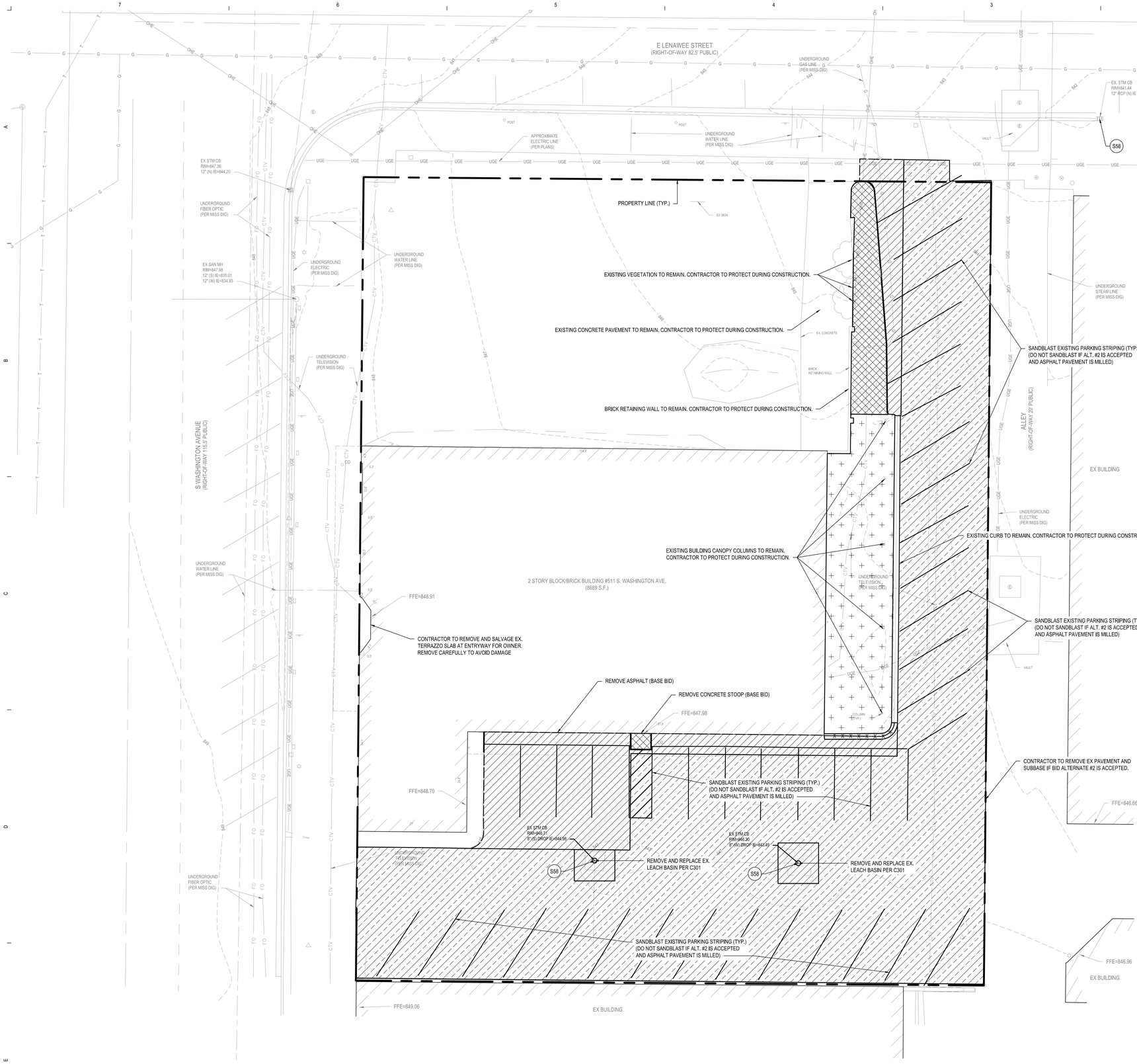
If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE
07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
B. SIMON
DRAWN BY
H. TELESCO
CHECKED BY
B SIMON

EXISTING CONDITIONS PLAN
C101

7/25/2026 10:17:28 PM Brandon Simon
P:\75820023\03D WPC2 SIM\10 - C101 - EXISTING CONDITIONS PLAN.dwg Saimon
THE DESIGNS AS INSTRUMENTS OF SERVICE BY KEBS, INC. AS A PROFESSIONAL ARCHITECTURAL AND ENGINEERING CORPORATION, ARE AND SHALL REMAIN THE PROPERTY OF KEBS, INC. AND THE UNDERSIGNED HAVE COMMON LAW COPYRIGHT AND OTHER PROPERTY RIGHTS IN THESE DESIGNS, INCLUDING THE COPYRIGHT THEREIN.



DEMOLITION AND SESC PLAN

1"= 10' NORTH 0 10'

811 Know what's below. Call before you dig. www.CALL811.com

CALL 811 NOTE:

CONTRACTOR TO CONTACT 811 SERVICE AT LEAST 3 WORKING DAYS PRIOR TO CONSTRUCTION, TO CONFIRM LOCATION OF EXISTING UTILITIES. DIAL 811.

SITE CLEARING AND DEMOLITION NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE SITE AND BECOMING FAMILIAR WITH THE DEMOLITION AND CLEARING REQUIREMENTS.
2. NO REMOVAL, DEMOLITION, CLEARING OR TOPSOIL REMOVAL SHALL OCCUR ON SITE UNTIL THE SESC AND STORMWATER PERMITS HAVE BEEN ISSUED AND THE CONTRACTOR HAS VERIFIED AND STAKED THE LIMITS OF REMOVAL IN THE FIELD. NOTIFY SITE CONSULTANT OF THE START OF CONSTRUCTION AND DATE WHEN THE LIMITS LINE WILL BE ESTABLISHED FOR REVIEW AND APPROVAL.
3. ALL MATERIALS NOTED TO BE SALVAGED SHALL BE TURNED OVER TO THE OWNER OR REINSTALLED ON SITE AS NOTED.
4. NO BURNING OR BURYING OF CLEARED OR DEMOLITION MATERIAL SHALL BE ALLOWED ON SITE.
5. REMOVE ALL STRUCTURES, FOUNDATIONS, BITUMINOUS PAVEMENT, CONCRETE SIDEWALK STEPS AND OTHER EXISTING SITE FEATURES AS INDICATED ON THE DRAWINGS. ALSO, REMOVE ALL DEBRIS FROM WITHIN CONSTRUCTION LIMITS ON SITE. ALL DEMOLITION MATERIALS SHALL BE REMOVED FROM THE SITE AND, UNLESS OTHERWISE NOTED, DISPOSED OF IN A MANNER ACCEPTABLE TO LOCAL JURISDICTION HAVING AUTHORITY.
6. THE CONTRACTOR SHALL BE LICENSED BY THE STATE OF MICHIGAN FOR DEMOLITION REMOVAL AND HAULING OF MATERIALS.
7. THE CONTRACTOR IS RESPONSIBLE TO OBTAIN ALL PERMITS AND FEES FOR THIS WORK.
8. EXISTING UTILITIES ARE LOCATED TO THE BEST OF OUR KNOWLEDGE. THE CONTRACTOR WILL BE RESPONSIBLE FOR VERIFYING EXISTING UTILITY LOCATIONS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL PROTECT AND MAINTAIN EXISTING UTILITY SERVICES AT ALL TIMES.
9. ALL EXCESS OR UNSUITABLE TOPSOIL OR SUBSOIL TO BECOME THE PROPERTY OF THE CONTRACTOR AND REMOVED OFFSITE.
10. PROTECT EXISTING TREES UNLESS OTHERWISE NOTED. NO PARKING OR STORAGE OF MATERIALS WITHIN TREE ROOT ZONE. PLACE TREE PROTECTION FENCE WHERE SHOWN ON PLAN.
11. TREE PROTECTION FENCE - ORANGE SAFETY FENCE AROUND TREES SUPPORTED BY STEEL T-BAR FENCE POSTS. ZIP TIE FABRIC TO POSTS. INSTALL PRIOR TO ANY CONSTRUCTION ACTIVITY AND MAINTAIN DURING ENTIRE CONSTRUCTION PERIOD.
12. CONTRACTOR TO CALL 811 AT LEAST 3 WORKING DAYS PRIOR TO CONSTRUCTION, TO CONFIRM LOCATION OF EXISTING UTILITIES.
13. CONTRACTOR MUST RESTORE AND REPAIR ANY EXISTING CONDITIONS DISTURBED BY CONSTRUCTION.
14. ANY AREA DISTURBED BY CONSTRUCTION TO BE RESTORED TO CONDITION EQUAL TO OR BETTER THAN BEFORE CONSTRUCTION BEGAN. PATCH PAVEMENT IN-KIND IF REQUIRED.
15. SAWCUT FULL DEPTH ALL EDGES OF PAVEMENT TO BE REMOVED.
16. ALL GROUND AREAS DISTURBED BY CONSTRUCTION TO BE TOPSOILED AND SEEDED PER THE SITE LANDSCAPE PLAN UNLESS SHOWN OTHERWISE ON PLANS.

DEMOLITION LEGEND

- ASPHALT REMOVAL
- CONCRETE REMOVAL
- FULL DEPTH ASPHALT REMOVAL (ALT. #2)
- GRAVEL REMOVAL
- SAWCUT
- REMOVE CURB

ALL ITEMS IN BOLD TO BE REMOVED UNLESS OTHERWISE NOTED.

S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
EROSION CONTROLS			
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.

PROGRESSIVE COMPANIES
PROGRESSIVE AE, INC.
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHROITY
CATA RENOVATION
511 SOUTH WASHINGTON AVE, LANSING, MI 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
7582/0023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
B. SIMON
DRAWN BY
H. TELESCO
CHECKED BY
B SIMON

DEMOLITION AND SESC PLAN
C102

7/23/2026 10:17:55 PM Brandon Simon
P:\7582\0023\10 WIP\C2 EBM\10 - C102 - DEMOLITION AND SESC PLAN.dwg Salmon

THIS DOCUMENT AND THE IDEAS PRESENTED ARE PROPERTY OF PROGRESSIVE A/E, INC. AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN AS AN INSTRUMENT OF SERVICE, AND PROGRESSIVE ARCHITECTURE ASSUMES NO LIABILITY FOR ANY USE OF THIS DOCUMENT FOR ANY PURPOSE OTHER THAN AS STATED HEREIN. ALL RIGHTS RESERVED UNDER THE COPYRIGHT LAWS OF THE UNITED STATES, INCLUDING THE COPYRIGHT THEREIN.

SITE LAYOUT PLAN

1"= 10' (NORTH) 0 10'

811 Know what's below. Call before you dig. www.CALL811.com

CALL 811 NOTE:

CONTRACTOR TO CONTACT 811 SERVICE AT LEAST 3 WORKING DAYS PRIOR TO CONSTRUCTION, TO CONFIRM LOCATION OF EXISTING UTILITIES. DIAL 811.

PAVEMENT LEGEND

STANDARD CURB AND GUTTER

INTEGRAL CONCRETE WALK / CURB

BITUMINOUS PAVEMENT
- 2" (220 LB/SYD) MDOT 5EML BIT. WEARING COURSE
- MDOT TACK COAT @ 0.15 GAL/SY
- 2 1/2" (275 LB/SYD) MDOT 4EML LEVELING COURSE
- 9" AGGREGATE BASE, MDOT 21AA MOD
- 12" SUBBASE, CL II SAND OR APPROVED NATIVE MATERIAL

CONCRETE SIDEWALK
- 4" CONCRETE
- 4" MDOT CLASS II GRANULAR BASE
- APPROVED COMPACTED SUBBASE

BITUMINOUS PAVEMENT (BID ALT. #2)
- 2" (220 LB/SYD) MDOT 5EML BIT. WEARING COURSE
- MDOT TACK COAT @ 0.15 GAL/SY
- 2 1/2" (275 LB/SYD) MDOT 4EML LEVELING COURSE
- 9" AGGREGATE BASE, MDOT 21AA MOD
- 12" SUBBASE, CL II SAND OR APPROVED NATIVE MATERIAL

GENERAL SITE LAYOUT NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE ACCORDING TO THE CURRENT MICHIGAN DEPARTMENT OF TRANSPORTATION (M.D.O.T) STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. NO DIMENSION MAY BE SCALED. REFER UNCLEAR ITEMS TO THE ENGINEER FOR INTERPRETATION.
3. DIMENSIONS SHOWN ARE TO FACE OF CURB UNLESS OTHERWISE NOTED AS B-B (BACK TO BACK) OR E-E (EDGE OF METAL TO EDGE OF METAL).
4. CONTRACTOR TO PAINT STRIPE ALL PARKING SPACES SHOWN. PAINT COLOR TO BE YELLOW. BARRIER FREE MARKINGS TO BE BLUE.
5. UPON REQUEST, ELECTRONIC INFORMATION WILL BE PROVIDED FOR SITE LAYOUT PURPOSES. CONTRACTOR SHALL REQUEST ALL INFORMATION IN WRITING THROUGH PROGRESSIVE COMPANIES. LAYOUT OF ALL NEW CONSTRUCTION SHALL BE DONE BY A LICENSED SURVEYOR.
6. ALL CONCRETE JOINTS SHALL BE TOOLED PER SPECIFICATIONS.
7. CONTRACTOR MUST RESTORE AND REPAIR ANY EXISTING CONDITIONS DISTURBED BY CONSTRUCTION. THIS IS TO INCLUDE BURIED UTILITIES, LIGHTING, LANDSCAPING, SPRINKLING, ETC.
8. ANY AREA DISTURBED BY CONSTRUCTION TO BE RESTORED TO CONDITION EQUAL TO OR BETTER THAN BEFORE CONSTRUCTION BEGAN.
9. ALL PAVEMENT, CURB & GUTTER, SIDEWALK AND UTILITIES WITHIN PUBLIC RIGHT OF WAY SHALL MEET CITY OF LANSING STANDARDS.
10. CONTRACTOR TO PROTECT EXISTING IRRIGATION SYSTEM AS MUCH AS POSSIBLE. REPAIR DAMAGE TO EXISTING IRRIGATION SYSTEM AND RECONFIGURE SPRINKLER LAYOUT TO ACCOMMODATE THE NEW IMPROVEMENTS.

ZONING NOTES

ZONE DISTRICT: DT-3
ADJACENT ZONING: DT-3
PARCEL SIZE: 0.70 ACRES

NOTE: NO ADDITIONAL ROW LANDSCAPING IS PROPOSED

NUMBER OF EXISTING PARKING SPACES: 37
NUMBER OF PROPOSED PARKING SPACES: 33

PROGRESSIVE COMPANIES
PROGRESSIVE A/E, INC.
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHROITY
CATA RENOVATION
511 SOUTH WASHINGTON AVE, LANSING, MI 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

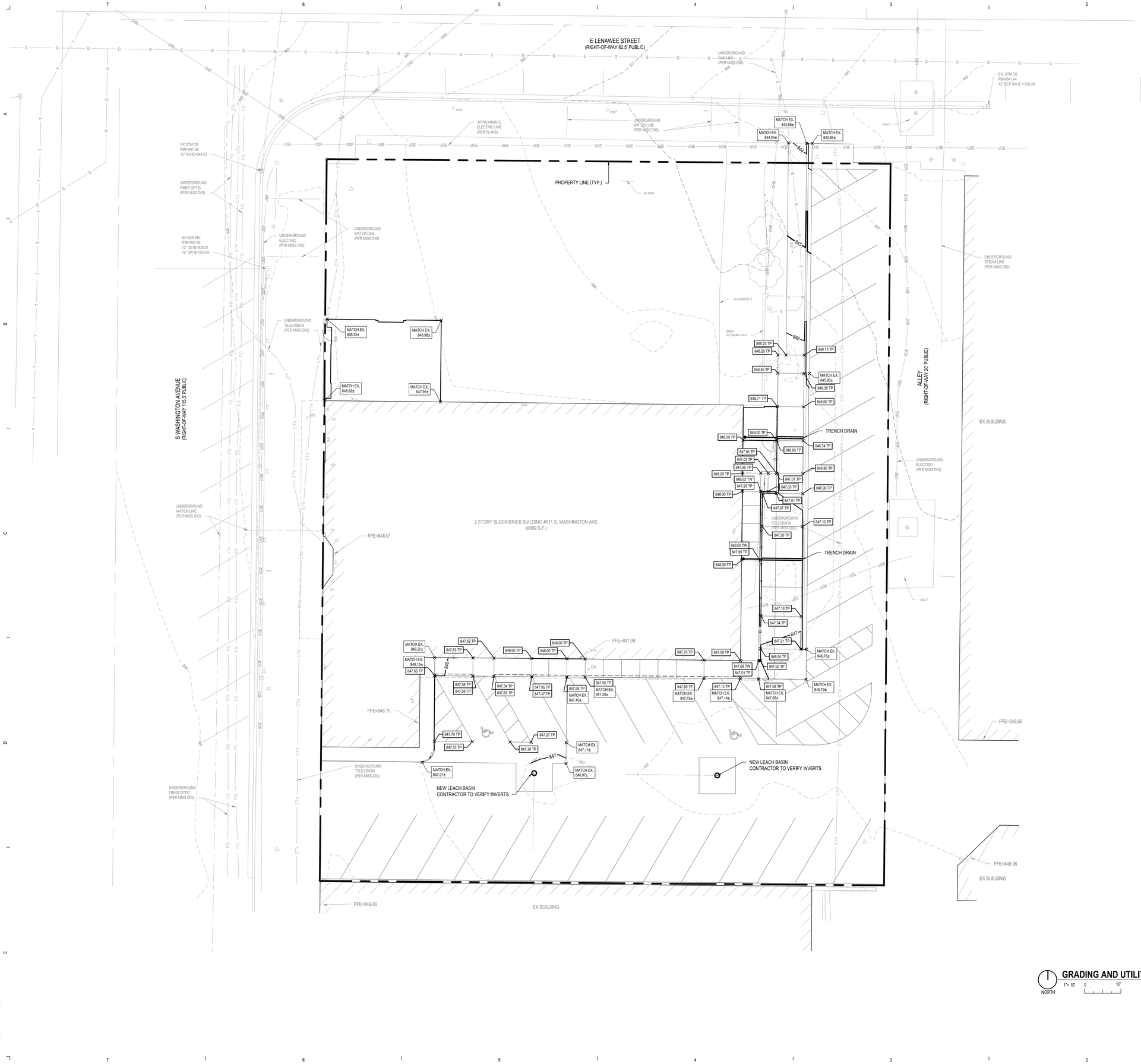
ISSUANCE

07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
*7582002*3
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
B. SIMON
DRAWN BY
H. TELESCO
CHECKED BY
B SIMON

SITE LAYOUT PLAN
C201

7/25/2026 10:18:10 PM Brandon Simon
P:\7582002\310 WIP\C2 SBM\10 - C201 - SITE LAYOUT PLAN.dwg
THIS DOCUMENT AND IDEAS PRESENTED BY PROGRESSIVE A/E, INC. AS AN INSTRUMENT OF SERVICE, ARE PROPRIETARY, ARCHITECTURAL WORKS AND SHALL NOT BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE EXPRESS WRITTEN PERMISSION OF PROGRESSIVE A/E, INC. AND ITS CONSULTANTS. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



GRADING AND UTILITIES PLAN

NORTH 1"= 10' 0 10'

811 Know what's below. Call before you dig.
www.CALL811.com

CALL 811 NOTE:
CONTRACTOR TO CONTACT 811 SERVICE AT LEAST 3 WORKING DAYS PRIOR TO CONSTRUCTION, TO CONFIRM LOCATION OF EXISTING UTILITIES. DIAL 811.

EARTHWORK & GRADING NOTES

1. EARTHWORK AND PAVEMENT CONSTRUCTION ARE TO BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF THE MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION UNLESS OTHERWISE NOTED IN THE FOLLOWING ITEMS.
2. THE SUBGRADE SHALL BE THOROUGHLY PROOFROLLED USING THE EQUIVALENT OF A FULLY LOADED TANDEM AXLE TRUCK HAVING A MINIMUM AXLE WEIGHT OF 10 TONS. SOFT OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REMOVED AND REPLACED WITH ENGINEERED FILL.
3. PROOFROLLING SHALL BE PERFORMED UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER.
4. FINISHED SUBGRADE SURFACE SHALL NOT BE MORE THAN 0.1 FEET ABOVE OR BELOW ESTABLISHED FINISHED SUBGRADE ELEVATIONS AND ALL GROUND SURFACES SHALL VARY UNIFORMLY BETWEEN INDICATED ELEVATIONS. FINISHED DITCHES SHALL BE GRADED TO ALLOW FOR PROPER DRAINAGE WITHOUT PONDING AND IN A MANNER THAT WILL MINIMIZE EROSION.
5. GRADE THE AGGREGATE BASE MATERIAL TO PROVIDE POSITIVE DRAINAGE AT A MINIMUM OF 1.5 PERCENT.
6. THE AGGREGATE BASE AND SUBBASE SHALL EXTEND 12 INCHES BEYOND THE PAVED EDGE.
7. ENGINEERED FILL LOCATED WITHIN PAVEMENT AND BUILDING AREAS SHALL BE PLACED IN 8 INCH MAXIMUM LOOSE THICKNESS AND MOISTURE CONDITIONED TO WITHIN 2 PERCENT OF OPTIMUM MOISTURE CONTENT. COMPACT TO MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY PER ASTM D-1557, MODIFIED PROCTOR METHOD
8. ALL FILL OPERATIONS SHALL BE OBSERVED BY A QUALIFIED SOIL TECHNICIAN. A MINIMUM OF ONE COMPACTION TEST SHALL BE CONDUCTED PER 2,500 SFT AREA AT EACH LIFT. WITHIN TRENCH EXCAVATIONS, ONE TEST SHALL BE CONDUCTED FOR EACH 100 LINEAR FEET PER LIFT.
9. SIDE SLOPES SHALL NOT EXCEED 1 VERTICAL OVER 3 HORIZONTAL SLOPE UNLESS SHOWN OTHERWISE.
10. EXCESS TOPSOIL SHALL BE SPOILED ON SITE IN LOCATION DETERMINED WITH OWNER AND ENGINEER AND SEEDED.
11. PARKING LOT CURBS SHALL BE BUILT WITH REVERSE SLOPE ON THE DOWNHILL SIDE OF THE ISLAND TO ASSURE POSITIVE STORM WATER RUNOFF TO CATCH BASINS.
12. UNLESS SHOWN OTHERWISE, FINISH GRADES OF LAWN/LANDSCAPE ADJACENT TO BUILDING WALLS SHALL BE 6" BELOW FINISH FLOOR ELEVATION.
13. PLACE 4" MINIMUM TOPSOIL IN ALL LANDSCAPE AREAS TO BE SEEDED. PROVIDE POSITIVE DRAINAGE AT ALL TIMES TO ENSURE NO STANDING WATER WITHIN PAVEMENT, BUILDING PAD, OR GREEN AREAS.
14. FOR ALL CURB ISLANDS, CENTER OF ISLANDS TO BE A MINIMUM OF 6" HIGHER THAN TOP OF CURB.
15. THE SITE MAY BE DESIGNATED AS A FACILITY BECAUSE OF ENVIRONMENTAL IMPACTS. IN THE EVENT MATERIALS MUST BE REMOVED FROM THE SITE, TRANSPORTATION, HANDLING AND DISPOSAL OF EXCAVATED SOIL MATERIALS SHOULD BE PERFORMED IN ACCORDANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS.

GRADING LEGEND

	FLOW ARROW
TP	TOP OF PAVEMENT
TC	TOP OF CURB
TW	TOP OF WALL
GR	GROUND
GP	GUTTER PAN
FF	FINISH FLOOR ELEVATION
EX	EXISTING ELEVATION
EW	EDGE OF WALK
HP	HIGH POINT
LP	LOW POINT
L	LANDING
R	RAMP

PROGRESSIVE COMPANIES
PROGRESSIVE A/E, INC.
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHROITY
CATA RENOVATION
511 SOUTH WASHINGTON AVE, LANSING, MI 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

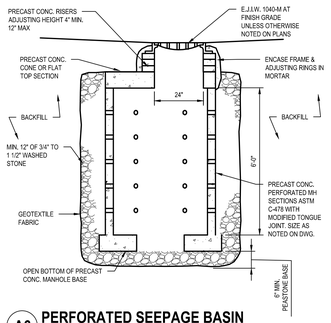
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

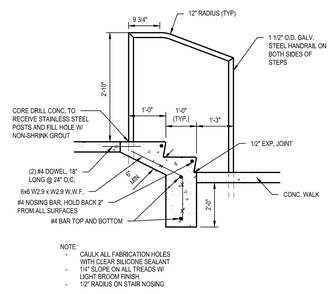
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
B. SIMON
DRAWN BY
H. TELESCO
CHECKED BY
B SIMON

GRADING AND UTILITIES PLAN
C301

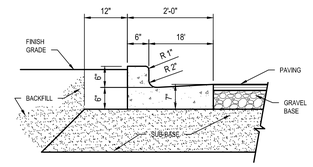
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE A/E, INC. AS AN INSTRUMENT OF SERVICE, AND REMAINS THE PROPERTY OF PROGRESSIVE A/E, INC. THIS DOCUMENT MAY NOT BE REPRODUCED, IN WHOLE OR IN PART, BY ANY METHOD OR MEANS WHATSOEVER, NOR MAY IT BE USED FOR ANY PURPOSE NOT EXPRESSLY AUTHORIZED BY PROGRESSIVE A/E, INC. IN WRITING. ALL OTHER RIGHTS RESERVED. COPYRIGHT 2026 PROGRESSIVE A/E, INC. ALL RIGHTS RESERVED. UNPUBLISHED WORK.



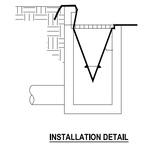
A6 PERFORATED SEEPAGE BASIN
NOT TO SCALE



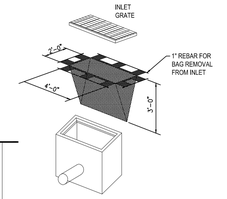
A5 TYPICAL STAIR DETAIL
NOT TO SCALE



A4 TYPICAL ROAD CURB & GUTTER DETAIL
NOT TO SCALE

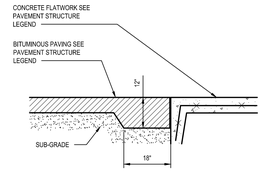


INSTALLATION DETAIL

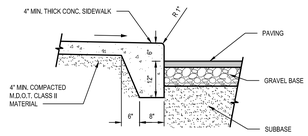


ISOMETRIC VIEW

A3 INLET PROTECTION - FABRIC DROP
NOT TO SCALE

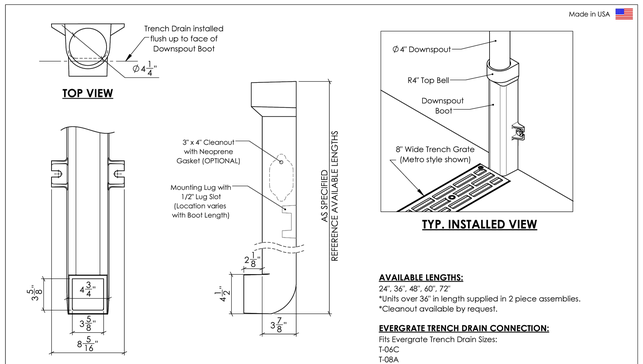


TURNDOWN BITUMINOUS PAVEMENT DETAIL
A2
NOT TO SCALE



A1 INTEGRAL CONCRETE WALK / CURB DETAIL
NOT TO SCALE

Made in USA



AVAILABLE LENGTHS:
24", 36", 48", 60", 72"
*Units over 36" in length supplied in 2 piece assemblies.
*Cleanout available by request.

EVERGRATE TRENCH DRAIN CONNECTION:
Fits Evergrate Trench Drain Sizes:
T-06C
T-08A
T-08C

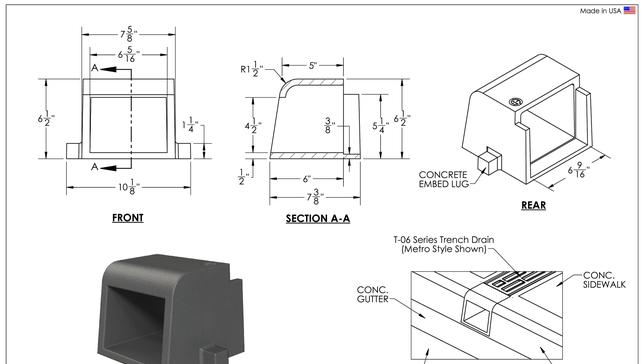
E-R4 Cast Iron Downspout Boot

Material: ASTM-A48 Class 308 Cast Iron

Finish Options: Plain, or Architectural Powder Coating

EVERGRATE
A DIVISION OF JR HOE

Made in USA



Product No. : C-646T

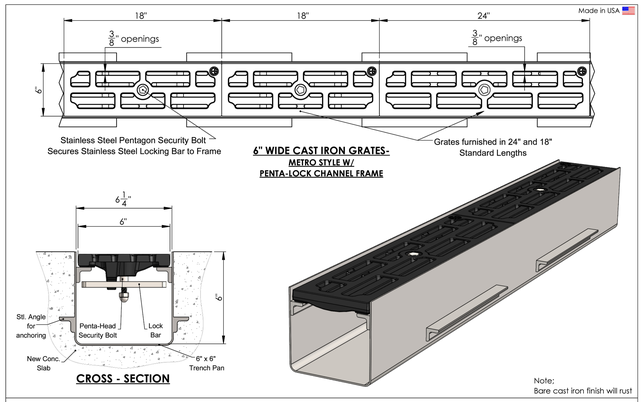
Material: ASTM-A48 Class 308 Gray Iron

Finish: Plain, or anti-skid black powder coat

Weight: 25 lbs. ea.

EVERGRATE
A DIVISION OF JR HOE

Made in USA



Product No. : T-06C Metro

Grate Material: ASTM-A48 Class 35B Gray Iron
Grate Finish: Plain or anti-skid Black Powder Coat
Frame Material: A36 Mild Steel
Frame Finish: Plain or Hot Dip Galvanized

Grate + Frame Weight: 20.2 lbs./LF.
6" x 18" : Open Area 18.6 sq. in.
6" x 24" : Open Area 26.3 sq. in.
Medium Duty (150 psi), ADA Compliant Grating

EVERGRATE
A DIVISION OF JR HOE

PROGRESSIVE COMPANIES
PROGRESSIVE AE, INC.
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHROITY
CATA RENOVATION
511 SOUTH WASHINGTON AVE, LANSING, MI 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
B. SIMON
DRAWN BY
H. TELESCO
CHECKED BY
B.SIMON

SITE DETAILS
C501

7/22/2026 10:19:29 PM Brandon Simon
P:\75820023\03 IMPCZ BIM\10 - C501 - SITE DETAILS.dwg bsimon

THIS DOCUMENT AND ITEMS FURNISHED BY PROGRESSIVE AE, INC. AS A INSTRUMENT OF SERVICE, ARE PROPRIETARY, AND REPLICATION OR REUSE IN WHOLE OR IN PART BY ANY METHOD OR MEDIUM WITHOUT THE EXPRESS AND WRITTEN CONSENT OF PROGRESSIVE AE, INC. IS PROHIBITED. ALL RIGHTS RESERVED UNDER THE COPYRIGHT LAWS OF THE UNITED STATES AND OTHER COUNTRIES WHICH PROTECT THE RIGHTS, INCLUDING THE COPYRIGHT THERETO.

GENERAL NOTES

GN.1 THIS PROJECT HAS BEEN DESIGNED FOR THE WEIGHTS AND MATERIALS INDICATED ON THE DRAWINGS AND FOR THE LIVE LOADS INDICATED IN THE DESIGN CRITERIA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE ALLOWABLE CONSTRUCTION LOADS AND TO PROVIDE PROPER DESIGN AND CONSTRUCTION OF FALSEWORK, FORMWORK, STAGING, BRACING, SHEETING AND SHORING, ETC.

GN.2 COORDINATE THESE DRAWINGS WITH THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, PLUMBING, AND CIVIL DRAWINGS.

GN.3 VERIFY AND COORDINATE PRIOR TO FABRICATION ALL ROOF OPENING SIZES AND LOCATIONS, EQUIPMENT PAD SIZES AND LOCATIONS, ANCHOR BOLT LAYOUTS, ETC WITH EQUIPMENT SELECTED.

GN.4 REFER TO THE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR SLEEVES, CURBS, INSERTS OR OPENINGS, ETC. NOT HEREIN INDICATED.

GN.5 FOR SECTIONS AND DETAILS NOT EXPLICITLY INDICATED ON THE DRAWINGS, USE TYPICAL DETAILS PROVIDED FOR CONDITIONS THAT ARE SIMILAR, OTHERWISE BRING TO THE ATTENTION OF THE STRUCTURAL ENGINEER-OF-RECORD FOR CLARIFICATION.

GN.6 ANY ALTERATION TO A STRUCTURAL ITEM OR MEMBER SHALL BE APPROVED BY THE STRUCTURAL ENGINEER-OF-RECORD.

GN.7 OPENINGS THROUGH STEEL FRAMED CONCRETE FLOOR SLABS SMALLER THAN 10" MAY BE CORE DRILLED IN THE FIELD.

GN.8 SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF MASONRY WALLS, MASONRY OPENINGS AND DRYWALL NON-LOAD BEARING PARTITIONS.

GN.9 ALL COLUMNS, FOOTINGS, AND PIERS ARE CENTERED ON GRID LINES UNLESS DIMENSIONED OTHERWISE.

GN.10 BEAM OR JOIST SPACING IS EQUAL BETWEEN GRID LINES UNLESS DIMENSIONED OTHERWISE.

GN.11 TYPICAL DETAILS ARE NOTED AS SUCH AND SHALL APPLY AT ALL RELATED CONDITIONS, UNLESS NOTED OTHERWISE.

GN.12 PROVIDE SLEEVES FOR PLUMBING PENETRATIONS THROUGH CAST-IN-PLACE CONCRETE SLABS, TYPICAL. COORDINATE WITH PLUMBING DRAWINGS FOR SIZE AND LOCATIONS. CORE DRILLING IS ALLOWED FOR OPENINGS 6" OR LESS IN DIAMETER ONLY. SEE TYPICAL SLAB OPENING DETAIL FOR REINFORCING.

SPECIAL INSPECTION REQUIREMENTS

SP.1 SPECIAL INSPECTIONS AND STRUCTURAL TESTING ARE REQUIRED AND SHALL BE IN ACCORDANCE WITH CHAPTER 17 OF THE INTERNATIONAL BUILDING CODE, LATEST EDITION, AND THE CASE NATIONAL PRACTICE GUIDELINE FOR SPECIAL INSPECTIONS.

SP.2 THE PROGRAM OF SPECIAL INSPECTIONS AND TESTING IS A QUALITY ASSURANCE PROGRAM INTENDED TO ENSURE THAT THE WORK IS PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, TO INFORM THE CONTRACTOR OF THE OWNER'S QUALITY ASSURANCE PROGRAM AND THE EXTENT OF THE CONTRACTOR'S RESPONSIBILITIES.

SP.3 THE OWNER SHALL ENGAGE AND PAY FOR THE SERVICES OF THE SPECIAL INSPECTOR, AGENT OF THE SPECIAL INSPECTOR, AND TESTING LABORATORY.

SP.4 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF ANY RETESTING OR REINSPECTION OF WORK WHICH FAILS TO COMPLY WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

SP.5 THE CONTRACTOR SHALL COOPERATE WITH THE SPECIAL INSPECTOR AND HIS AGENTS SO THAT THE SPECIAL INSPECTIONS AND TESTING MAY BE PERFORMED WITHOUT HINDRANCE.

SP.6 THE CONTRACTOR SHALL REVIEW THE STATEMENT OF SPECIAL INSPECTIONS AND BE RESPONSIBLE FOR COORDINATING AND SCHEDULING INSPECTIONS AND TESTS. THE CONTRACTOR SHALL NOTIFY THE SPECIAL INSPECTOR OR TESTING LABORATORY AT LEAST 24 HOURS IN ADVANCE OF A REQUIRED INSPECTION OR TEST. UNINSPECTED WORK THAT REQUIRED INSPECTION MAY BE REJECTED SOLELY ON THAT BASIS.

SP.7 THE CONTRACTOR SHALL PROVIDE INCIDENTAL LABOR AND FACILITIES TO PROVIDE ACCESS TO THE WORK TO BE INSPECTED OR TESTED, TO OBTAIN AND HANDLE SAMPLES AT THE SITE OR AT SOURCE OF PRODUCTS TO BE TESTED, TO FACILITATE TESTS AND INSPECTIONS, STORAGE AND CURING OF TEST SAMPLES.

SP.8 THE CONTRACTOR SHALL KEEP AT THE PROJECT SITE THE LATEST SET OF CONSTRUCTION DRAWINGS, FIELD SKETCHES, APPROVED SHOP DRAWINGS, AND SPECIFICATIONS FOR USE BY THE INSPECTORS AND TESTING TECHNICIANS.

SP.9 THE SPECIAL INSPECTION PROGRAM SHALL IN NO WAY RELIEVE THE CONTRACTOR OF HIS OBLIGATION TO PERFORM WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS OR FROM IMPLEMENTING AN EFFECTIVE QUALITY CONTROL PROGRAM. ALL WORK THAT IS TO BE SUBJECTED TO SPECIAL INSPECTIONS SHALL FIRST BE REVIEWED BY THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.

SP.10 THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION SITE SAFETY.

FOUNDATION NOTES

FN.1 SEE THE DESIGN CRITERIA SHEET FOR GEOTECHNICAL INFORMATION FOR THIS PROJECT.

FN.2 PRIOR TO THE PLACEMENT OF CONCRETE FOR THE BUILDING FOUNDATIONS, THE CONTRACTOR SHALL EMPLOY THE SERVICES OF A CERTIFIED TESTING AGENCY TO VERIFY THE SOIL REQUIREMENTS OUTLINED IN THE DOCUMENTS, AND GEOTECHNICAL REPORT. VALUES THAT DO NOT MEET OR EXCEED THOSE INDICATED SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD FOR RESOLUTION.

FN.3 FOUNDATION CONDITIONS NOTED DURING CONSTRUCTION WHICH DIFFER FROM THOSE DESCRIBED IN THE GEOTECHNICAL REPORT SHALL BE REPORTED TO THE GENERAL CONTRACTOR BEFORE FURTHER CONSTRUCTION IS ATTEMPTED.

FN.4 NO FOUNDATIONS OR SLABS SHALL BE POURED INTO OR AGAINST SUBGRADE CONTAINING FREE WATER, FROST, ICE, OR LOOSE MATERIAL.

FN.5 INTERIOR SLAB-ON-GRADE, TRENCH BOTTOMS AND OTHER SOIL SUPPORTED HORIZONTAL SURFACES SHALL BE PLACED OVER A GRANULAR SUBBASE; MINIMUM THICKNESS OF 6" OR AS OUTLINED IN THE GEOTECHNICAL REPORT, AGGREGATE SUBBASE SHALL BE SMOOTH AND LEVEL, TO WITHIN 1/4" BELOW DESIGN ELEVATION JUST PRIOR TO CONCRETE PLACEMENT, AND COMPACTED PER THE GEOTECHNICAL REPORT OR A MIN OF 95% OF THE MAX DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST (ASTM D-1557), WHICHEVER IS STRICTER.

FN.6 SEE PLUMBING, MECHANICAL, ELECTRICAL, AND CIVIL DOCUMENTS FOR REQUIRED UNDERSLAB UTILITIES.

FN.7 SEE ARCHITECTURAL DOCUMENTS FOR ALL WATERPROOFING DETAILS AND MATERIALS AS REQUIRED.

FN.8 IF UNDERMINING OF FOOTINGS OCCURS, FILL VOIDS WITH 2500 PSI CONCRETE. DO NOT ATTEMPT TO REPLACE AND RECOMPACT SOIL.

FN.9 SUBMIT AN EXCAVATION AND SHORING PLAN, SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MICHIGAN, PRIOR TO COMMENCING ANY EXCAVATION ACTIVITIES.

REINFORCED CONCRETE

RC.1 CONCRETE SHALL HAVE THE UNIT WEIGHT AND THE MINIMUM COMPRESSIVE STRENGTHS (f'c) AT 28 DAYS AS SHOWN ON THE CONCRETE MATERIALS SCHEDULE. THE CONTRACTOR SHALL SUBMIT MIX DESIGNS WITH SUBSTANTIATING STRENGTH TEST DATA FOR REVIEW FOR EACH MIX DESIGN USED PER SPECIFICATION REQUIREMENTS PRIOR TO CONCRETE PLACEMENT.

RC.2 MIX DESIGNS ARE THE RESPONSIBILITY OF THE CONCRETE CONTRACTOR/SUPPLIER FOLLOWING THE REQUIREMENTS OUTLINED IN THIS SPECIFICATION AND FOR THE LOCATION IN WHICH THE CONCRETE IS BEING DEPOSITED. MAXIMUM AGGREGATE SIZE SHALL BE SELECTED TO FALL WITHIN THE RANGE SPECIFIED FOR THE REQUIRED STRENGTH INDICATED AS WELL AS TO FACILITATE PLACEMENT CONSIDERING REBAR SPACING AND CONFINEMENT, PLACEMENT AND CONSOLIDATION METHOD, AND CONSTRUCTION SEQUENCING. SLUMPS INDICATED ARE RECOMMENDATIONS FOR TYPICAL CONDITIONS ENCOUNTERED AND SHALL BE VERIFIED AND MODIFIED WITH APPROVAL FOR ACTUAL FIELD CONDITIONS.

RC.3 ENTRAIN AIR FOR CONCRETE EXPOSED TO FREEZING TEMPERATURES (EXTERIOR FOUNDATIONS, SLAB TURNDOWNS, EXTERIOR SLABS AND SLABS-ON-GRADE, AND EXTERIOR RETAINING WALLS.)

RC.4 NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.

RC.5 ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI-318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", AND CONTRACT SPECIFICATIONS. WHEN THERE IS A CONFLICT BETWEEN ACI AND SPECIFICATIONS, THE MORE STRINGENT SHALL GOVERN.

RC.6 CHAMFER ALL EXPOSED EXTERNAL CORNERS OF CONCRETE WITH 3/4" x 45 DEGREE CHAMFER, UNLESS NOTED OTHERWISE.

RC.7 CONCRETE REINFORCEMENT BARS SHALL BE DEFORMED AND CONFORM TO ASTM A615, GRADE 60. REINFORCING BARS SHALL NOT BE TACK WELDED, WELDED, HEATED OR CUT, UNLESS INDICATED ON THE DOCUMENTS. ALL LAPS SHALL BE TENSION SPLICES UNLESS NOTED OTHERWISE.

RC.8 HORIZONTAL WALL REINFORCEMENT SHALL BE CONTINUOUS AND SHALL HAVE 90 DEGREE BENDS AND EXTENSIONS, OR CORNER BARS OF EQUIVALENT SIZE LAPPED WITH A TENSION SPLICE AT CORNERS AND INTERSECTIONS, UNLESS NOTED OTHERWISE.

RC.9 SLABS-ON-GRADE SHALL HAVE CONSTRUCTION JOINTS OR CRACK CONTROL JOINTS AS SHOWN ON THE DRAWINGS. CONSTRUCTION JOINTS CAN BE USED AT CONTROL JOINT LOCATIONS AT CONTRACTORS OPTION. SEE PLANS AND JOINT DETAILS FOR ADDITIONAL REQUIREMENTS.

RC.10 SLABS-ON-GRADE SHALL MEET THE FLOOR FLATNESS & LEVELNESS CRITERIA OUTLINED IN THE DOCUMENTS. VALUES SHALL BE VERIFIED BY A CERTIFIED TESTING AGENCY PER ASTM E1155 AFTER WORK IS COMPLETE. ELEVATED STRUCTURAL SLABS TO MEET THE FLOOR FLATNESS CRITERIA ONLY.

RC.11 ALL WELDED WIRE FABRIC SHALL BE LAPPED TWO (2) FULL MESH PANELS AND TIED SECURELY.

RC.12 ALL CONCRETE REINFORCEMENT SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED, AND SPACED IN FORMS AND SECURED IN PLACE IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITION OF THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", ACI 318, AND THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.

RC.13 ADDITIONAL BARS SHALL BE PROVIDED AROUND ALL FLOOR AND WALL OPENINGS PER TYPICAL DETAILS.

RC.14 SEE ARCHITECTURAL DRAWINGS FOR TYPE AND LOCATION OF ALL FLOOR FINISHES.

RC.15 THE CONTRACTOR SHALL COORDINATE ADDITIONAL WALL AND SLAB OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS. SEE MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS.

RC.16 THE CONTRACTOR SHALL VERIFY ALL EQUIPMENT PAD SIZES AND ANCHOR BOLTS WITH EQUIPMENT SELECTED.

RC.17 FOR ALL WALLS AND PIERS, PROVIDE DOWELS INTO FOOTING AT EACH VERTICAL REINFORCEMENT BAR. UNLESS NOTED OTHERWISE, DOWEL SIZE SHALL BE SAME AS VERTICAL REINFORCEMENT.

RC.18 ALL REINFORCING INDICATED TO BE WELDED SHALL BE IN ACCORDANCE WITH ASTM A706, "LOW ALLOY STEEL DEFORMED BARS FOR CONCRETE REINFORCEMENT".

RC.19 PROVIDE CONCRETE POUR STOPS OR FORM EDGES AS REQUIRED FOR INSTALLATION OF ALL CONCRETE WORK.

RC.20 PROVIDE ADDITIONAL (2) #4 x 3'-0" REINFORCING BARS IN SLAB-ON-GRADE AT ALL RE-ENTRANT CORNERS. PLACE BARS AT MID-DEPTH OF SLAB WITH A CLEARANCE OF 2" FROM CORNER UNLESS NOTED OTHERWISE.

RC.21 PROVIDE SMOOTH DOWELS BETWEEN NEW AND EXISTING CONCRETE FLOOR SLABS UNLESS NOTED OTHERWISE.

RC.22 PROVIDE FORMED 3/4" DEEP V-TYPE VERTICAL CONTROL JOINTS IN ALL CONCRETE WALLS BOTH SIDES FULL HEIGHT. IN ADDITION, PROVIDE V-TYPE CONTROL JOINT AT THE TOP OF INTERIOR AND EXTERIOR CONCRETE WALLS THAT EXTEND ABOVE GRADE OR FINISH FLOORS AND ARE VISIBLE TO VIEW PER TYPICAL DETAIL UNLESS NOTED OTHERWISE. JOINTS SHALL BE PLUMB AND TRUE.

CONCRETE MASONRY

CM.1 MASONRY CONSTRUCTION AND MATERIALS SHALL CONFORM TO ALL REQUIREMENTS OF THESE CONTRACT DOCUMENTS AND THE PROJECT SPECIFICATIONS.

CM.2 GROUT FOR MASONRY SHALL BE NORMAL WEIGHT AND HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS. GROUT SHALL CONFORM TO ASTM C476. GROUT LIFTS SHALL NOT EXCEED LIMITS SET FORTH BY ACI 530, LATEST EDITION. CONSOLIDATE GROUT POURS EXCEEDING 12" IN HEIGHT BY MECHANICAL VIBRATION AND RECONSOLIDATE BY MECHANICAL VIBRATION AFTER INITIAL WATER LOSS AND SETTLEMENT HAS OCCURRED.

CM.3 THE SPECIFIED COMPRESSIVE STRENGTH OF CONCRETE MASONRY (f' _m) ON THE NET AREA SHALL BE A MINIMUM OF 2000 PSI UNLESS NOTED OTHERWISE.

CM.4 PROVIDE (2) #5 BARS CONTINUOUS IN ALL BOND BEAMS, UNLESS OTHERWISE INDICATED IN THE DRAWINGS. SEE TYPICAL MASONRY WALL ELEVATION DETAIL FOR BOND BEAM REINFORCEMENT DETAILS AT CONTROL JOINTS. SPLICE BARS AS SPECIFIED IN THE MASONRY LAP SPLICE SCHEDULE.

CM.5 PROVIDE VERTICAL REINFORCEMENT IN ALL WALLS AT SPACING INDICATED. SEE PLAN FOR WALL TYPES AND MASONRY WALL REINFORCING SCHEDULE FOR MINIMUM REINFORCING REQUIREMENTS. ALL VERTICAL REINFORCEMENT EXTENDS FULL HEIGHT OF WALL. SPLICE BARS AS SPECIFIED IN THE MASONRY LAP SPLICE SCHEDULE.

CM.6 MASONRY CELLS THAT REQUIRE VERTICAL REINFORCING BARS AS INDICATED ON THE CONTRACT DRAWINGS SHALL BE PLACED IN CENTERS OF BLOCK CELLS UNLESS NOTED OTHERWISE.

CM.7 PROVIDE LADDER TYPE HORIZONTAL JOINT REINFORCEMENT AT 16" OC MAX OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS.

CM.8 PROVIDE CONTROL JOINTS AT MAJOR CHANGES IN WALL HEIGHT, CHANGES IN WALL THICKNESS, AT FLOOR CONTROL JOINTS, AT WALL OPENINGS, AND NEAR RETURN ANGLES OF L, T, AND U-SHAPED STRUCTURES. CONTROL JOINT SPACING SHALL NOT EXCEED 25'-0" OR THE DISTANCES INDICATED ON THE ARCHITECTURAL DRAWINGS.

CM.9 FILL ALL BOND BEAMS AND FIRST COURSES ABOVE LINTELS WITH GROUT. FILL ALL CELLS CONTAINING VERTICAL REINFORCEMENT WITH GROUT AND ALL OTHER CELLS NOTED ON THE CONTRACT DOCUMENTS.

CM.10 USE MORTAR TYPE AS INDICATED IN SPECIFICATIONS.

CM.11 STRUCTURAL CONCRETE MASONRY UNITS SHALL BE 2-CORE OR AS INDICATED ON THE ARCHITECTURAL DRAWINGS.

CM.12 ALL CELLS, OPEN CAVITIES, AND AIR SPACES BELOW GRADE OR FINISHED SLAB-ON-GRADE SHALL BE GROUTED.

CM.13 CONTRACTOR SHALL COORDINATE LOCATION OF ALL OPENINGS. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR SIZE AND LOCATION OF OPENINGS. SEE TYPICAL MASONRY WALL ELEVATION DETAIL FOR OPENING REINFORCEMENT.

CM.14 ALL CMU WALLS SHALL BE LATERALLY SUPPORTED AT TOP OR AT INTERFACE WITH STRUCTURAL MEMBERS UNLESS NOTED OTHERWISE.

CM.15 LINTELS AND WALL OPENINGS REQUIRED BUT NOT DETAILED ON THE DRAWINGS SHALL BE CONSTRUCTED FOLLOWING THE TYPICAL STEEL LINTEL SCHEDULE.

CM.16 AT NON-STRUCTURAL CMU WALLS, PROVIDE 1" MIN GAP BETWEEN CMU AND BOTTOM OF SLAB OR STEEL ABOVE AND PROVIDE COMPRESSIBLE FILLER IN GAP THAT MAINTAINS FIRE RATING.

CM.17 VERTICAL REINFORCING SHALL BE CONTINUOUS THROUGH BOND BEAMS.

CM.18 PROVIDE ADDITIONAL REINFORCING AT WALL OPENINGS, INTERSECTIONS, CORNERS AND ENDS PER TYPICAL DETAILS.

CM.19 ALL STEEL LINTELS AND STEEL MEMBERS IN EXTERIOR CMU WALLS OR EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED UNLESS NOTED OTHERWISE.

CM.20 PROVIDE CMU BOND BEAMS W/ 2-#5 CONTINUOUS BARS AT FLOOR AND ROOF DIAPHRAGMS FOR ATTACHMENT UNLESS NOTED OTHERWISE. STEP BOND BEAMS AS REQUIRED AT SLOPING ROOF DIAPHRAGM LOCATIONS PER TYPICAL DETAILS.

CM.21 PROVIDE CMU BOND BEAMS W/ 2-#5 CONTINUOUS BELOW ALL WALL OPENINGS GREATER THAN 2'-0" IN WIDTH. EXTEND BOND BEAM MINIMUM 2'-0" BEYOND EDGE OF OPENING, UNLESS NOTED OTHERWISE. SEE TYPICAL WALL ELEVATION FOR ADDITIONAL REQUIREMENTS.

CM.22 CMU WALL DESIGN HAS BEEN PERFORMED ASSUMING ROOF/FLOOR DIAPHRAGMS PROVIDE CONTINUOUS LATERAL SUPPORT. CONTRACTOR SHALL PROVIDE AND MAINTAIN WALL SUPPORT DURING CONSTRUCTION TO MAINTAIN STRUCTURAL INTEGRITY UNTIL CONSTRUCTION IS COMPLETE.

CM.23 ALL NON-STRUCTURAL CMU WALLS SHALL BE REINFORCED WITH #4 @ 48" OC. UNLESS NOTED OTHERWISE.

STRUCTURAL STEEL

SS.1 STRUCTURAL STEEL ROLLED SHAPES AND PLATES SHALL CONFORM TO THE MATERIALS SCHEDULE. DIMENSIONS AND PROPERTIES SHALL BE IN ACCORDANCE TO ASTM A6.

SS.2 CONNECTION BOLTS FOR STRUCTURAL STEEL MEMBERS SHALL BE 3/4"Ø A325-N, UNLESS NOTED OTHERWISE, AND SHALL CONFORM TO ASTM A325; NUTS SHALL CONFORM TO ASTM A563; WASHERS SHALL CONFORM TO ASTM F436. CONNECTION BOLTS SHALL HAVE A HARDENED WASHER PLACED UNDER THE ELEMENT TO BE TIGHTENED.

SS.3 DETAILING OF STRUCTURAL STEEL CONNECTIONS MUST BE CONSISTENT WITH THE AISC MANUAL OF STEEL CONSTRUCTION. OR THE AISC DETAILING FOR STEEL CONSTRUCTION MANUAL.

SS.4 THE CODE OF STANDARD PRACTICE OF AISC 14TH EDITION ASD IS AMENDED SUCH THAT THE FABRICATOR/DETAILER IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF ALL CONNECTIONS.

SS.5 ALL MEMBERS AND CONNECTIONS ON THE CONTRACT DRAWINGS AND CONNECTIONS FOR ANY PORTION OF THE STRUCTURE NOT SHOWN SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER, LICENSED IN THE PROJECT STATE AND SUBMITTED FOR REVIEW AND SHOWN ON THE SHOP DRAWINGS.

SS.6 CONNECTIONS SHALL BE DESIGNED AND DETAILED FOR THE END REACTIONS SHOWN ON PLAN THUS [#k] (UNFACTORED), WHERE NO REACTION IS SHOWN, CONNECTION TO BE DESIGNED FOR A MINIMUM 12 KIPS. SEE TYPICAL CONNECTION DETAIL FOR ADDITIONAL INFORMATION.

SS.7 CALCULATIONS FOR DETAILS MUST SHOW A RATIONAL ANALYSIS OF A COMPLETE LOAD PATH, INCLUDING LOCAL EFFECTS ON WEBS, FLANGES, ETC. OF THE CONNECTED MEMBERS AND THE DEVICES (PLATES, SEATS, BRACKETS, BOLTS, WEBS, ETC) AFFECTING ALL CONNECTIONS. FAILURE TO SUBMIT SUCH CALCULATIONS FOR REVIEW CONCURRENT WITH SHOP DRAWING ERECTION PLANS AND DETAILS WILL BE CAUSE FOR IMMEDIATE REJECTION OF THAT SUBMITTAL.

SS.8 ALTERNATIVE CONNECTION DETAILS MAY BE SUBMITTED ON SHOP DRAWINGS BY THE CONTRACTOR ONLY IF ACCOMPANIED BY COMPLETE STRUCTURAL CALCULATIONS PREPARED AND SEALED BY A PROFESSIONAL ENGINEER AND SUBMITTED FOR REVIEW.

SS.9 BEAM AND GIRDER CONNECTIONS SHALL BE DESIGNED SUCH THAT ALL ADDITIONAL STRESSES DUE TO CONNECTION ECCENTRICITY SHALL BE DEVELOPED BY THE CONNECTION AND NOT INDUCE ANY ADDITIONAL STRESSES INTO SUPPORTING MEMBERS.

SS.10 WELDING SHALL CONFORM TO THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE AWS D1.1. ELECTRODES FOR SHOP AND FIELD WELDS SHALL BE CLASS E70XX. ALL WELDING SHALL BE DONE BY QUALIFIED, CERTIFIED WELDERS PER THE ABOVE STANDARD AND REQUIREMENTS OUTLINED IN THE PROJECT SPECIFICATIONS.

SS.11 PREHEATING OF BASE MATERIAL SHALL BE PERFORMED WHEN REQUIRED BY AWS D1.1. PREHEAT TEMPERATURE TO BE A MINIMUM OF AWS D1.1 REQUIREMENTS AND SHALL BE ADEQUATE TO PROHIBIT CRACKING. PREHEAT SHALL BE APPLIED UNIFORMLY TO THE JOINT. WHEN SELECTING METHOD OF APPLYING PREHEAT THICKNESS OF MATERIAL, SIZE OF WELD AND HEATING EQUIPMENT TO BE USED SHALL BE CONSIDERED.

SS.12 SHOP AND FIELD TESTING OF WELDS AND BOLTS SHALL BE AS OUTLINED PER THE PROJECT SPECIFICATIONS.

SS.13 ALL WELDS NOT INDICATED SHALL BE THE MINIMUM SIZE FILLET WELD PER AISC GUIDELINES.

SS.14 THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT PRIOR APPROVAL OF THE STRUCTURAL ENGINEER.

SS.15 SEE MECHANICAL, ELECTRICAL & PLUMBING DRAWINGS FOR ADDITIONAL OPENINGS NOT INDICATED. PROVIDE SUPPLEMENTAL FRAMING FOR OPENINGS NOT SHOWN PER TYPICAL DETAILS. THE FABRICATOR SHALL VERIFY OPENING LOCATIONS WITH EQUIPMENT SELECTED AND MAKE ANY NECESSARY MODIFICATIONS AT NO ADDITIONAL COST. THE CONTRACTOR SHALL COORDINATE MECHANICAL UNITS AND OPENINGS & ARCHITECTURAL ITEMS REQUIRED FOR COMPLETE INSTALLATION OF WORK. IT IS THE RESPONSIBILITY OF FABRICATOR TO RECEIVE ALL NECESSARY INFORMATION PRIOR TO FABRICATION OF THE STEEL.

SS.16 ALL STRUCTURAL STEEL SHALL RECEIVE A SHOP PRIME FINISH PER THE PROJECT SPECIFICATIONS, EXCEPT THE FOLLOWING:
- SURFACES EMBEDDED IN CONCRETE OR MORTAR. EXTEND PRIMING OF PARTIALLY EMBEDDED MEMBERS TO A DEPTH OF 2 INCHES.
- SURFACES TO BE FIELD WELDED.
- GALVANIZED SURFACES.
- MEMBERS TO RECEIVE SPRAY-APPLIED FIREPROOFING.

ALL EXTERIOR EXPOSED STEEL AND STEEL EXPOSED TO WEATHER SHALL BE HOT-DIP GALVANIZED.

SS.17 ALL PLATES NOT INDICATED SHALL BE 5/16" MINIMUM THICKNESS. ALL ANGLES NOT INDICATED SHALL BE L3x3x5/16" MINIMUM.

SS.18 COLUMN CAP PLATES SHALL BE 3/4" THICK UNLESS NOTED OTHERWISE.

SS.19 ALL MEMBERS NOTED AS CONTINUOUS SHALL BE EITHER PROVIDED AS A SINGLE PIECE CONTINUOUS FOR THE EXTENT OF ITS LENGTH OR PROVIDED IN SEGMENTS AND RE-ATTACHED WITH ADJACENT PIECES VIA FULL PENETRATION WELDS SUCH THAT THE MEMBER FUNCTIONS AS CONTINUOUS IN ITS FINAL POSITION.

SS.20 GROUT FOR BASE PLATES SHALL BE NON-SHRINK GROUT AND SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH AT 28 DAYS OF 7000 PSI, UNLESS NOTED OTHERWISE.

STEEL ROOF DECK

RD.1 ROOF DECK SHALL HAVE THE MINIMUM DESIGN PROPERTIES AND ATTACHMENTS AS SHOWN IN THE ROOF DECK SCHEDULE ON THE DESIGN CRITERIA SHEET.

RD.2 STEEL ROOF DECK SHALL BE ASTM A1008/A NON-GALVANIZED UNLESS NOTED OTHERWISE. FOR EXTERIOR APPLICATIONS WHERE THE DECK IS EXPOSED TO WEATHER, OR WHERE DECK IS TO RECEIVE SPRAY FIRE PROOFING. PROVIDE GALVANIZED ROOF DECK CONFORMING TO ASTM A653/A. PROVIDE MINIMUM YIELD STRENGTHS AS SPECIFIED IN THE ROOF DECK SCHEDULE AND IN COMPLIANCE WITH THE STEEL DECK INSTITUTE DESIGN MANUAL.

RD.3 STEEL ROOF DECK SHALL BE ERECTED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND ERECTION LAYOUTS AND CONNECTED TO SUPPORTING MEMBERS AS INDICATED IN THE ROOF DECK SCHEDULE.

RD.4 IN ADDITION TO MEETING THE MINIMUM REQUIREMENTS INDICATED IN THE ROOF DECK SCHEDULE, THE DECK MANUFACTURER SHALL DESIGN THE ROOF DECK AND ATTACHMENTS TO STEEL FOR THE NET WIND UPLIFT.

RD.5 ALL ROOF DECK SHALL HAVE A MINIMUM SPAN CONDITION AS INDICATED IN THE ROOF DECK SCHEDULE UNLESS NOTED OTHERWISE ON THE DRAWINGS.

RD.6 ALL ENDLAPS SHALL BE A MINIMUM OF 2" AND SHALL OCCUR OVER SUPPORTS.

RD.7 DO NOT SUSPEND PIPES, DUCTS, OR CEILING FROM ROOF DECK.

STEEL FLOOR DECK

FD.1 FLOOR DECK SHALL HAVE THE MINIMUM DESIGN PROPERTIES AND ATTACHMENTS AS SHOWN IN THE FLOOR DECK SCHEDULE ON THE DESIGN CRITERIA SHEET.

FD.2 FLOOR DECK SHALL BE ASTM A653/A (HOT DIP GALVANIZED). PROVIDE MINIMUM YIELD STRENGTHS AS SPECIFIED IN THE FLOOR DECK SCHEDULE AND IN COMPLIANCE WITH THE STEEL DECK INSTITUTE DESIGN MANUAL.

FD.3 STEEL FLOOR DECK SHALL BE ERECTED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND ERECTION LAYOUTS AND CONNECTED TO SUPPORTING MEMBERS AS INDICATED IN THE FLOOR DECK SCHEDULE.

FD.4 ALL ENDLAPS SHALL BE A MINIMUM OF 2" AND SHALL OCCUR OVER SUPPORTS.

POST INSTALLED ANCHORS

PA.1 POST INSTALLED ANCHORS SHALL BE MANUFACTURED BY HILTI, INC. INTERNATIONAL CODE COUNCIL (ICC) APPROVED SUBSTITUTIONS (ALTERNATES) ARE ALLOWED AND MAY BE SUBMITTED FOR REVIEW AND APPROVAL. BUT PROPER DOCUMENTATION MUST BE PROVIDED WHICH CLEARLY INDICATES EQUIVALENCY BETWEEN MANUFACTURERS, INCLUDING ANY ICC APPROVAL DOCUMENTATION, NECESSARY REDUCTIONS FOR SPACING, EDGE DISTANCES, ETC. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR COORDINATING AND VERIFYING EQUIVALENCE FOR SUBSTITUTIONS. PROPER DOCUMENTATION MUST INCLUDE LOCATIONS, DETAIL REFERENCES, AND SPECIFIED BOLT VERSUS REQUESTED BOLT CAPACITIES. SUBMITTAL OF THE ALTERNATE MANUFACTURER'S STANDARD LOAD TABLES ALONE IS NOT ACCEPTABLE AND WILL BE REJECTED UNTIL PROPER DOCUMENTATION HAS BEEN PROVIDED.

PA.2 THE FOLLOWING ANCHORS SHALL BE USED FOR THE VARIOUS APPLICATIONS LISTED UNLESS NOTED OTHERWISE. SEE THE DRAWINGS FOR SIZE, SPACING AND REQUIRED EMBEDMENT. PROVIDE MINIMUM 3/4" DIAMETER ANCHORS AT LOCATIONS NOT INDICATED. PROVIDE STANDARD EMBEDMENT AT LOCATIONS NOT INDICATED.

ATTACHMENT TO CONCRETE:
-EXPANSION ANCHORS: HILTI KWIK BOLT TZ2.
-ADHESIVE ANCHORS: HILTI HAS RODS WITH HIT-HY 200 V3 INJECTION ADHESIVE.
-SCREW ANCHORS: HILTI KWIK HUS-EZ
-REINFORCING BAR: HILTI HIT-HY200 V3

ATTACHMENT TO GROUT-FILLED (SOLID) MASONRY (APPLIES TO ALL STRUCTURAL ATTACHMENTS):
-EXPANSION ANCHORS: HILTI KWIK BOLT TZ2.
-ADHESIVE ANCHORS: HILTI HAS RODS WITH HIT-HY 270 INJECTION ADHESIVE.

ATTACHMENT TO HOLLOW MASONRY AND BRICK (NON-STRUCTURAL APPLICATIONS ONLY, UNO):
-EXPANSION ANCHORS: HILTI HLC SLEEVE ANCHORS.
-ADHESIVE ANCHORS: HILTI HAS RODS WITH HIT-HY 270 INJECTION ADHESIVE.

PA.3 THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND FOLLOWING THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AS WELL AS ANY NECESSARY INSTALLATION TOOLS REQUIRED FOR PLACEMENT OF ANCHORS. HOLE INSTALLATION CONDITIONS SHALL BE HAMMER DRILL DRY.

PA.4 POST INSTALLED ANCHORS (EXPANSION AND ADHESIVE TYPES) USED IN SLIP (MOVEMENT) CONNECTIONS SHALL BE STUD TYPE UNLESS NOTED OTHERWISE. ANCHORS SHALL BE INSTALLED PER THE MANUFACTURER'S TORQUE REQUIREMENTS TO ALLOW PROPER SEATING OF THE ANCHOR PRIOR TO BACKING OFF THE NUT TO FINGER-TIGHT.

COLD FORMED METAL FRAMING (CFMF)

MF.1 THE COLD FORMED METAL FRAMING IS A PERFORMANCE SPECIFIED ITEM AND SHALL BE DESIGNED BY THE SUPPLIER FOR THE WIND LOADS SHOWN IN THE DESIGN CRITERIA AND ANY OTHER LOADS SHOWN HEREIN. ALL STRUCTURAL MEMBERS AND CONNECTIONS (INCLUDING CONNECT

STEEL MATERIALS SCHEDULE

STRUCTURAL ELEMENT	MINIMUM YIELD STRENGTH F_y (ksi)	REMARKS
BEAMS, GIRDERS, ALL W-SHAPES	50	ASTM A572 ASTM A992
PLATES, ANGLES, CHANNELS, ALL OTHERS	36	ASTM A36
TYPICAL ANCHOR BOLTS	36	ASTM F1554 GRADE 36
HOLLOW STRUCTURAL SECTIONS (HSS) - SQUARE & RECTANGULAR	50	ASTM A500 GRADE C

CONCRETE MATERIALS AND MIX DESIGN SCHEDULE

STRUCTURAL ELEMENT	ACI EXPOSURE CLASS	MAX W/C RATIO	f'c (PSI)	AIR-ENTRAINMENT REQUIRED [SEE NOTE 3]	REMARKS
INTERIOR SLAB ON GRADE	F0	0.5	4000	NO	-
INTERIOR FOOTINGS	F0	0.5	4000	NO	-
SLAB ON METAL DECK	F0	0.5	3500	NO	-
EXTERIOR FOOTINGS, FOUNDATION WALLS, PIERS	F1	0.5	4000	YES	-
ELEVATOR PIT	F0	0.5	4000	NO	A

NOTES:
1. FINAL MIX DESIGN TO BE BY THE CONCRETE SUPPLIER FOLLOWING THIS TABLE AS A MINIMUM.
2. SEE REINFORCED CONCRETE GENERAL NOTES AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.
3. SEE ACI 318 FOR AIR ENTRAINMENT RECOMMENDATIONS BASED ON EXPOSURE TYPE AND MAXIMUM AGGREGATE SIZE.

REMARKS:
A. CONCRETE TO INCLUDE WATER-PROOFING ADMIXTURE

CONCRETE COVER SCHEDULE

LOCATION		CLEAR COVER
CONCRETE PLACED AGAINST EARTH		3"
CONCRETE PLACED IN FORMS BUT EXPOSED TO WEATHER OR EARTH	#5 BARS AND SMALLER	1 1/2"
	#6 BARS AND LARGER	2"
COLUMNS, PIERS		1 1/2"
SLABS OR WALLS NOT EXPOSED TO WEATHER OR EARTH		3/4"

NOTES:
1. MINIMUM CONCRETE COVER APPLIES TO OUTER-MOST LAYER OF REINFORCING BARS.
2. SPECIFIC DIMENSIONS FOR BAR PLACEMENT SHOWN IN SECTIONS AND DETAILS SHALL SUPERSEDE MINIMUM SCHEDULED REQUIREMENTS.
3. PROVIDE ACCESSORIES AS REQUIRED TO PROPERLY SUPPORT REINFORCING AND WELDED WIRE FABRIC TO MAINTAIN CONCRETE PROTECTION SPECIFIED.

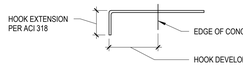
MINIMUM LAP SPLICES SCHEDULE OF REINFORCING BARS IN TENSION (INCHES)

	CONC COVER \ BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11
f'c = 4000 psi	3/4"	16	19	28	37	60	74	90	108	127
	1"	16	16	22	31	50	62	76	92	108
	1 1/2"	16	16	19	22	37	47	57	70	84
	2"	16	16	19	22	33	37	46	57	68

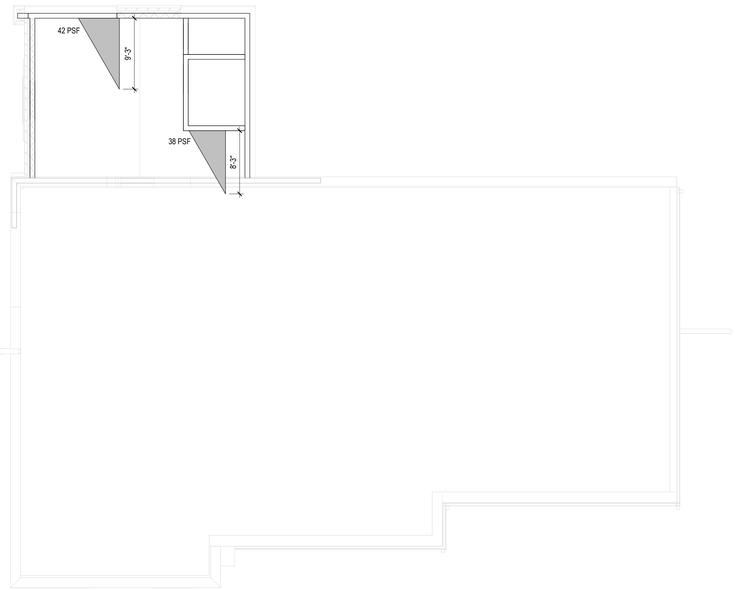
NOTES:
1. SCHEDULE IS FOR TYPICAL SPLICE LENGTHS FOR VERTICAL OR HORIZONTAL REINFORCEMENT. REINFORCEMENT WHICH IS PLACED ABOVE 12" OR MORE OF FRESH CONCRETE IS CONSIDERED "TOP" BARS AND THE SCHEDULE VALUES ARE MULTIPLIED BY 1.3.
2. ALL SPLICES SHALL BE WIRED IN CONTACT. HORIZONTAL BARS TO BE STACKED VERTICAL UNLESS NOTED OTHERWISE.
3. ALL SPLICES ARE TENSION SPLICES WITH LENGTHS PER SCHEDULE UNLESS NOTED OTHERWISE. LAP LENGTHS SPECIFICALLY DETAILED ON DRAWINGS SHALL GOVERN IN LIEU OF LAP LENGTHS SCHEDULED.
4. SMALLER BAR LAP LENGTH SHALL BE USED WHEN SPLICING DIFFERENT SIZED BARS.
5. CLEAR COVER APPLIES TO BAR BEING LAPPED, NOT NECESSARILY MINIMUM COVER AS SHOWN IN CONCRETE COVER SCHEDULE.
6. STRAIGHT DEVELOPMENT LENGTH OF AN UNLAPPED BAR IS EQUAL TO VALUE FROM SCHEDULE DIVIDED BY 1.3.
7. SCHEDULE ASSUMES CONCRETE IS NORMAL WEIGHT WITH YIELD STRENGTH OF REINFORCEMENT, f_y EQUAL TO 60 ksi. FOR LIGHT WEIGHT CONCRETE, MULTIPLY THE SCHEDULED VALUES BY 1.3.
8. CENTER TO CENTER SPACING OF BARS IS ASSUMED TO BE GREATER THAN TWICE THE CONCRETE COVER PLUS ONE BAR DIAMETER.
9. THE TRANSVERSE REINFORCEMENT INDEX Ktr IS ASSUMED TO BE ZERO.
10. FOR EPOXY-COATED BARS WITH COVER LESS THAN 3x BAR DIAMETER OR CLEAR SPACING LESS THAN 6x BAR DIAMETER MULTIPLY THE SCHEDULED VALUES BY 1.5. FOR ALL OTHER EPOXY-COATED BARS MULTIPLY THE SCHEDULED VALUES BY 1.2.

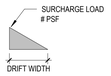
HOOK DEVELOPMENT LENGTH SCHEDULE (INCHES)

BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11
f'c 4000 PSI	6	7	8	10	12	13	15	17	19



NOTES:
1. HOOK DEVELOPMENT LENGTH ALSO APPLIES FOR 180 DEGREE HOOKED BARS.
2. SIDE COVER IS ASSUMED TO BE GREATER THAN 2 1/2". IF THIS CRITERIA IS NOT MET, MULTIPLY SCHEDULED VALUES BY 1.4.
3. COVER BEYOND HOOK IS ASSUMED TO BE GREATER THAN 2".
4. SCHEDULE ASSUMES CONCRETE IS NORMAL WEIGHT WITH YIELD STRENGTH OF REINFORCEMENT, f_y EQUAL TO 60 ksi. FOR LIGHT WEIGHT CONCRETE, MULTIPLY THE SCHEDULE VALUES BY 1.3.





DRIFT DIAGRAM LEGEND

SNOW LOAD PLAN
1/8" = 1'-0"

SLAB ON GRADE SCHEDULE

TYPE	THICKNESS	REINFORCEMENT	VAPOR RETARDER	FLOOR FLATNESS F (F)	FLOOR FLATNESS F (L)	REMARKS
SG-1	4"	FIBER	YES	35	25	-

NOTES:
1. ALL SLABS TO BE PLACED OVER VAPOR RETARDER (WHERE INDICATED) OVER 6" MINIMUM COMPACTED GRANULAR SUBBASE (UNLESS NOTED OTHERWISE IN GEOTECH REPORT).
2. SEE SPECS FOR FIBER TYPE AND DOSAGE.

ROOF DECK SCHEDULE

ROOF DECK DESIGNATION	DECK TYPE	GAGE	MIN YIELD F_y	MINIMUM DECK SECTION PROPERTIES (PER FOOT WIDTH) I_p (in⁴/ft)	S_p (in³/ft)	I_n (in⁴/ft)	S_n (in³/ft)	DECK FASTENERS WELD PATTERN	DECK FASTENERS # SIDELAP FASTENERS	MIN SPAN COND	REMARKS
RD-1	1.5B	20	33 ksi	0.201	0.234	0.222	0.247	36/4	4 PER SPAN	3-SPAN UNO	-

NOTES:
1. ROOF DECK SHALL BE WELDED TO SUPPORTS WITH 5/8" DIAMETER PUDDLE WELDS IN THE BOTTOM OF THE FLUTES USING THE WELD PATTERN INDICATED.
2. ROOF DECK SIDELAPS SHALL BE FASTENED USING #10 TEK SCREWS WITH THE MINIMUM NUMBER OF FASTENERS PER SPAN (BETWEEN SUPPORTS) AS INDICATED.
3. ROOF DECK SHALL BE ATTACHED TO ALL PERIMETER EDGE ANGLES, EAVE STRUTS, OR MEMBERS AROUND OPENINGS AND PENETRATIONS WITH 5/8" DIAMETER PUDDLE WELDS IN THE BOTTOM OF THE FLUTES AT 6" OC UNLESS NOTED OTHERWISE.

FLOOR DECK SCHEDULE

FLOOR DECK DESIGNATION	DECK TYPE	GAGE	MIN YIELD F_y	COMPOSITE SHEAR STUDS	CONCRETE SLAB THICKNESS ABOVE DECK	CONCRETE SLAB TOTAL SLAB THICKNESS	CONCRETE SLAB MAXIMUM WET UNIT WEIGHT (PCF)	CONCRETE SLAB REINFORCEMENT	MINIMUM DECK SECTION PROPERTIES (PER FOOT WIDTH) I_p (in⁴/ft)	S_p (in³/ft)	I_n (in⁴/ft)	S_n (in³/ft)	DECK FASTENERS WELD PATTERN	DECK FASTENERS # SIDELAP FASTENERS	MIN SPAN COND	REMARKS
FD-1	1.5 VL	20	50 ksi	3/4"Ø x4"	3 1/2"	5"	150	6x6 W2.9xW2.9 WWR	0.182	0.218	0.216	0.226	36/4	4 PER SPAN	2-SPAN	GALVANIZED

NOTES:
1. FLOOR DECK SHALL BE WELDED TO SUPPORTS WITH 5/8" DIAMETER PUDDLE WELDS IN THE BOTTOM OF THE FLUTES USING THE WELD PATTERN INDICATED AT LOCATIONS WHERE SHEAR STUDS DO NOT OCCUR.
2. FLOOR DECK SIDELAPS SHALL BE FASTENED USING #10 TEK SCREWS WITH THE MINIMUM NUMBER OF FASTENERS PER SPAN AS INDICATED.
3. FLOOR DECK SHALL BE ATTACHED TO ALL PERIMETER EDGE ANGLES, EAVE STRUTS, OR MEMBERS AROUND OPENINGS AND PENETRATIONS WITH 5/8 " DIAMETER PUDDLE WELDS IN THE BOTTOM OF THE FLUTES AT 12" OC UNLESS NOTED OTHERWISE.
4. CONCRETE SLAB SHALL BE CONSTRUCTED TO THE UNIFORM TOTAL SLAB THICKNESS SPECIFIED, EVEN IF BEAMS OR DECK STRUCTURE DEFLECTS DURING CONCRETE POUR. MAXIMUM LOCAL THICKNESS OVERAGE NOT TO EXCEED 1/2"
5. PROVIDE 1 1/2" COVER FROM TOP OF SLAB TO WELDED WIRE REINFORCEMENT. SET WWR ON CHAIRS (OR OTHER SUITABLE SUPPORT ACCESSORY). DO NOT LIFT INTO PLACE DURING CONCRETE POUR.
6. ANY FINISHING OR OTHER CONSTRUCTION EQUIPMENT MAY NOT EXCEED THE DESIGN UNIFORM LIVE LOAD OF THE FLOOR SYSTEM SHOWN IN THE DESIGN CRITERIA.

STRUCTURAL DESIGN CRITERIA

ALL DESIGNS SHALL CONFORM TO THE PROVISIONS OF:
MICHIGAN BUILDING CODE 2021

A.1 **DEAD LOADS**

STEEL FRAMED CONCRETE FLOOR	MAX GRAVITY LOAD
CONCRETE & DECK	45 PSF
DEFLECTION & LEVELING	5 PSF
MECHANICAL (PIPING, DUCTS, ETC)	3 PSF
ELECTRICAL (LIGHTING, ETC)	2 PSF
FIRE PROTECTION (SPRINKLERS)	2 PSF
FIRE PROOFING ON STEEL	3 PSF
CEILING/FLOORING	3 PSF
MISC.	3 PSF
TOTAL	66 PSF

+ STEEL SELF WEIGHT

STEEL FRAMED ROOF	MAX GRAVITY LOAD	MAX GRAVITY LOAD FOR UPLIFT
STEEL DECK	3 PSF	3 PSF
ROOFING & INSULATION	5 PSF	5 PSF
MECHANICAL (PIPING, DUCTS, ETC)	3 PSF	3 PSF
ELECTRICAL (LIGHTING, ETC)	2 PSF	2 PSF
FIRE PROTECTION (SPRINKLERS)	2 PSF	2 PSF
MISC.	5 PSF	5 PSF
TOTAL	20 PSF	20 PSF

+ STEEL SELF WEIGHT

B.1 **LIVE LOADS**

ROOF LIVE LOADS: GREATER OF 20 PSF OR ROOF SNOW LOAD.

LOBBY	100 PSF
STAIR	100 PSF

C.1 **SNOW LOAD**

GROUND SNOW LOAD, Pg	30 PSF
SNOW LOAD IMPORTANCE FACTOR, Is	1.00
SNOW EXPOSURE FACTOR, Ce	1.20
SNOW THERMAL FACTOR, Ct	1.00
UNIFORM ROOF DESIGN SNOW LOAD:	25.2 PSF

C.2 **SNOW DRIFT LOADS**

ROOF MEMBERS HAVE BEEN DESIGNED, WHERE APPLICABLE, FOR SNOW DRIFT LOADING IN THE AREA OF OCCURANCE. SEE SNOW DRIFT DIAGRAM FOR SNOW DRIFT LOADING CRITERIA.

D.1 **SEISMIC LOAD**

RISK CATEGORY	II
IMPORTANCE FACTOR, Ie	1.00
MAPPED RESPONSE PARAMETER, Ss	0.009
MAPPED RESPONSE PARAMETER, S1	0.046
SITE CLASS	D
DESIGN RESPONSE PARAMETER, SDS	0.0099
DESIGN RESPONSE PARAMETER, SD1	0.0736
DESIGN CATEGORY	B
SEISMIC RESISTING SYSTEM	INTERMEDIATE REINFORCED MASONRY SHEAR WALLS
DESIGN BASE SHEAR, V	2.0 k
SEISMIC RESPONSE COEFFICIENT, Cs	0.010
RESPONSE MOD FACTOR	4.0
ANALYSIS PROCEDURE	EQUIVALENT LATERAL-FORCE ANALYSIS

E.1 **WIND LOAD**

ASCE 7 - 16 (PRESSURES ARE ULTIMATE, FACTOR BY 0.6 FOR ASD)

ULTIMATE DESIGN WIND SPEED, Vult	107 MPH
NOMINAL DESIGN WIND SPEED, Vasd = Vult·√0.6	83 MPH
RISK CATEGORY	II
WIND EXPOSURE CATEGORY	B
INTERNAL PRESSURE COEFFICIENT, GCpi	0.18 +/-

E.2 **DESIGN WIND PRESSURE - MAIN WINDFORCE RESISTING SYSTEM**

MWFRS WIND PRESSURE (PSF)

SURFACE	FIELD	EDGE/CORNER
WINDWARD WALL	10.1	13.8
LEEWARD WALL	-1.9	-4.4
WINDWARD + LEEWARD	12.0	18.1

EDGE/CORNER DIMENSION, 2a = 18.4 ft

E.3 **DESIGN WIND PRESSURE - ROOF UPLIFT COMPONENTS &...**

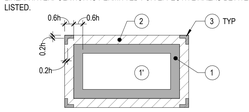
ROOF COMPONENTS & FASTENERS SHALL BE DESIGNED FOR THE WIND PRESSURES SHOWN IN THE TABLE BELOW. VALUES ARE GROSS UPLIFT PRESSURE.

COMPONENTS & CLADDING ROOF PRESSURE (PSF)

EFFECTIVE WIND AREA	ZONE 1	ZONE 1'	ZONE 2	ZONE 3
AREA = 10 ft2	-30.4	-17.5	-40.1	-40.1
AREA = 50 ft2	-25.8	-17.5	-34.1	-34.1
AREA = 100 ft2	-23.7	-17.5	-31.6	-31.6

CORNER DIMENSION, 0.2h= 4.6 ft

LINEAR INTERPOLATION IS PERMITTED FOR EFFECTIVE AREAS BETWEEN THOSE LISTED.



SCHEMATIC ROOF PLAN (ZONES 1, 2, AND 3)

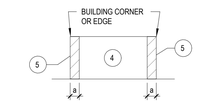
E.4 **DESIGN WIND PRESSURE - WALL PRESSURES COMPONENTS & CLADDING**

COMPONENTS & CLADDING WALL PRESSURE (PSF)

EFFECTIVE WIND AREA	NEGATIVE ZONE 4	NEGATIVE ZONE 5	POSITIVE ZONE 4 & 5
AREA = 10 ft2	-18.9	-23.3	17.5
AREA = 100 ft2	-16.4	-18.2	16.0
AREA = 200 ft2	-16.0	-16.6	16.0

CORNER DIMENSION, 0.2h = 4.6 ft

LINEAR INTERPOLATION IS PERMITTED FOR EFFECTIVE AREAS BETWEEN THOSE LISTED.



SCHEMATIC WALL ELEVATION (ZONES 4 AND 5)

F.1 **FOUNDATION DESIGN CRITERIA**

F.1.1 GEOTECHNICAL INFORMATION FOR THIS PROJECT WAS TAKEN FROM VALUES OBTAINED FROM THE GEOTECHNICAL REPORT PROVIDED BY: SME, 98012.03, DATED JULY 23, 2026.

F.1.2 MINIMUM FROST PROTECTION DEPTH BELOW GRADE IS: 42 INCHES

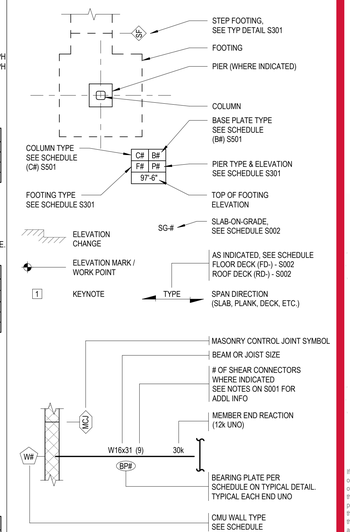
F.1.3 MINIMUM FACTOR OF SAFETY FOR STABILITY AGAINST SLIDING, OVERTURNING AND UPLIFT IS 1.5.

F.1.5 PRESUMED ALLOWABLE SOIL BEARING CAPACITY: 2,000 PSF

ABBREVIATIONS

AB	ANCHOR BOLT	LLV	LONG LEG, VERTICAL
AFF	ABOVE FINISHED FLOOR	LSH	LONG SIDE HORIZONTAL
AL	ALUMINUM	LSV	LONG SIDE VERTICAL
ALT	ALTERNATE	LVL	LAMINATED VENEER LUMER
ARCH	ARCHITECT, ARCHITECTURAL	LW	LONG WAY
BFE	BOTTOM OF FOOTING ELEVATION	MIN	MINIMUM
BLDG	BUILDING	MISC	MISCELLANEOUS
BOT	BOTTOM	MTD	MOUNTED
BSE	BOTTOM OF STEEL ELEVATION	NIC	NOT IN CONTRACT
CFMF	COLD FORMED METAL FRAMING	OC	ON CENTER
CJ	CONTROL JOINT	OPP	OPPOSITE
CJP	COMPLETE JOINT PENETRATION WELD	PJP	PARTIAL JOINT PENETRATION WELD
CL	CENTERLINE	PL	PLATE
COL	COLUMN	PP	PARTIAL PENETRATION WELD
CONC	CONCRETE	PSI	POUNDS PER SQUARE INCH
CONST	CONSTRUCTION	PT	POINT
CONT	CONTINUOUS; CONTINUATION		
COORD	COORDINATE		
CTJ	CONSTRUCTION JOINT	QTY	QUANTITY
CTR	CENTER	RAD	RADIUS
DBE	DECK BEARING ELEVATION	REQ	REQUIRED, REQUIREMENT
DEG	DEGREES	REV	REVISE, REVISION
DIA	DIAMETER		
DL	DEAD LOAD	SIM	SIMILAR
DWG	DRAWING	SL	SNOW LOAD
		SPEC	SPECIFICATION
EA	EACH	SSH	SHORT SIDE HORIZONTAL
EF	EACH FACE	SSV	SHORT SIDE VERTICAL
EOR	EDGE OF ROOF	SW	SHORT WAY
EOS	EDGE OF SLAB		
EQ	EQUAL	T&B	TOP AND BOTTOM
EW	EACH WAY	TBD	TO BE DETERMINED
EX	EXISTING	TCE	TOP OF CONCRETE ELEVATION
EXP	EXPANSION	TFE	TOP OF FOOTING ELEVATION
		TLE	TOP OF LEDGE ELEVATION
FDN	FOUNDATION	TPE	TOP OF PIER ELEVATION
FFE	FINISHED FLOOR ELEVATION	TSE	TOP OF STEEL ELEVATION
FT	FOOT, FEET	TWE	TOP OF WALL ELEVATION
FTG	FOOTING	TYP	TYPICAL
FV	FIELD VERIFY		
		UNO	UNLESS NOTED OTHERWISE
GA	GAUGE, GAGE		
GALV	GALVANIZED	VDB	VERTICAL DIAGONAL BRACE
GT	GIRDER TRUSS	VERT	VERTICAL
		VXB	VERTICAL X-BRACE
HORIZ	HORIZONTAL		
HSS	HOLLOW STEEL SECTION	W/	WITH
HT	HEIGHT	WL	WIND LOAD
		WP	WORK POINT
KB	KNEE BRACE	WWR	WELDED WIRE REINFORCEMENT
LL	LIVE LOAD		
LLH	LONG LEG, HORIZONTAL		

STRUCTURAL SYMBOL LEGEND



PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
R. KIPKE
DRAWN BY
A. PETERSON
CHECKED BY
E. FLANNERY

DESIGN CRITERIA AND SCHEDULES
S002

7/24/2026 12:10:56 PM Autodesk Docs://75820023 - CATA Renovation of 511 S Washington/75820023 CATA Revit 511 S Washington - STR.rvt
DESIGN CRITERIA AND SCHEDULES
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AN INSTRUMENT OF SERVICE, AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.

REQUIRED SPECIAL INSPECTIONS OF TESTS OF SOILS

REQUIRED IF CHECKED	INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
☑	VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY	☐	☑
☑	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL	☐	☑
☑	PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	☐	☑
☑	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	☑	☐
☑	PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY	☐	☑

REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

REQUIRED IF CHECKED	INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
☑	INSPECT REINFORCEMENT, INCLUDING PRESTRESSING TENDONS AND VERIFY PLACEMENT	☐	☑
☑	REINFORCING BAR WELDING: a. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A706; b. INSPECT SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"; AND c. INSPECT ALL OTHER WELDS	☐ ☐ ☑	☑ ☑ ☐
☑	INSPECT ANCHORS CAST IN CONCRETE	☐	☑
☑	INSPECT ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS a. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS b. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN a.	☑ ☐	☐ ☑
☑	VERIFY USE OF REQUIRED DESIGN MIX	☐	☑
☑	PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS AND DETERMINE THE TEMPERATURE OF THE CONCRETE	☑	☐
☑	INSPECT CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	☑	☐
☑	VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	☐	☑
☐	INSPECT PRESTRESSED CONCRETE FOR: a. APPLICATION OF PRESTRESSING FORCES; AND b. GROUTING OF BONDED PRESTRESSING TENDONS	☑ ☑	☐ ☐
☐	INSPECT ERECTION OF PRECAST CONCRETE MEMBERS	☐	☑
☐	VERIFY IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS	☐	☑
☑	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED	☐	☑

SPECIAL INSPECTION FOR MASONRY LEVEL C QUALITY ASSURANCE

REQUIRED IF CHECKED	INSPECTION TASK	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
☑	1. VERIFY COMPLIANCE WITH THE APPROVED SUBMITTALS	☐	☑
☑	2. VERIFY THAT THE FOLLOWING ARE IN COMPLIANCE:		
☑	a. PROPORTIONS OF SITE-PREPARED MORTAR, GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS	☐	☑
☑	b. GRADE, TYPE, AND SIZE OF REINFORCEMENT AND ANCHOR BOLTS, AND PRESTRESSING TENDONS AND ANCHORAGES	☐	☑
☑	c. PLACEMENT OF MASONRY UNITS AND CONSTRUCTION OF MORTAR JOINTS	☐	☑
☑	d. PLACEMENT OF REINFORCEMENT, CONNECTORS, AND PRESTRESSING TENDONS AND ANCHORAGES	☑	☐
☑	e. GROUT SPACE PRIOR TO GROUTING	☑	☐
☑	f. PLACEMENT OF GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS	☑	☐
☑	g. SIZE AND LOCATION OF STRUCTURAL ELEMENTS	☐	☑
☑	h. TYPE, SIZE, AND LOCATION OF ANCHORS INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION	☑	☐
☑	i. WELDING OF REINFORCEMENT	☑	☐
☑	j. PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER(TEMPERATURE BELOW 40°F(4.4°C)) OR HOT WEATHER (TEMPERATURE ABOVE 90°F (32.2°C))	☐	☑
☑	k. APPLICATION AND MEASUREMENT OF PRESTRESSING FORCE	☑	☐
☑	l. PLACEMENT OF AAC MASONRY UNITS AND CONSTRUCTION OF THIN-BED MORTAR JOINTS	☑	☐
☑	m. PROPERTIES OF THIN-BED MORTAR FOR AAC MASONRY	☑	☐
☑	3. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS	☑	☐

SPECIAL INSPECTION TASKS PRIOR TO WELDING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM TASKS FOR EACH WELDED JOINT OR MEMBER	OBSERVE ITEMS ON RANDOM BASIS, OPERATIONS NEED NOT BE DELAYED PENDING INSPECTIONS
☑	WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE	☑	☐
☑	MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE	☑	☐
☑	MATERIAL IDENTIFICATION (TYPE/GRADE)	☐	☑
☑	WELDER IDENTIFICATION SYSTEM	☐	☑
☑	FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) • JOINT PREPARATION • DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION) • BACKING TYPE AND FIT (IF APPLICABLE)	☐	☑
☑	CONFIGURATION AND FINISH OF ACCESS HOLES	☐	☑
☑	FIT-UP OF FILLET WELDS • DIMENSIONS (ALIGNMENT, GAPS AT ROOT) • CLEANLINESS (CONDITION OF STEEL SURFACES) • TACKING (TACK WELD QUALITY AND LOCATION)	☐	☑

SPECIAL INSPECTION TASKS DURING WELDING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM TASKS FOR EACH WELDED JOINT OR MEMBER	OBSERVE ITEMS ON RANDOM BASIS, OPERATIONS NEED NOT BE DELAYED PENDING INSPECTIONS
☑	USE OF QUALIFIED WELDERS	☐	☑
☑	CONTROL AND HANDLING OF WELDING CONSUMABLES • PACKAGING • EXPOSURE CONTROL	☐	☑
☑	NO WELDING OVER CRACKED TACK WELDS	☐	☑
☑	ENVIRONMENTAL CONDITIONS • WIND SPEED WITHIN LIMITS • PRECIPITATION AND TEMPERATURE	☐	☑
☑	WPS FOLLOWED • SETTINGS ON WELDING EQUIPMENT • TRAVEL SPEED • SELECTED WELDING MATERIALS • SHIELDING GAS TYPE/FLOW RATE • PREHEAT APPLIED • INTERPASS TEMPERATURE MAINTAINED (MIN/MAX) • PROPER POSITION (F, V, H, OH)	☐	☑
☑	WELDING TECHNIQUES • INTERPASS AND FINAL CLEANING • EACH PASS WITHIN PROFILE LIMITATIONS • EACH PASS MEETS QUALITY REQUIREMENTS	☐	☑

SPECIAL INSPECTION TASKS AFTER WELDING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM TASKS FOR EACH WELDED JOINT OR MEMBER	OBSERVE ITEMS ON RANDOM BASIS, OPERATIONS NEED NOT BE DELAYED PENDING INSPECTIONS
☑	WELDS CLEANED	☐	☑
☑	SIZE, LENGTH AND LOCATION OF WELDS	☑	☐
☑	WELDS MEET VISUAL ACCEPTANCE CRITERIA • CRACK PROHIBITION • WELD/BASE-METAL FUSION • CRATER CROSS SECTION • WELD PROFILES • WELD SIZE • UNDERCUT • POROSITY	☑	☐
☑	ARCH STRIKES	☑	☐
☑	k-AREA	☑	☐
☑	BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	☑	☐
☑	REPAIR ACTIVITIES	☑	☐
☑	DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	☑	☐

SPECIAL INSPECTION TASKS PRIOR TO BOLTING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM TASKS FOR EACH BOLTED JOINT OR MEMBER	OBSERVE ITEMS ON RANDOM BASIS, OPERATIONS NEED NOT BE DELAYED PENDING INSPECTIONS
☑	MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS	☑	☐
☑	FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	☐	☑
☑	PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	☐	☑
☑	PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL	☐	☑
☑	CONNECTING ELEMENTS INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS	☐	☑
☑	PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED	☐	☑
☑	PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	☐	☑

SPECIAL INSPECTION TASKS DURING BOLTING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM TASKS FOR EACH BOLTED JOINT OR MEMBER	OBSERVE ITEMS ON RANDOM BASIS, OPERATIONS NEED NOT BE DELAYED PENDING INSPECTIONS
☑	FASTENER ASSEMBLIES OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	☐	☑
☑	JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION	☐	☑
☑	FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	☐	☑
☑	FASTENERS ARE PRETENSION IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	☐	☑

SPECIAL INSPECTION TASKS AFTER BOLTING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM TASKS FOR EACH BOLTED JOINT OR MEMBER	OBSERVE ITEMS ON RANDOM BASIS, OPERATIONS NEED NOT BE DELAYED PENDING INSPECTIONS
☑	DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	☑	☐

INSPECTION OR EXECUTION TASKS PRIOR TO DECK PLACEMENT

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM	OBSERVE
☑	VERIFY COMPLIANCE OF MATERIALS (DECK AND ALL DECK ACCESSORIES) WITH CONSTRUCTION DOCUMENTS, INCLUDING PROFILES, MATERIAL PROPERTIES, AND BASE METAL THICKNESS	☑	☐
☑	DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES	☑	☐

INSPECTION OR EXECUTION TASKS AFTER DECK PLACEMENT

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM	OBSERVE
☑	VERIFY COMPLIANCE OF DECK AND ALL DECK ACCESSORIES INSTALLATION WITH CONSTRUCTION DOCUMENTS	☑	☐
☑	VERIFY DECK MATERIALS ARE REPRESENDED BY THE MILL CERTIFICATIONS THAT COMPLY WITH THE CONSTRUCTION DOCUMENTS	☑	☐
☑	DOCUMENT ACCEPTANCE OR REJECTION OF INSTALLATION OF DECK AND DECK ACCESSORIES	☑	☐

INSPECTION OR EXECUTION TASKS PRIOR TO MECHANICAL FASTENING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM	OBSERVE
☑	MANUFACTURER INSTALLATION INSTRUCTIONS AVAILABLE FOR MECHANICAL FASTENERS	☐	☑
☑	PROPER TOOLS AVAILABLE FOR FASTENER INSTALLATION	☐	☑
☑	PROPER STORAGE FOR MECHANICAL FASTENERS	☐	☑

INSPECTION OR EXECUTION TASKS DURING MECHANICAL FASTENING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM	OBSERVE
☑	FASTENERS ARE POSITIONED AS REQUIRED	☐	☑
☑	FASTENERS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS	☐	☑

INSPECTION OR EXECUTION TASKS AFTER MECHANICAL FASTENING

REQUIRED IF CHECKED	INSPECTION TASK	PERFORM	OBSERVE
☑	CHECK SPACING, TYPE AND INSTALLATION OF SUPPORT FASTENERS	☑	☐
☑	CHECK SPACING, TYPE AND INSTALLATION OF SIDELAP FASTENERS	☑	☐
☑	CHECK SPACING, TYPE AND INSTALLATION OF PERIMETER FASTENERS	☑	☐
☑	VERIFY REPAIR ACTIVITIES	☑	☐
☑	DOCUMENT ACCEPTANCE OR REJECTION OF MECHANICAL FASTENERS	☑	☐

SPECIAL INSPECTION OF FABRICATED ITEMS

REQUIRED IF CHECKED	INSPECTION TASK
☑	SPECIAL INSPECTIONS OF FABRICATED ITEMS SHALL BE PERFORMED IN ACCORDANCE WITH SECTIONS 1704.2.5 OF IBC. WHERE FABRICATION OF STRUCTURAL, LOAD-BEARING MEMBERS OR ASSEMBLIES IS BEING CONDUCTED ON THE PREMISES OF FABRICATOR'S SHOP, SPECIAL INSPECTION OF THE FABRICATED ITEMS SHALL BE PERFORMED DURING FABRICATION, UNLESS ONE OF THE TWO EXEMPTIONS BELOW APPLY:
	EXCEPTION 1: SPECIAL INSPECTIONS DURING FABRICATION ARE NOT REQUIRED WHERE THE FABRICATOR MAINTAINS APPROVED DETAIL FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR CONTROL OF THE WORKMANSHIP AND THE FABRICATORS ABILITY TO CONFORM TO APPROVED CONSTRUCTION DOCUMENTS AND BUILDING CODES. APPROVAL SHALL BE BASED UPON REVIEW OF FABRICATION AND QUALITY CONTROL PROCEDURES AND PERIODIC INSPECTIONS OF FABRICATION PRACTICES BY THE BUILDING OFFICIAL. APPROVAL BY THE BUILDING OFFICIAL REQUIRED TO USE THIS EXCEPTION.
	EXCEPTION 2: SPECIAL INSPECTIONS DURING FABRICATION ARE NOT REQUIRED WHERE THE FABRICATOR IS REGISTERED AND APPROVED TO PERFORM SUCH WORK WITHOUT SPECIAL INSPECTION. APPROVAL SHALL BE BASED UPON REVIEW OF THE FABRICATOR'S WRITTEN PROCEDURAL AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES BY AN APPROVED AGENCY (AN ESTABLISHED AND RECOGNIZED AGENCY THAT IS REGULARLY ENGAGED IN CONDUCTING TESTS OR FURNISHING INSPECTION SERVICES, WHERE SUCH AGENCY HAS BEEN APPROVED BY THE BUILDING OFFICIAL).
☑	STRUCTURAL STEEL
☐	STEEL JOISTS & GIRDERS

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION

511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

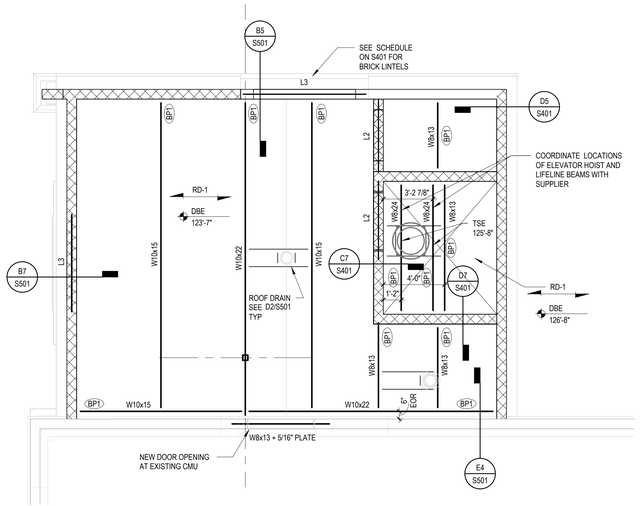
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
R. KIPKE
DRAWN BY
A. PETERSON
CHECKED BY
E. FLANNERY

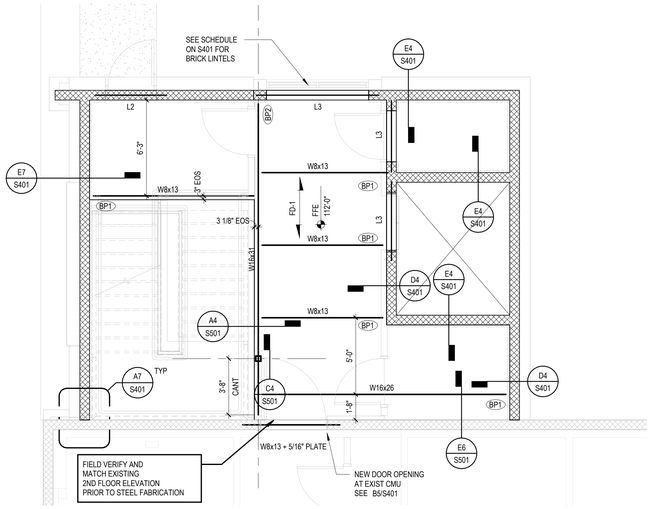
SPECIAL INSPECTIONS
S003

7/24/2026 12:19:08 PM
Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - STR.rvt
SPECIAL INSPECTIONS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. WHETHER THE PROJECT FOR WHICH IT WAS PREPARED IS EXECUTED OR NOT. THE USE OF THIS DOCUMENT FOR ANY OTHER PROJECT OR EXTENSION OF THIS PROJECT, EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO PROGRESSIVE AE INC., IS PROHIBITED. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



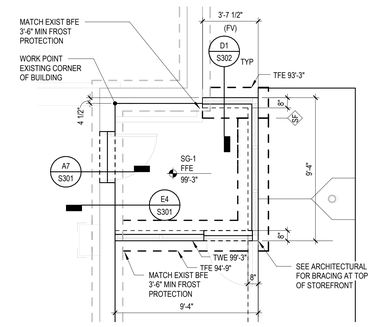
ROOF FRAMING PLAN (ALTERNATE #1)

1/4" = 1'-0"



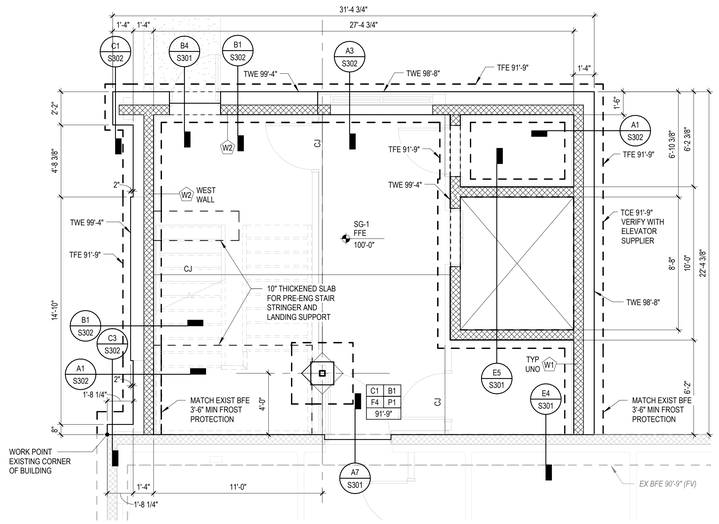
SECOND FLOOR FRAMING PLAN (ALTERNATE #1)

1/4" = 1'-0"



ENTRY FOUNDATION PLAN

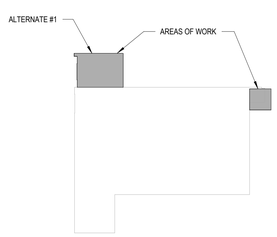
1/4" = 1'-0"



FOUNDATION PLAN (ALTERNATE #1)

1/4" = 1'-0"

KEY PLAN



7/24/2026 12:11:00 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revo 511 S Washington - STR.rvt
STRUCTURAL PLANS
THIS DOCUMENT AND ITEMS DEPICTED HEREIN ARE PROPRIETARY TO PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE AND SHALL NOT BE USED IN WHOLE OR IN PART FOR ANY PURPOSE WHATSOEVER WITHOUT THE WRITTEN CONSENT OF PROGRESSIVE AE, INC. PROGRESSIVE AE, INC. RESERVES ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

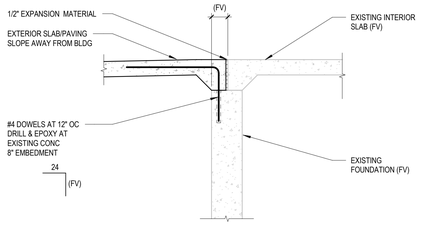
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

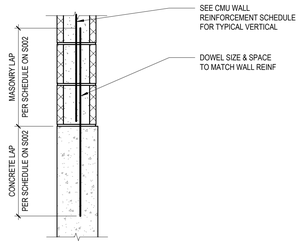
PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
R. KIPKE
DRAWN BY
A. PETERSON
CHECKED BY
E. FLANNERY

STRUCTURAL PLANS
S100

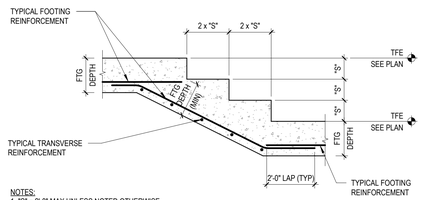
24.2.2022



A7 THRESHOLD AT EXISTING WALL
NOT TO SCALE

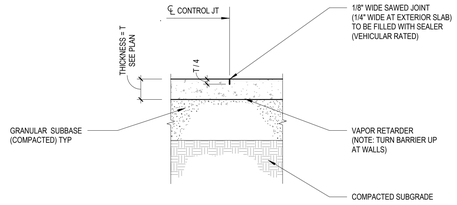


A5 TYPICAL CMU WALL DOWEL INTO FOUNDATION WALL
NOT TO SCALE



NOTES:
1. "S" = 2'-0" MAX UNLESS NOTED OTHERWISE.
2. WALL REINF NOT SHOWN, SEE TYP DETAILS.

A4 TYPICAL STEPPED FOOTING
NOT TO SCALE



NOTES:
1. DO NOT LOCATE JOINTS BELOW MASONRY WALLS.
2. SAW CUTTING OF JOINTS SHALL BE AS SOON AS THE CONCRETE SETS SUFFICIENTLY TO PERMIT CUTTING WITHOUT CHIPPING, SPALLING OR TEARING, BUT NOT MORE THAN 24 HOURS AFTER PLACING.

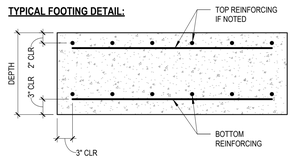
A2 TYPICAL CONTROL JOINT (CJ)
NOT TO SCALE

FOOTING SCHEDULE					
MARK	WIDTH	LENGTH	DEPTH	REINFORCING	COMMENTS
F4	4'-0"	4'-0"	1'-0"	(5) #5 EW BOT	

FOOTING NOTES:

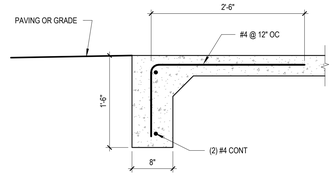
1. CENTER FOOTING ABOUT COLUMN ABOVE UNLESS NOTED OTHERWISE

TYPICAL FOOTING DETAIL:

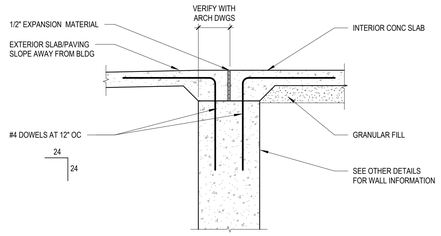


A1 FOOTING SCHEDULE & TYPICAL DETAIL
NOT TO SCALE

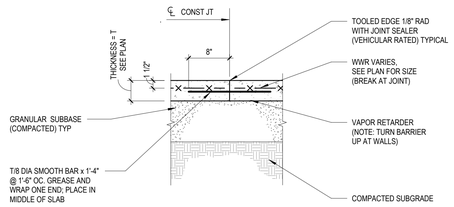
B7 TYPICAL CMU FOUNDATION
NOT TO SCALE



B5 TYPICAL STOOP/TURNED DOWN
NOT TO SCALE



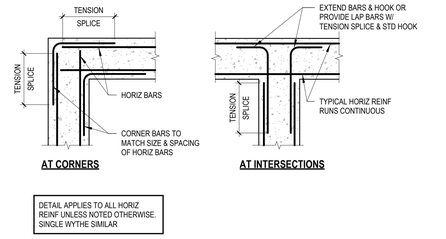
B4 TYPICAL THRESHOLD
NOT TO SCALE



B2 TYPICAL CONSTRUCTION JOINT (CTJ)
NOT TO SCALE

SLAB INFILL

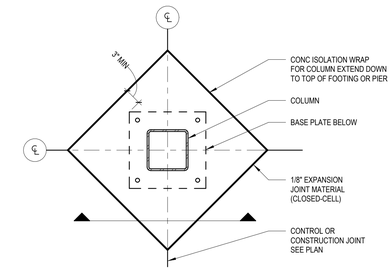
C5 TYPICAL NEW SLAB CONNECTION TO EXISTING SLAB
NOT TO SCALE



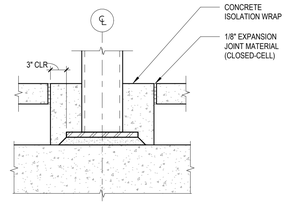
AT CORNERS **AT INTERSECTIONS**

DETAIL APPLIES TO ALL HORIZ REINF UNLESS NOTED OTHERWISE. SINGLE WYTHE SIMILAR

C4 TYPICAL HORIZONTAL REINFORCEMENT
NOT TO SCALE



PLAN



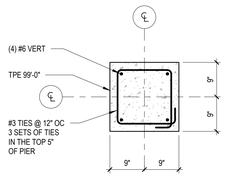
SECTION

D2 TYPICAL COLUMN ISOLATION
NOT TO SCALE

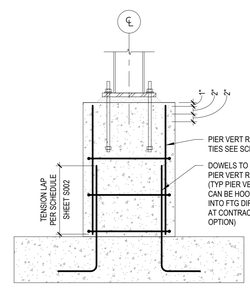
PIER NOTES:

1. SEE ADJACENT PLAN DETAILS FOR PIER REINFORCEMENT FOR EACH TYPE.
2. SEE BELOW FOR TYPICAL PIER DETAILS UNLESS NOTED OTHERWISE.

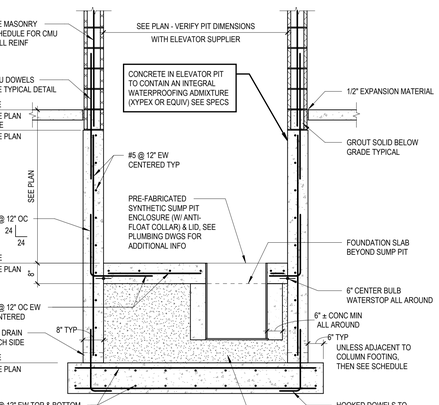
TYPICAL PIER DETAILS:



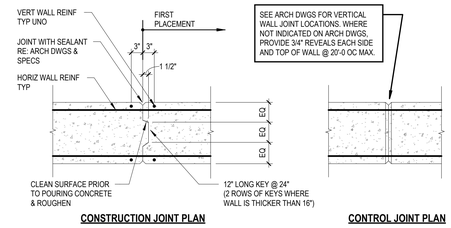
PIER TYPE P1



E1 PIER SCHEDULE & TYPICAL PIER DETAILS
NOT TO SCALE



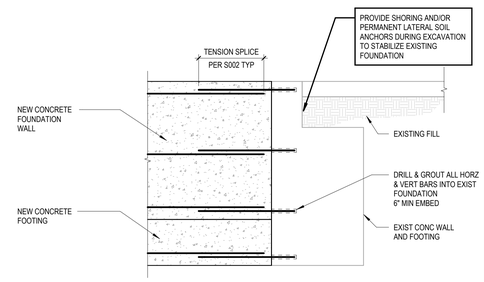
E5 TYPICAL ELEVATOR PIT DETAIL
NOT TO SCALE



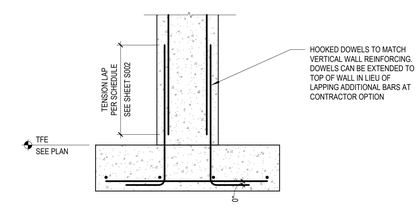
CONSTRUCTION JOINT PLAN **CONTROL JOINT PLAN**

NOTE:
1. LOCATION AND DETAIL OF JOINTS SHALL BE APPROVED BY ARCHITECT AND ENGINEER PRIOR TO CONSTRUCTING FORMS OR PLACING CONCRETE AND SHALL BE SHOWN ON THE SHOP DRAWINGS.

D4 TYPICAL VERTICAL WALL CONSTRUCTION AND CONTROL JOINTS
NOT TO SCALE



E4 EXISTING FOUNDATION DOWELING DETAIL
NOT TO SCALE



E2 TYPICAL FOUNDATION WALL DOWELS
NOT TO SCALE

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and a received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

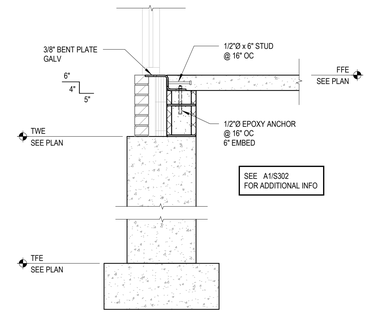
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

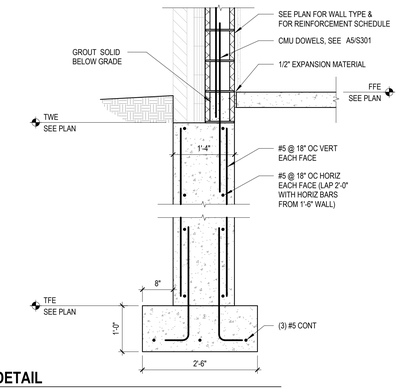
PROJECT NUMBER 75820023
PROJECT MANAGER G.RUNIONS
PROFESSIONAL R. KIPKE
DRAWN BY A. PETERSON
CHECKED BY E. FLANNERY

TYPICAL CONCRETE DETAILS
S301

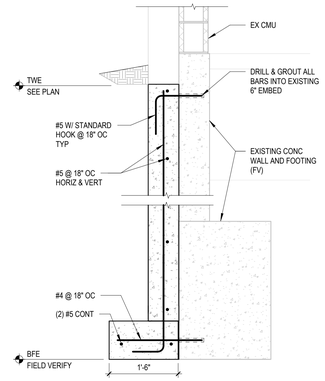
7/24/2026 12:11:01 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - STR.rvt
TYPICAL CONCRETE DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE. IT IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY PURPOSE OTHER THAN AS INTENDED BY PROGRESSIVE AE INC. ALL OTHER RIGHTS RESERVED. INCLUDING THE COPYRIGHT THERETO.



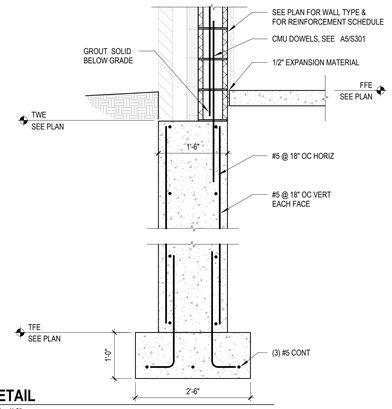
A3 DETAIL
3/4" = 1'-0"



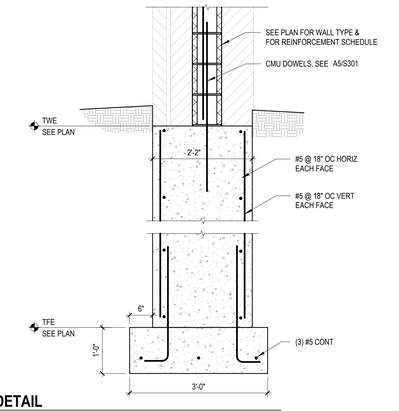
A1 DETAIL
3/4" = 1'-0"



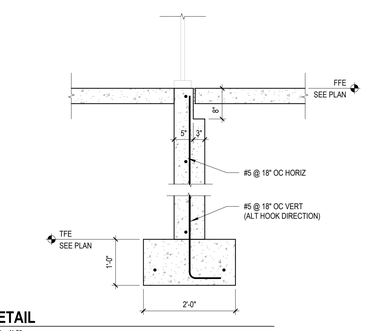
C3 DETAIL
3/4" = 1'-0"



B1 DETAIL
3/4" = 1'-0"



C1 DETAIL
3/4" = 1'-0"



D1 DETAIL
3/4" = 1'-0"

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

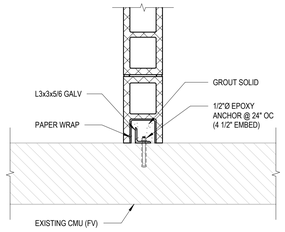
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

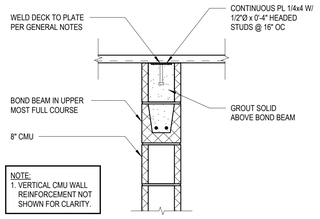
PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
R. KIPKE
DRAWN BY
A. PETERSON
CHECKED BY
E. FLANNERY

CONCRETE DETAILS
S302

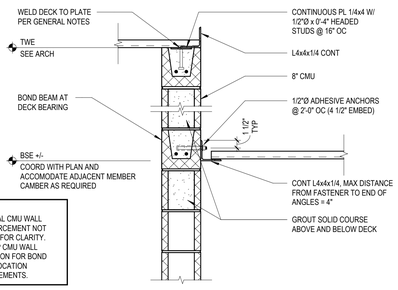
7/24/2026 12:11:03 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - S1R.rvt
CONCRETE DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. AND SHALL NOT BE USED IN WHOLE OR IN PART FOR ANY OTHER WORK OTHER THAN AS AGREED AND/OR IS, INCLUDING THE COPYRIGHT THERETO.



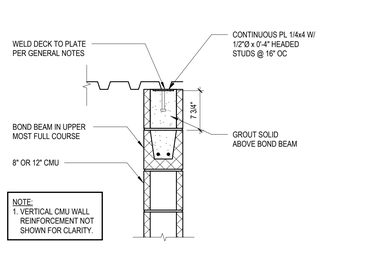
A7 TYP NEW WALL AT EXISTING CMU WALL
NOT TO SCALE



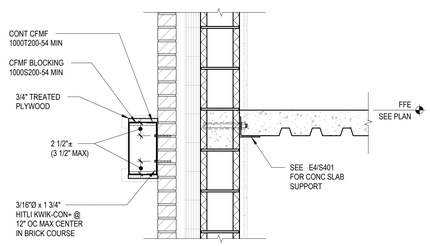
B7 TYP DECK BEARING PERP TO CMU WALL
NOT TO SCALE



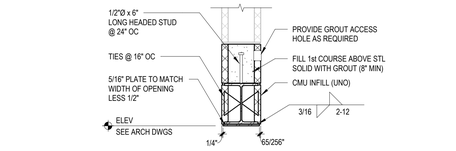
C7 TYPICAL ROOF DECK SUPPORT ANGLE
NOT TO SCALE



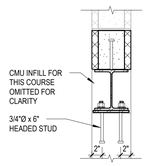
D7 TYP DECK BEARING PERP TO CMU WALL
NOT TO SCALE



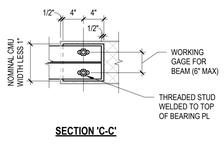
E7 DETAIL
1" = 1'-0"



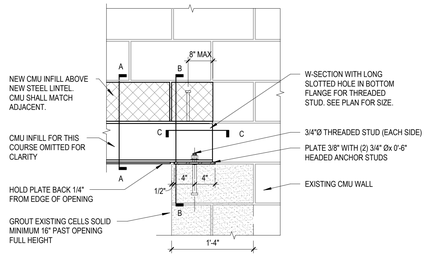
SECTION 'A-A'



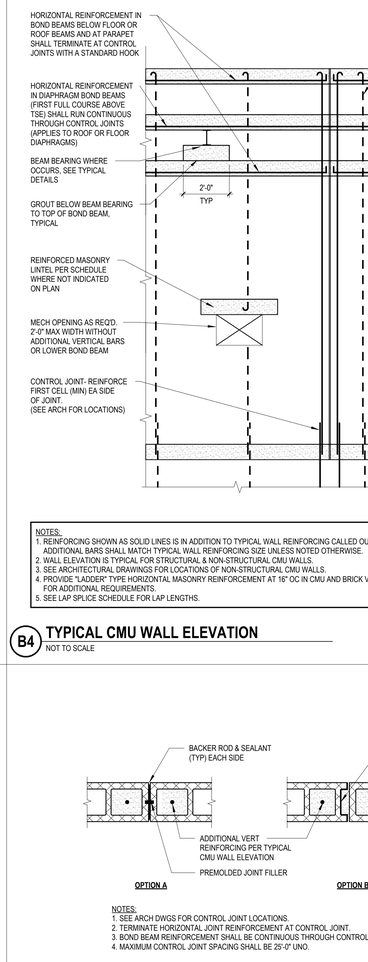
SECTION 'B-B'



SECTION 'C-C'



TYPICAL WIDE FLANGE LINTEL IN EXISTING MASONRY
B5
NOT TO SCALE

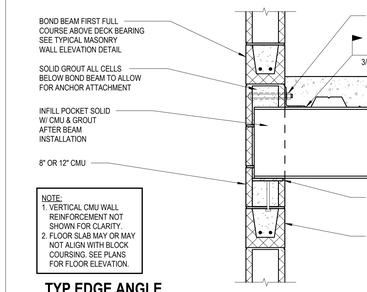


NOTES:
1. REINFORCING SHOWN AS SOLID LINES IS IN ADDITION TO TYPICAL WALL REINFORCING CALLED OUT ON DRAWINGS. SIZE OF ADDITIONAL BARS SHALL MATCH TYPICAL WALL REINFORCING SIZE UNLESS NOTED OTHERWISE.
2. WALL ELEVATION IS TYPICAL FOR STRUCTURAL & NON-STRUCTURAL CMU WALLS.
3. SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF NON-STRUCTURAL CMU WALLS.
4. PROVIDE "LADDER" TYPE HORIZONTAL MASONRY REINFORCEMENT AT 16" OC IN CMU AND BRICK VENEER. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. SEE LAP SPLICE SCHEDULE FOR LAP LENGTHS.

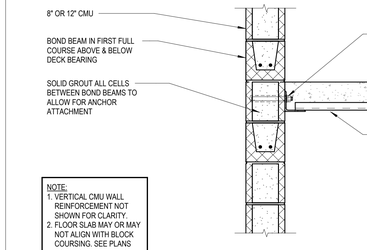
B4 TYPICAL CMU WALL ELEVATION
NOT TO SCALE

C5 TYPICAL BEAM BEARING AT CMU WALL
NOT TO SCALE

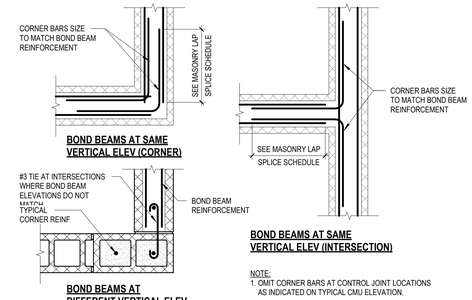
D5 TYPICAL ROOF DECK SUPPORT ANGLE
NOT TO SCALE



TYP EDGE ANGLE PARALLEL TO FLOOR DECK
D4
NOT TO SCALE



E4 TYPICAL FLOOR DECK SUPPORT ANGLE
NOT TO SCALE

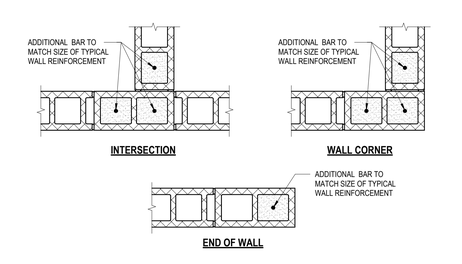


NOTES:
1. SEE ARCH DWGS FOR CONTROL JOINT LOCATIONS.
2. TERMINATE HORIZONTAL JOINT REINFORCEMENT AT CONTROL JOINT.
3. BOND BEAM REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONTROL JOINT WHERE NOTED.
4. MAXIMUM CONTROL JOINT SPACING SHALL BE 25'-0" UNO.

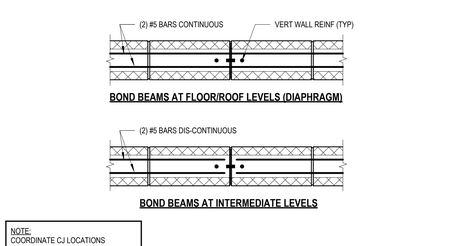
C4 TYPICAL CMU CONTROL JOINT (CJ)
NOT TO SCALE

NOTE:
1. OMIT CORNER BARS AT CONTROL JOINT LOCATIONS AS INDICATED ON TYPICAL CMU ELEVATION.

C2 TYP CMU BOND BEAM REINFORCEMENT
NOT TO SCALE



D2 TYPICAL CMU VERTICAL REINFORCEMENT
NOT TO SCALE



NOTE:
COORDINATE CJ LOCATIONS WITH ARCHITECTURAL DRAWINGS

E2 TYP BOND BEAMS AT CONTROL JOINTS
NOT TO SCALE

MASONRY WALL REINFORCING SCHEDULE

WALL TYPE	CMU SIZE	REINFORCING		GROUT SPACING	REMARKS
		VERTICAL	BOND BEAMS		
W1	8"	#5 @ 48" OC	-	48"	-
W2	8"	#5 @ 24" OC	NOTE A	24"	-

TYPICAL SCHEDULE NOTES (APPLY TO ALL WALL TYPES):
1. REINFORCING DEFINED IN SCHEDULE IS THE MINIMUM REQUIRED. SEE PLANS, TYPICAL DETAILS AND NOTES FOR ADDITIONAL REINFORCING REQUIRED.
2. PROVIDE BOND BEAMS REINFORCED WITH (2) #5 CONTINUOUS AT TOP OF ALL CMU WALLS, AT FLOOR & ROOF LEVELS, AND WHERE SHOWN IN DETAILS.
3. SEE S401 FOR TYPICAL MASONRY DETAILS, ALL OF WHICH APPLY UNLESS NOTED OTHERWISE.
4. SEE ARCHITECTURAL DRAWINGS FOR WALL LOCATIONS NOT DEFINED HEREIN.

OTHER NOTES (APPLY WHERE NOTED):
A. PROVIDE BOND BEAMS REINFORCED W/ (2) #5 CONTINUOUS AT 8'-0" OC VERTICALLY.

STEEL ANGLE LINTEL SCHEDULE FOR BRICK

CLEAR SPAN	LINTEL	BEARING EA END
UP TO 4'-0"	L3 1/2 x 3 1/2 x 5/16	6"
>4'-0" TO 6'-0"	L4 x 3 1/2 x 5/16 (LLV)	8"
>6'-0" TO 8'-0"	L5 x 3 1/2 x 3/8 (LLV)	8"
>8'-0" TO 10'-6"	L6 x 3 1/2 x 3/8 (LLV)	8"
OVER 10'-6"	SEE PLAN	8"

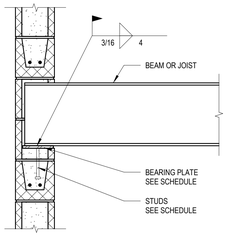
NOTES:
1. PROVIDE ONE ANGLE FOR EACH 4" OR LESS THICKNESS OF MASONRY.
2. ALL EXTERIOR LINTELS TO BE HOT-DIPPED GALVANIZED.
3. SEE ARCHITECTURAL DRAWINGS FOR OPENING LOCATION AND CLEAR SPAN.

MASONRY LAP SPLICE SCHEDULE
(F'm=2000 PSI)

BAR SIZE \ PLACEMENT	CENTER		EDGE
	8" CMU	12" CMU	ALL CMU
#3	18"	18"	18"
#4	24"	24"	24"
#5	30"	30"	30"
#6	38"	36"	57"
#7	-	42"	80"
#8	-	50"	-

BEARING PLATE SCHEDULE

MARK	SIZE (PL thick x width x length)	STUDS	REMARKS
BP1	PL 1/2" x 6" x 0'-8"	(2) 1/2"Ø x 0'-6"	
BP2	PL 1/2" x 6" x 1'-0"	(2) 1/2"Ø x 0'-6"	

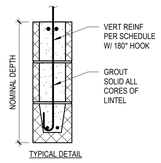


NOTES:
1. ALL BEARING PLATES ARE TYPE "BP1" UNLESS NOTED ON PLAN BELOW BEAM DESIGNATION.
2. VERTICAL CMU WALL REINFORCEMENT NOT SHOWN FOR CLARITY.
3. DECK OR EDGE ANGLE NOT SHOWN FOR CLARITY.
4. SEE TYP CMU WALL ELEVATION FOR BOND BEAM LOCATION REQUIREMENTS.

E1 TYPICAL BEARING PLATE
NOT TO SCALE

REINFORCED MASONRY LINTEL SCHEDULE

MARK	CLEAR SPAN	NOMINAL DEPTH	REINFORCING
L1	UP TO 4'-0"	8"	(2) # 4 BOT
L2	>4'-0" TO 6'-8"	16"	(2) # 4 T&B
L3	>6'-8" TO 8'-8"	24"	(2) # 5 T&B
L4	>8'-8" TO 10'-8"	32"	(2) # 6 T&B
L5	>10'-8" TO 12'-8"	40"	(2) # 6 T&B



NOTES:
1. SEE ARCHITECTURAL DRAWINGS FOR OPENING LOCATIONS AND CLEAR SPANS.
2. L LINTELS ARE CONTINUOUS FULL WIDTH OF OPENING.
3. PROVIDE 8" MINIMUM BEARING FOR CLEAR SPANS 8'-0" OR LESS; 16" MINIMUM BEARING FOR CLEAR SPANS GREATER THAN 8'-0".
4. EXTEND BOTTOM REINFORCEMENT TO END OF BEARING EACH SIDE. EXTEND TOP REINFORCEMENT WITH STANDARD HOOK AT CONTROL JOINTS OR FREE EDGES.
5. SEE TYPICAL CMU WALL ELEVATION FOR ADDITIONAL REQUIREMENTS.

TYPICAL REINFORCED MASONRY LINTEL SCHEDULE
E5
NOT TO SCALE

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

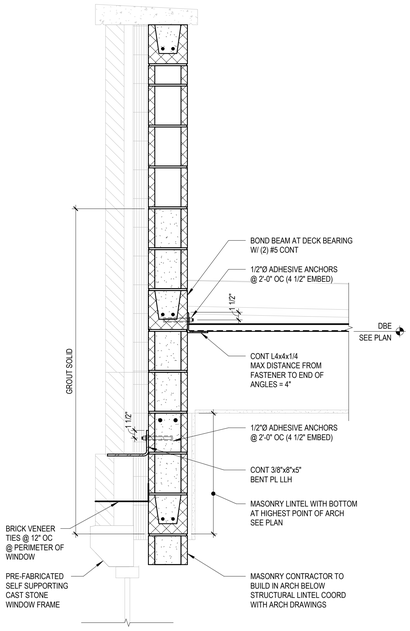
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

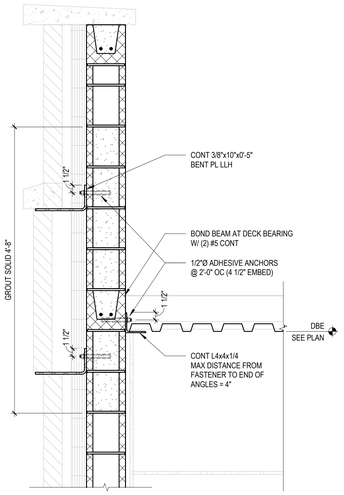
PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
R. KIPKE
DRAWN BY
A. PETERSON
CHECKED BY
E. FLANNERY

MASONRY DETAILS
S401

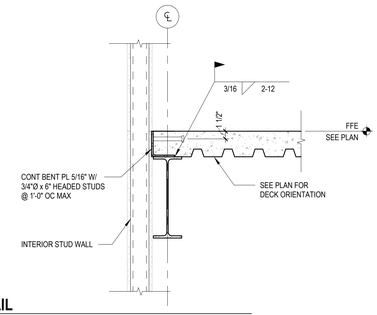
7/24/2026 12:11:09 PM Autodesk Docs://75820023 - CATA Renovation of 511 S Washington - STR.rvt
A7 TYP NEW WALL AT EXISTING CMU WALL
MASONRY DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE. IT IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY PURPOSE OR PROJECT OTHER THAN THE SPECIFIC PROJECT FOR WHICH IT WAS PREPARED. ALL COPYRIGHT AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



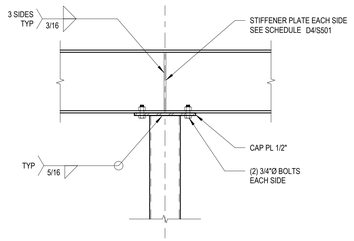
B7 DETAIL
1" = 1'-0"



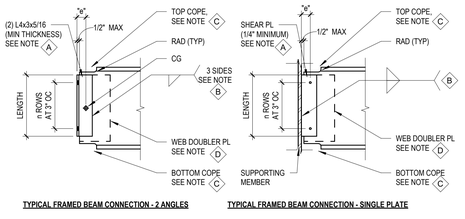
B5 DETAIL
1" = 1'-0"



A4 DETAIL
1" = 1'-0"



B4 TYPICAL BEAM OVER COLUMN
NOT TO SCALE



TYPICAL FRAMED BEAM CONNECTION - 2 ANGLES **TYPICAL FRAMED BEAM CONNECTION - SINGLE PLATE**

NOTES:

1. CONNECTIONS ABOVE ARE FOR PICTORIAL REPRESENTATION ONLY AND MAY NOT BE INCLUSIVE. WEB EXTENSION PLATES, STIFFENERS, ETC SHALL BE ADDED TO FACILITATE CONNECTION LENGTH REQUIRED AT NO ADDITIONAL COST.
2. DESIGN BEAM CONNECTIONS FOR ADDITIONAL STRESSES DUE TO AXIAL LOAD TRANSFER (PRYING ACTION) WHERE INDICATED IN PLAN.
3. CONNECTIONS ABOVE SHALL BE DESIGNED TO DEVELOP A MIN END REACTION OF 12-KIPS.
4. CONNECTIONS SHALL BE DESIGNED SUCH THAT ALL ADDITIONAL STRESSES DUE TO ECCENTRICITY SHALL BE DEVELOPED BY THE CONNECTION AND NOT INDUCE ANY ADDITIONAL STRESSES INTO SUPPORTING MEMBERS.
5. IN ADDITION TO THE REACTION INDICATED, WEB BOLTS MUST BE DESIGNED FOR THE MOMENT IN THE BOLT GROUP CREATED AS A RESULT OF THE FORCE TRANSFER FROM THE CONNECTING MEMBER TO THE SUPPORTING MEMBER.

(A) THICKNESS AND LENGTH OF ANGLES OR SHEAR PLATE AND NUMBER OF BOLTS SHALL BE DESIGNED FOR THE REACTION INDICATED USING THE CORRESPONDING ECCENTRIC "e" DISTANCE CALCULATED FOR THE CONNECTION LAYOUT AND VERIFYING ALL APPLICABLE LIMIT STATES.

(B) LENGTH AND SIZE OF WELD SHALL BE DESIGNED FOR THE REACTION INDICATED INCLUDING ANY ADDITIONAL STRESS/MOMENTS CREATED IN THE LOAD TRANSFER FROM THE CONNECTING MEMBER TO THE SUPPORTING MEMBER.

(C) BEAM COPES SHALL BE PROVIDED AS NECESSARY TO FACILITATE CONNECTION FIT-UP. CAPACITIES OF MEMBERS W/ COPES (TOP OR TOP & BOTTOM) SHALL BE ANALYZED TO DETERMINE THE CRITICAL LIMIT STATE DUE TO THE REDUCED SECTION INCLUDING BUT NOT LIMITED TO BUCKLING OR YIELDING OF THE WEB.

(D) WEB DOUBLER PLATES OR STIFFENERS (NOT SHOWN) SHALL BE PROVIDED AS NECESSARY TO DEVELOP THE REACTION INDICATED AND FOR REGIONS OF OVER-STRESS AS DESCRIBED IN NOTE (C)

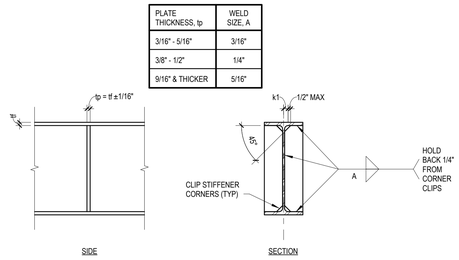
B2 TYPICAL STEEL CONNECTIONS
NOT TO SCALE

STEEL COLUMN SCHEDULE		
MARK	SIZE	COMMENTS
C1	HSS4x4x1/4	

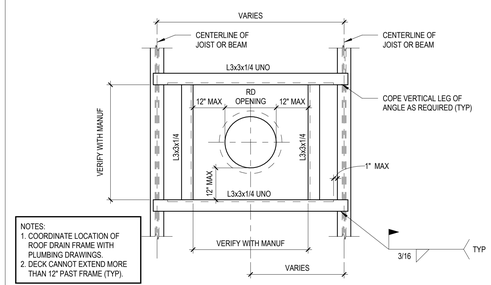
C4 TYPICAL BEAM OVER COLUMN
NOT TO SCALE

CONTINUOUS HOT-ROLLED ANGLE SHAPE (IE L4x4x5/16) IS ACCEPTABLE AT CONTRACTOR OPTION PROVIDED MINIMUM CRITERIA SHOWN IS MET

C2 TYPICAL EDGE OF ROOF DETAIL
1" = 1'-0"

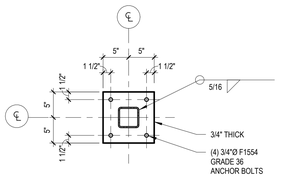


D4 TYPICAL BEAM STIFFENER DETAIL
NOT TO SCALE



NOTES:
1. COORDINATE LOCATION OF ROOF DRAIN FRAME WITH PLUMBING DRAWINGS.
2. DECK CANNOT EXTEND MORE THAN 12" PAST FRAME (TYP).

D2 TYPICAL ROOF DRAIN (RD) FRAME
NOT TO SCALE



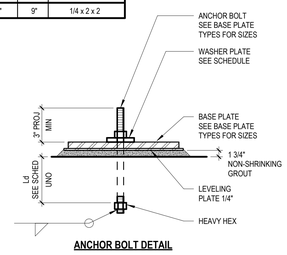
BASE PLATE TYPE B1

E6 DETAIL
1" = 1'-0"

E4 DETAIL
1" = 1'-0"

E2 TYPICAL ROOF FRAME
NOT TO SCALE

ANCHOR Ø	Ld	WASHER PL W/ STD HOLE UNO
3/4"	9"	1/4 x 2 x 2



ANCHOR BOLT DETAIL

E1 TYPICAL ANCHOR BOLT DETAIL
NOT TO SCALE

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

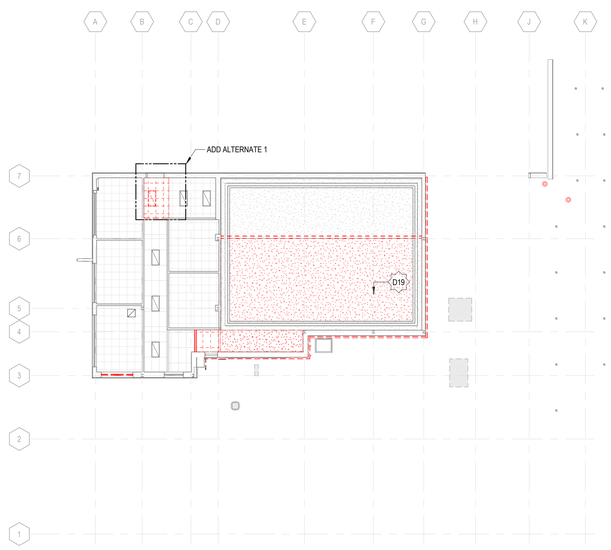
If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE
07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
R. KIPKE
DRAWN BY
A. PETERSON
CHECKED BY
E. FLANNERY

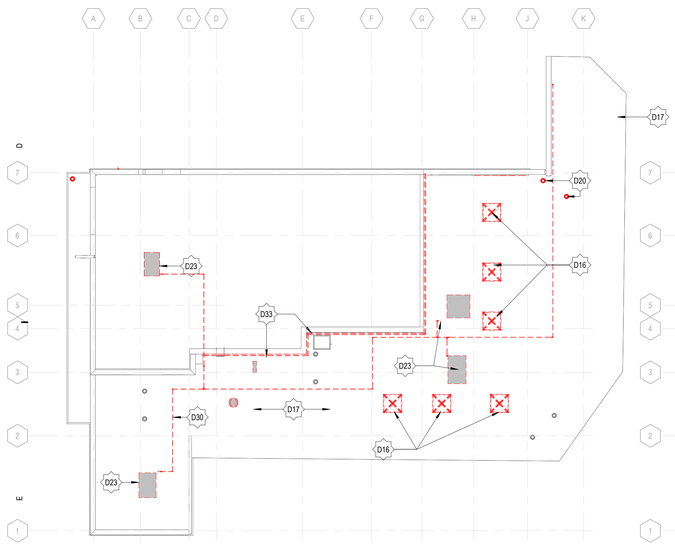
STEEL DETAILS
S501

7/24/2026 12:11:59 PM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington_STR.rvt
7/24/2026
STEEL DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE, AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL COPYRIGHTS AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.

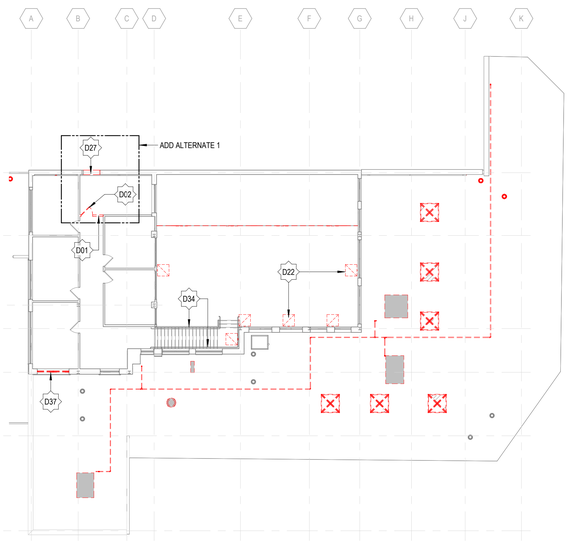


SECOND FLOOR DEMOLITION REFLECTED CEILING PLAN
1/16" = 1'-0"

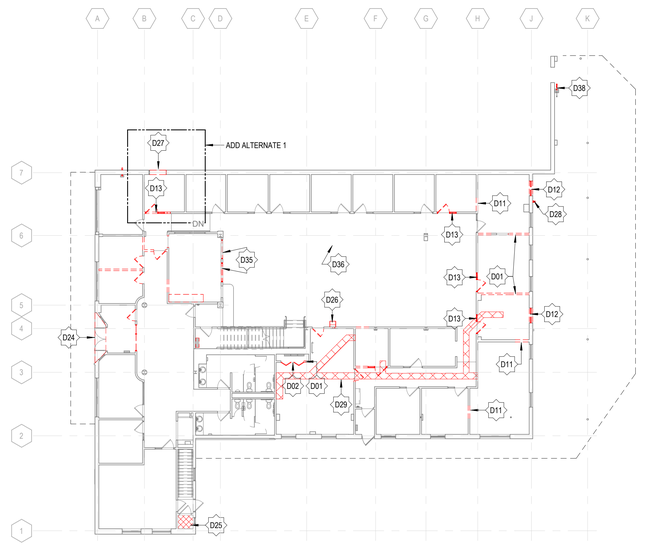
FIRST FLOOR REFLECTIVE CEILING DEMOLITION PLAN
1/16" = 1'-0"



ROOF DEMOLITION PLAN
1/16" = 1'-0"



SECOND FLOOR DEMOLITION PLAN
1/16" = 1'-0"



FIRST FLOOR DEMOLITION PLAN
1/16" = 1'-0"

DEMOLITION NOTES AND LEGEND

1. EXISTING BUILDING CONDITION BASED ON OWNER PROVIDED DRAWINGS AND LIMITED FIELD VERIFICATION. VERIFY EXACT CONDITIONS IN FIELD. SHOULD DISCREPANCIES OCCUR, NOTIFY ARCHITECT FOR CLARIFICATIONS.
2. BEGINNING WORK INDICATES THAT THE CONTRACTOR HAS ACCEPTED AND VERIFIED EXISTING CONDITIONS.
3. COORDINATE DEMOLITION WITH ALL CONTRACTORS WORKING IN AREAS BEING RENOVATED.
4. DURING DEMOLITION, PROTECT ALL ADJACENT CONSTRUCTION TO REMAIN.
5. ANY ASBESTOS CONTAINING MATERIALS THAT ARE ENCOUNTERED ARE TO BE REMOVED BY THE OWNER.
6. REFER TO CIVIL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ITEMS TO BE REMOVED NOT SHOWN HERE.
7. COORDINATE THE RETURN AND STORAGE OF ALL ITEMS DESIGNATED AS SALVAGE WITH THE OWNER.
8. PROVIDE TEMPORARY SHORING AND/OR STAGING OF THE DEMOLITION WORK.
9. MANY OF THE MASONRY WALLS OF THIS BUILDING ARE LOAD-BEARING. COORDINATE DEMOLITION OF ALL WALLS OR PORTIONS OF WALLS FOR NEW OPENINGS WITH STRUCTURAL DOCUMENTS AND EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR SHORING ALL STRUCTURE SUPPORTED BY BEARING WALLS PRIOR TO REMOVAL.
10. COORDINATE CONSTRUCTION BARRIER LOCATIONS, NOISY DEMOLITION / CONSTRUCTION, AND WORK NOTED "INTERMITTENT" WITH OWNER.
11. HATCHED AREA(S) OF FULL NON-STRUCTURAL DEMOLITION (AS INDICATED IN LEGEND BELOW): REMOVE ALL WALLS, DOORS, FLOORING, CEILINGS, FIXTURES, MILLWORK, EQUIPMENT, ETC. UNLESS NOTED OTHERWISE. OWNER TO REVIEW SALVAGEABLE ITEMS FOR POTENTIAL RE-USE.
12. REMOVE ALL TERRAZZO FLOOR BASE.

EXISTING CONSTRUCTION TO REMAIN

EXISTING CONSTRUCTION TO BE REMOVED

EXISTING PLASTER CEILING TO BE REMOVED

EXISTING EXTERIOR CEILING PANELS TO BE REMOVED

EXISTING 2x4 CEILING PANELS TO BE REMOVED

EXISTING LIGHT FIXTURES TO BE REMOVED

EXISTING WALL MOUNTED LIGHT FIXTURES TO BE REMOVED

EXISTING FIRE EXIT SIGN LOCATION TO BE REMOVED

EXISTING WALL MOUNTED TRACK LIGHT TO BE REMOVED

DEMOLITION PLAN KEYNOTES

NUMBER	NOTE
D01	DEMO WALL OR PORTION OF WALL AS SHOWN
D02	DEMO DOOR, FRAME AND HARDWARE
D11	DEMO PORTION OF WALL TO ALLOW FOR A NEW DOOR
D12	DEMO WINDOW AND PREPARE WALL FOR NEW DOOR
D13	DEMO SIDELITE, DOOR FRAME AND HARDWARE. OPENING TO BE INFILL
D16	DEMO EXISTING SKYLIGHTS AND HORIZONTAL SHUTTERS WITHIN.
D17	DEMO EXISTING ROOF MEMBRANE AND INSULATION TO DECKING
D19	DEMO CEILING AS SHOWN
D20	DEMO ROOF DRAIN
D21	DEMOLISH PORTION OF CANOPY CEILING AS REQUIRED FOR NEW VESTIBULE
D22	REMOVE LIGHT FIXTURES. SEE ELECTRICAL DWGS
D23	DEMO EXISTING ROOF TOP UNITS (TYP) - SEE MECH DWGS
D24	REMOVE TERRAZZO FLOORING AT BUILDING ENTRY AND SAVE FOR FUTURE DISPLAY INSIDE BUILDING.
D25	REMOVE EXISTING TILE FLOOR. FILL ALL CRACKS AND PROVIDE NEW FLOOR SURFACE PRIOR TO FILLING CRACKS (ARCHITECT/ STRUCTURAL ENGINEER TO INSPECT TO DETERMINE CAUSE OF CRACK
D26	REMOVE EXISTING WATER FOUNTAIN. DEMO WATER LINES BACK TO SOURCE AND CAP
D27	CUT NEW DOOR OPENING IN EXISTING BRICK MASONRY: PROVIDE TEMPORARY SHORING AND NEW STEEL LINTEL. PATCH AND REPAIR ADJACENT MASONRY AND FINISHES AS REQUIRED FOR COMPLETE INSTALLATION. SEE STRUCTURAL.
D28	REMOVE EXISTING LEADERS AND RELOCATE THEM. SEE PLUMBING AND CIVIL DWGS.
D29	SAW CUT AND PATCH FLOOR. SEE PLUMBING DWGS
D30	DEMO GAS PIPING TO BE REPLACED. SEE MECHANICAL DWGS
D33	REPLACE EXISTING GUTTERS AND DOWNSPOUTS.
D34	REMOVE EXISTING STAIR AND WALL MOUNTED HANDRAILS.
D35	REMOVE EXISTING WINDOWS AND INFILL WALL OPENING
D36	REMOVE CARPET IN ON RAMP AND BOARDROOM FLOOR TO EXTENTS OF TERRAZZO REVIEW EXTENTS WITH OWNER TO DETERMINE AREAS OF CARPETED SCOPE.
D37	DEMO STOREFRONT. REMOVE PLYWOOD, VERIFY LINTEL AND HEADER ARE FUNCTIONAL, AND REPLACE WITH NEW STOREFRONT.
D38	REFER TO MECHANICAL DEMOLITION NOTES

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

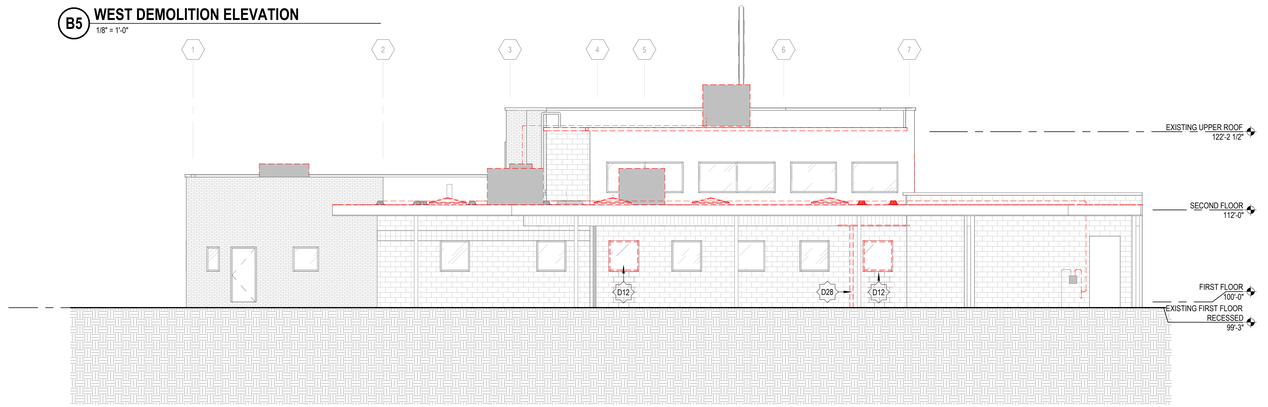
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

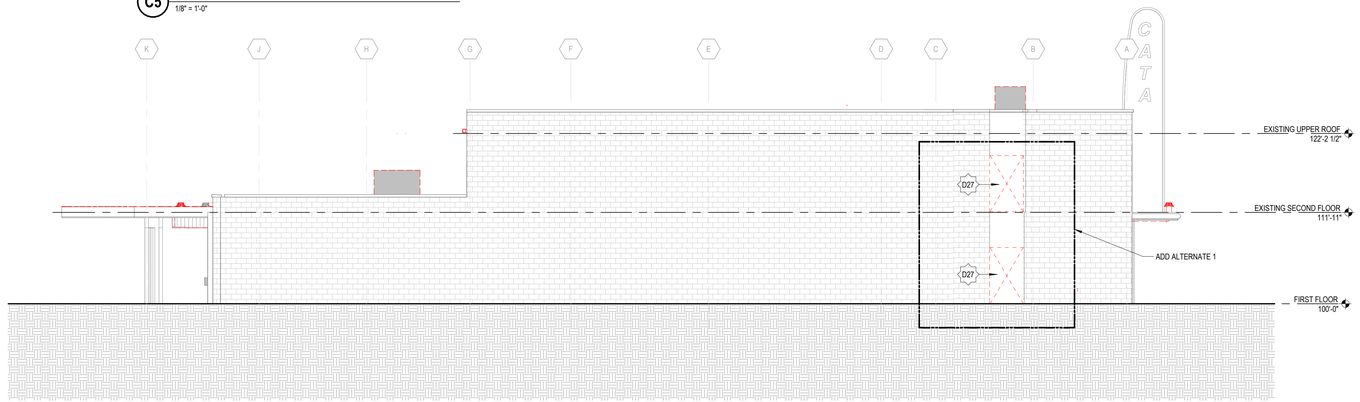
DEMOLITION FLOOR PLANS & REFLECTED CEILING PLANS
AD101

7/24/2026 11:27:58 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
JAY.JOHNSON
DEMOLITION FLOOR PLANS & REFLECTED CEILING PLANS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE A.E. INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF

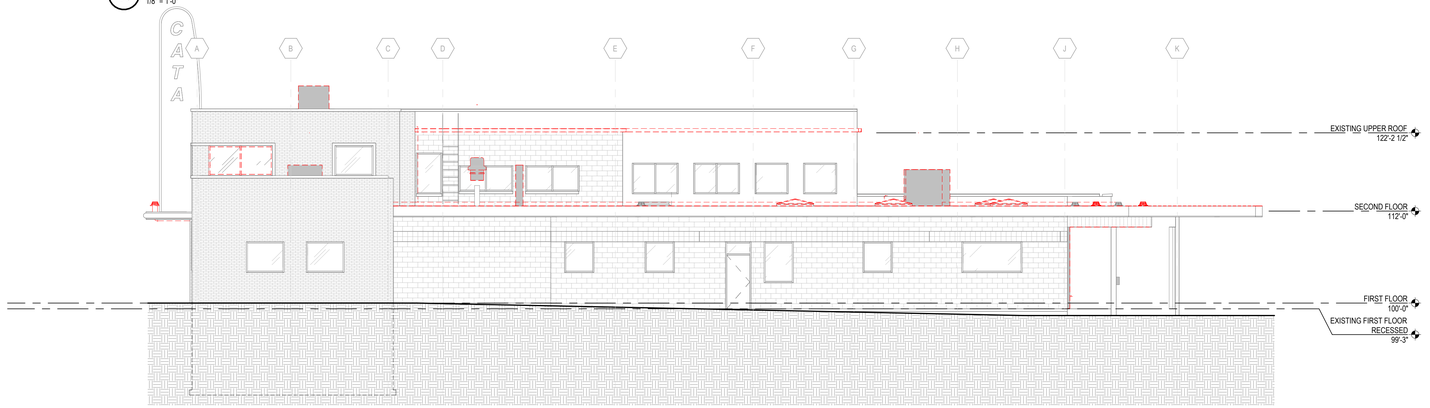
B5 WEST DEMOLITION ELEVATION
1/8" = 1'-0"



C5 EAST DEMOLITION ELEVATION
1/8" = 1'-0"



D5 NORTH DEMOLITION ELEVATION
1/8" = 1'-0"



E5 SOUTH DEMOLITION ELEVATION
1/8" = 1'-0"

DEMOLITION NOTES AND LEGEND

1. EXISTING BUILDING CONDITION BASED ON OWNER PROVIDED DRAWINGS AND LIMITED FIELD VERIFICATION. VERIFY EXACT CONDITIONS IN FIELD. SHOULD DISCREPANCIES OCCUR, NOTIFY ARCHITECT FOR CLARIFICATIONS.
2. BEGINNING WORK INDICATES THAT THE CONTRACTOR HAS ACCEPTED AND VERIFIED EXISTING CONDITIONS.
3. COORDINATE DEMOLITION WITH ALL CONTRACTORS WORKING IN AREAS BEING RENOVATED.
4. DURING DEMOLITION, PROTECT ALL ADJACENT CONSTRUCTION TO REMAIN.
5. ANY ASBESTOS CONTAINING MATERIALS THAT ARE ENCOUNTERED ARE TO BE REMOVED BY THE OWNER.
6. REFER TO CIVIL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS FOR ITEMS TO BE REMOVED NOT SHOWN HERE.
7. COORDINATE THE RETURN AND STORAGE OF ALL ITEMS DESIGNATED AS SALVAGE WITH THE OWNER.
8. PROVIDE TEMPORARY SHORING AND/OR STAGING OF THE DEMOLITION WORK.
9. MANY OF THE MASONRY WALLS OF THIS BUILDING ARE LOAD-BEARING. COORDINATE DEMOLITION OF ALL WALLS OR PORTIONS OF WALLS FOR NEW OPENINGS WITH STRUCTURAL DOCUMENTS AND EXISTING CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR SHORING ALL STRUCTURE SUPPORTED BY BEARING WALLS PRIOR TO REMOVAL.
10. COORDINATE CONSTRUCTION BARRIER LOCATIONS, NOISY DEMOLITION / CONSTRUCTION, AND WORK NOTED "INTERMITTENT" WITH OWNER.
11. HATCHED AREA(S) OF FULL NON-STRUCTURAL DEMOLITION (AS INDICATED IN LEGEND BELOW): REMOVE ALL WALLS, DOORS, FLOORING, CEILINGS, FIXTURES, MILLWORK, EQUIPMENT, ETC. UNLESS NOTED OTHERWISE. OWNER TO REVIEW SALVAGEABLE ITEMS FOR POTENTIAL RE-USE.
12. REMOVE ALL TERRAZZO FLOOR BASE.

- EXISTING CONSTRUCTION TO REMAIN
- EXISTING CONSTRUCTION TO BE REMOVED
- EXISTING PLASTER CEILING TO BE REMOVED
- EXISTING EXTERIOR CEILING PANELS TO BE REMOVED
- EXISTING 2x4 CEILING PANELS TO BE REMOVED
- EXISTING LIGHT FIXTURES TO BE REMOVED
- EXISTING WALL MOUNTED LIGHT FIXTURES TO BE REMOVED
- EXISTING FIRE EXIT SIGN LOCATION TO BE REMOVED
- EXISTING WALL MOUNTED TRACK LIGHT TO BE REMOVED

DEMOLITION PLAN KEYNOTES

NUMBER	NOTE
D12	DEMO WINDOW AND PREPARE WALL FOR NEW DOOR
D27	CUT NEW DOOR OPENING IN EXISTING BRICK MASONRY: PROVIDE TEMPORARY SHORING AND NEW STEEL LINTEL. PATCH AND REPAIR ADJACENT MASONRY AND FINISHES AS REQUIRED FOR COMPLETE INSTALLATION. SEE STRUCTURAL.
D28	REMOVE EXISTING LEADERS AND RELOCATE THEM. SEE PLUMBING AND CIVIL DWGS

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and a received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

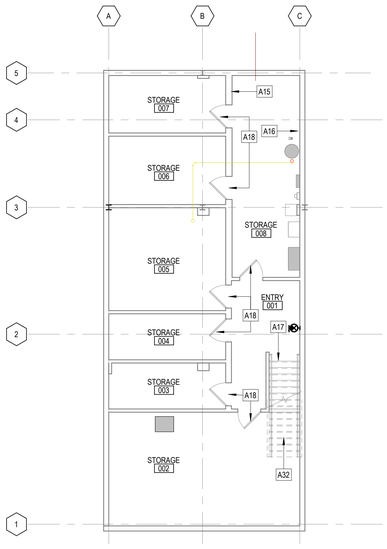
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J. CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

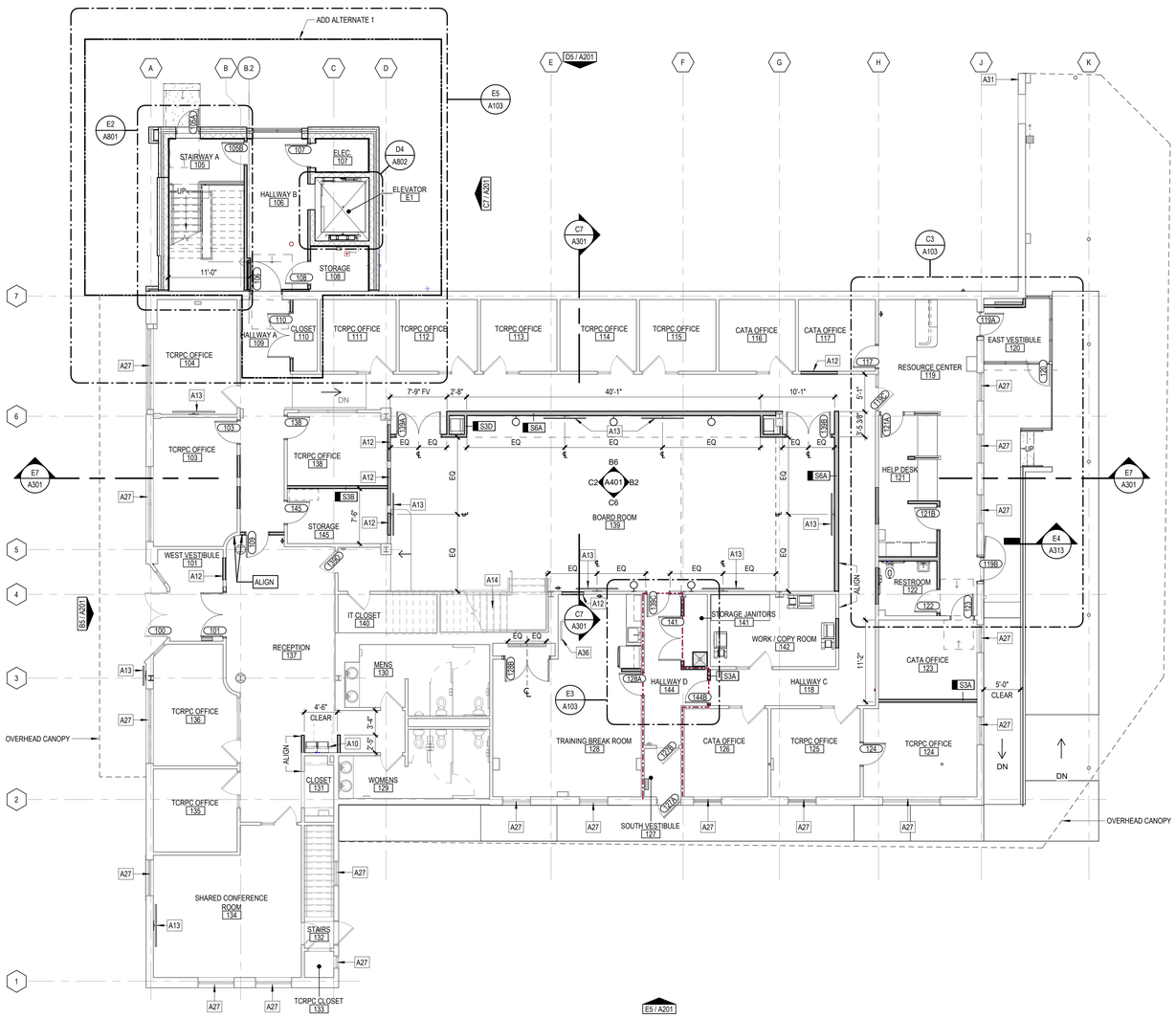
EXTERIOR DEMOLITION ELEVATIONS
AD201

7/24/2026 11:24:12 AM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington_ARCH.rvt
EXTERIOR DEMOLITION ELEVATIONS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS A INSTRUMENT OF PROFESSIONAL SERVICE. IT IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF PROGRESSIVE AE INC. AND SHALL NOT BE LOANED, COPIED OR OTHERWISE REUSED WITHOUT THE WRITTEN PERMISSION OF PROGRESSIVE AE INC. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



BASEMENT FLOOR PLAN

1/8" = 1'-0"



FIRST FLOOR PLAN

1/8" = 1'-0"

GENERAL NOTES

1. DO NOT SCALE DRAWINGS.
2. FINISH FLOOR ELEVATION = 100' - 0". IF APPLICABLE, REFER TO CIVIL DRAWINGS FOR SITE DATUM ELEVATION EQUIVALENT.
3. EXISTING BUILDING CONDITIONS BASED ON OWNER PROVIDED DRAWINGS AND LIMITED FIELD VERIFICATION. VERIFY EXACT CONDITIONS IN FIELD. SHOULD DISCREPANCIES OCCUR, NOTIFY ARCHITECT FOR CLARIFICATIONS.
4. BEGINNING WORK INDICATES THAT THE CONTRACTOR HAS ACCEPTED AND VERIFIED EXISTING CONDITIONS.
5. REFER TO CODE COMPLIANCE DRAWING(S) FOR LOCATIONS OF RATED ASSEMBLIES AND CODE SUMMARY.
6. ABBREVIATIONS, TYPICAL MOUNTING DIMENSIONS, AND ANNOTATION SYMBOLOGY ARE SHOWN ON GENERAL INFORMATION DRAWINGS.
7. WALL DIMENSIONS ARE TO FACE OF MASONRY, FACE OF CONCRETE, FACE OF STUDS, COLUMN CENTERLINE AS SHOWN OR EXISTING CONSTRUCTION UNLESS OTHERWISE NOTED.
8. ALL DIMENSIONS ARE PERPENDICULAR AND PARALLEL, UNLESS NOTED OTHERWISE.
9. PATCH ALL DISTURBED SURFACES WITH MATERIALS TO MATCH ADJACENT SURFACE CONSTRUCTION.
10. PROVIDE APPROVED SMOKE/FIRESTOPPING ASSEMBLIES AT ALL MECHANICAL AND ELECTRICAL PENETRATIONS THROUGH FIRE RATED AND SMOKE RESISTANT PARTITIONS IDENTIFIED ON CODE COMPLIANCE DRAWINGS.
11. OWNER FURNISHED EQUIPMENT IS SHOWN LIGHT DASHED FOR REFERENCE ONLY. REFER TO EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION.
12. REFER TO INTERIORS FOR FINISHES INCLUDING WALL PROTECTION ITEMS.

EXISTING TO REMAIN

INTERIOR PARTITION GENERAL NOTES

EXISTING WALL CONSTRUCTION

NEW STUD WALL CONSTRUCTION

NEW MASONRY WALL CONSTRUCTION

1. CONSTRUCT ALL WALLS TIGHT TO DECK ABOVE AND EXTEND INTO DECK FLUTES AND WEBS OF STEEL MEMBERS UNLESS OTHERWISE NOTED.
2. PROVIDE DEFLECTION TRACK AT THE TOP OF ALL INTERIOR NON-BEARING METAL STUD WALLS CAPABLE OF ACCOMMODATING 1" ROOF FLOOR DEFLECTION. REFER TO DETAILS A501 FOR HEAD OF WALL CONDITION.
3. REFER TO CODE COMPLIANCE PLAN FOR RATED WALL LOCATIONS. FIRE RATED AND SMOKE RESISTANT ASSEMBLIES SHALL BE CONTINUOUS, WITH OTHER PARTITIONS ABUTTING THEM.
4. PROVIDE FIRESTOPPING/ SMOKE SEALANT AT ALL PENETRATIONS THROUGH FIRE RATED AND SMOKE RESISTANT ASSEMBLIES, CORRIDORS, AND FLOORS WITH OCCUPIABLE SPACES ABOVE AND BELOW.
5. PROVIDE ACOUSTICAL SEALANT AT ALL WALLS WITH ACOUSTICAL INSULATION.
6. PROVIDE 5/8" WATER RESISTANT GYPSUM WALLBOARD AT ALL WALLS OF TOILET ROOMS, WALLS RECEIVING TILE, AND WALLS BEHIND AND ADJACENT TO SINKS.
7. PROVIDE 5/8 TILE BACKER AT ALL WALLS OF SHOWER ENCLOSURES.
8. REFER TO STRUCTURAL DRAWINGS FOR MASONRY REINFORCING AND GROUTING.
9. PROVIDE BULLNOSE CONCRETE MASONRY UNITS AT EXPOSED SILLS AND AT ALL INTERIOR EXPOSED VERTICAL CORNERS, INCLUDING WINDOW AND DOOR JAMBS.
10. ALL WALLS ARE TYPE S3B UNLESS NOTED OTHERWISE.

INTERIOR PARTITION TAG LEGEND

CORE MATERIAL
S - STEEL STUDS
M - MASONRY
H - CH / SHAFTWALL

ACOUSTICAL INSULATION
PROVIDE ACOUSTICAL INSULATION AT TAGGED LOCATIONS

PARTITION TYPE SUFFIX
REFER TO SCHEDULE BELOW

S6A

CORE SIZE (NOMINAL)

	S	M	H
0	7/8"		
1	1 5/8"		
2	2 1/2"		2 1/2"
3	3 5/8"		
4	4"	4"	4"
5			
6	6"	6"	6"
7			
8	8" CFMF	8"	
9			
10		10"	
11			
12		12"	

ADD ALTERNATE

ALT-1
2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE

INTERIOR PARTITION TYPE SUFFIXES

A	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK (OR HARD CEILING WHERE IT OCCURS)
B	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
C	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TAGGED SIDE TO DECK AND OTHER SIDE TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
D	5/8" GYPSUM BOARD ON ROOM SIDE ONLY; EXTEND TO DECK
E	5/8" GYPSUM BOARD ON ROOM SIDE ONLY; EXTEND TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
F1	(1) LAYER 5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK ABOVE; 1 HR RATED UL DESIGN #U465
F2	(2) LAYERS 5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK ABOVE; 2 HR RATED UL DESIGN #U419
H1	(1) LAYER 5/8" GYPSUM BOARD ON ROOM SIDE, 1" SHAFT LINER TO DECK ABOVE ON OTHER SIDE; 1 HR RATED UL DESIGN #U415-A

KEYNOTES

NUMBER	NOTE
A10	HI/LO ACCESSIBLE DRINKING FOUNTAIN; REF PLUMBING DWG
A12	INFILL WINDOWS AND DOOR OPENINGS. WALL WIDTH TO MATCH EXISTING AND PROVIDE ACOUSTICAL INSULATION
A13	TV MONITORS BY OWNER
A14	DEEP CLEAN AND RE-SEAL TERRAZZO FLOORING
A15	INFILL ALL HOLES IN INTERIOR WALLS WITH CONCRETE AND REPAINT (TYP)
A16	FIX ALL HOLES IN EXTERIOR WALLS W/ ..; REPAINT WALLS
A17	PREP EXISTING METAL STAIR AND HANDRAIL FOR REPAINTING INCLUDING REMOVAL OF RUST, LOOSE PAINT, AND SURFACE CONTAMINANTS; PRIME AND REPAINT ALL EXPOSED SURFACES.
A18	REPLACE ALL OPENINGS WITH HOLLOW METAL DOORS AND FRAMES. PROVIDE NEW DOOR HARDWARE.
A27	REPLACE GASKETS AT EXISTING STOREFRONT AND RE-CAULK TO THE WALL.
A31	REPAIR DAMAGE MASONRY WITH LIKE KIND AND REPAINT TO MATCH EXISTING WALL COLOR.
A32	REPAIR/REPLACE EXISTING PLASTER CEILING IN STAIR
A36	INSTALL ROOF HATCH OPENER TO THE EXISTING LADDER ROOF ACCESS

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

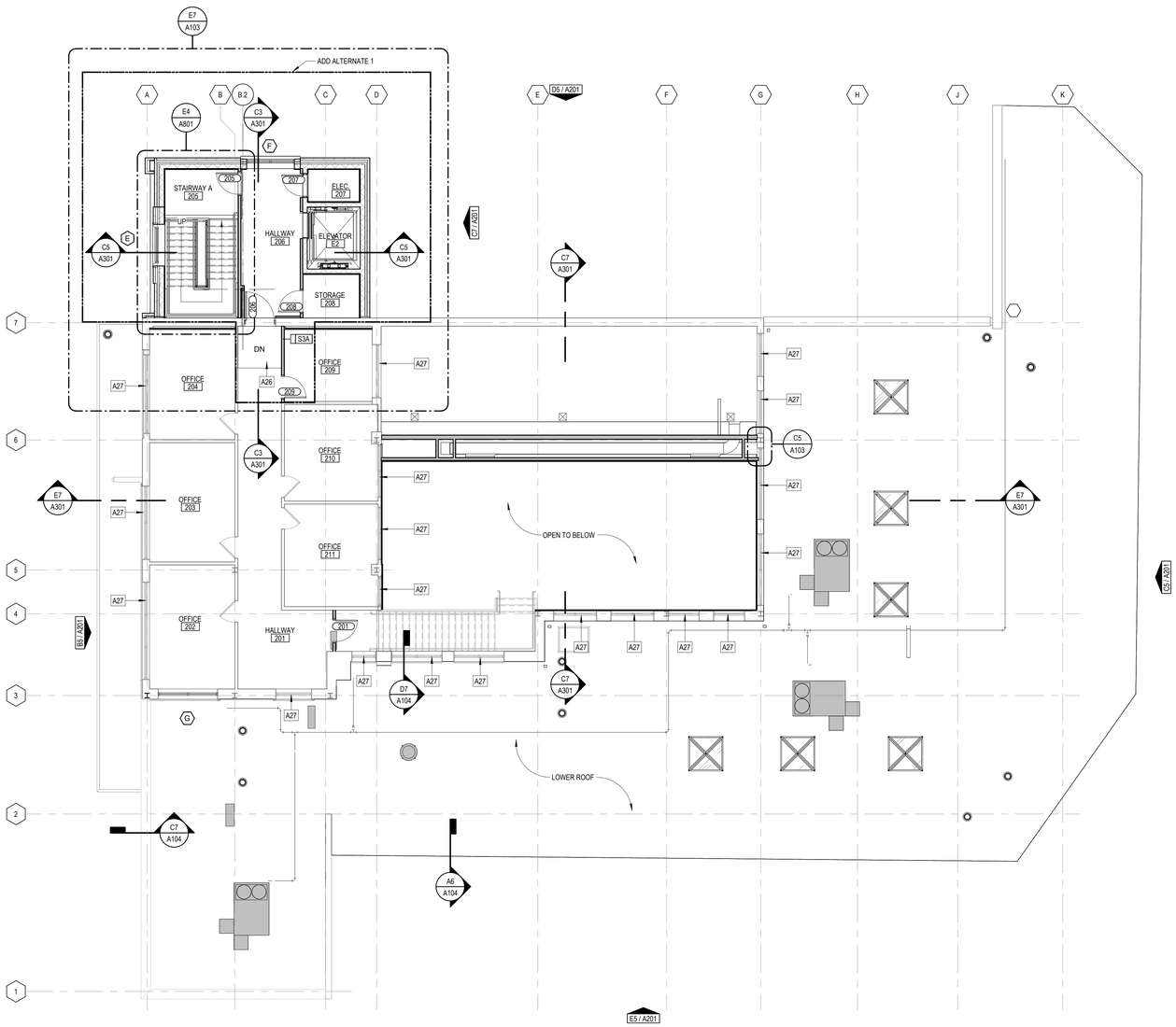
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

BASEMENT AND FIRST FLOOR PLANS
A101

7/24/2026 11:32:04 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revo 511 S Washington - ARCH.rvt
BASEMENT AND FIRST FLOOR PLANS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AUA ARCHITECTURE P.C. AND ITS CONSULTANTS AND IS PROTECTED BY COPYRIGHT LAWS AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THEREIN.



SECOND FLOOR PLAN

1/8" = 1'-0"

GENERAL NOTES

1. DO NOT SCALE DRAWINGS.
2. FINISH FLOOR ELEVATION = 100' - 0". IF APPLICABLE, REFER TO CIVIL DRAWINGS FOR SITE DATUM ELEVATION EQUIVALENT.
3. EXISTING BUILDING CONDITIONS BASED ON OWNER PROVIDED DRAWINGS AND LIMITED FIELD VERIFICATION. VERIFY EXACT CONDITIONS IN FIELD. SHOULD DISCREPANCIES OCCUR, NOTIFY ARCHITECT FOR CLARIFICATIONS.
4. BEGINNING WORK INDICATES THAT THE CONTRACTOR HAS ACCEPTED AND VERIFIED EXISTING CONDITIONS.
5. REFER TO CODE COMPLIANCE DRAWING(S) FOR LOCATIONS OF RATED ASSEMBLIES AND CODE SUMMARY.
6. ABBREVIATIONS, TYPICAL MOUNTING DIMENSIONS, AND ANNOTATION SYMBOLOGY ARE SHOWN ON GENERAL INFORMATION DRAWINGS.
7. WALL DIMENSIONS ARE TO FACE OF MASONRY, FACE OF CONCRETE, FACE OF STUDS, COLUMN CENTERLINE AS SHOWN OR EXISTING CONSTRUCTION UNLESS OTHERWISE NOTED.
8. ALL DIMENSIONS ARE PERPENDICULAR AND PARALLEL, UNLESS NOTED OTHERWISE.
9. PATCH ALL DISTURBED SURFACES WITH MATERIALS TO MATCH ADJACENT SURFACE CONSTRUCTION.
10. PROVIDE APPROVED SMOKE/FIRESTOPPING ASSEMBLIES AT ALL MECHANICAL AND ELECTRICAL PENETRATIONS THROUGH FIRE RATED AND SMOKE RESISTANT PARTITIONS IDENTIFIED ON CODE COMPLIANCE DRAWINGS.
11. OWNER FURNISHED EQUIPMENT IS SHOWN LIGHT DASHED FOR REFERENCE ONLY. REFER TO EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION.
12. REFER TO INTERIORS FOR FINISHES INCLUDING WALL PROTECTION ITEMS.

EXISTING TO REMAIN

INTERIOR PARTITION GENERAL NOTES

EXISTING WALL CONSTRUCTION

NEW STUD WALL CONSTRUCTION

NEW MASONRY WALL CONSTRUCTION

1. CONSTRUCT ALL WALLS TIGHT TO DECK ABOVE AND EXTEND INTO DECK FLUTES AND WEBS OF STEEL MEMBERS UNLESS OTHERWISE NOTED.
2. PROVIDE DEFLECTION TRACK AT THE TOP OF ALL INTERIOR NON-BEARING METAL STUD WALLS CAPABLE OF ACCOMMODATING 1" ROOF/FLOOR DEFLECTION. REFER TO DETAILS A501 FOR HEAD OF WALL CONDITION.
3. REFER TO CODE COMPLIANCE PLAN FOR RATED WALL LOCATIONS. FIRE RATED AND SMOKE RESISTANT ASSEMBLIES SHALL BE CONTINUOUS, WITH OTHER PARTITIONS ABUTTING THEM.
4. PROVIDE FIRESTOPPING/ SMOKE SEALANT AT ALL PENETRATIONS THROUGH FIRE RATED AND SMOKE RESISTANT ASSEMBLIES, CORRIDORS, AND FLOORS WITH OCCUPIABLE SPACES ABOVE AND BELOW.
5. PROVIDE ACOUSTICAL SEALANT AT ALL WALLS WITH ACOUSTICAL INSULATION.
6. PROVIDE 5/8" WATER RESISTANT GYPSUM WALLBOARD AT ALL WALLS OF TOILET ROOMS, WALLS RECEIVING TILE, AND WALLS BEHIND AND ADJACENT TO SINKS.
7. PROVIDE 5/8 TILE BACKER AT ALL WALLS OF SHOWER ENCLOSURES.
8. REFER TO STRUCTURAL DRAWINGS FOR MASONRY REINFORCING AND GROUTING.
9. PROVIDE BULLNOSE CONCRETE MASONRY UNITS AT EXPOSED SILLS AND AT ALL INTERIOR EXPOSED VERTICAL CORNERS, INCLUDING WINDOW AND DOOR JAMBS.
10. ALL WALLS ARE TYPE S3B UNLESS NOTED OTHERWISE.

INTERIOR PARTITION TAG LEGEND

CORE MATERIAL
S - STEEL STUDS
M - MASONRY
H - CH / SHAFTWALL

CORE SIZE (NOMINAL)

S6A

ACOUSTICAL INSULATION
PROVIDE ACOUSTICAL INSULATION AT TAGGED LOCATIONS

PARTITION TYPE SUFFIX
REFER TO SCHEDULE BELOW

	S	M	H
0	7/8"		
1	1 5/8"		2 1/2"
2	2 1/2"		
3	3 5/8"		
4	4"	4"	4"
5			
6	6"	6"	6"
7			
8	8" CFMF	8"	
9			
10		10"	
11			
12		12"	

INTERIOR PARTITION TYPE SUFFIXES

A	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK (OR HARD CEILING WHERE IT OCCURS)
B	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
C	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TAGGED SIDE TO DECK AND OTHER SIDE TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
D	5/8" GYPSUM BOARD ON ROOM SIDE ONLY; EXTEND TO DECK
E	5/8" GYPSUM BOARD ON ROOM SIDE ONLY; EXTEND TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
F1	(1) LAYER 5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK ABOVE; 1 HR RATED UL DESIGN #U465
F2	(2) LAYERS 5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK ABOVE; 2 HR RATED UL DESIGN #U419
H1	(1) LAYER 5/8" GYPSUM BOARD ON ROOM SIDE, 1" SHAFT LINER TO DECK ABOVE ON OTHER SIDE; 1 HR RATED UL DESIGN #U415-A

KEYNOTES

NUMBER	NOTE
A26	PROVIDE CONCRETE COMPOUND TO FEATHER FLOOR TO MEET NEW LOBBY ELEVATION.
A27	REPLACE GASKETS AT EXISTING STOREFRONT AND RE-CAULK TO THE WALL.

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

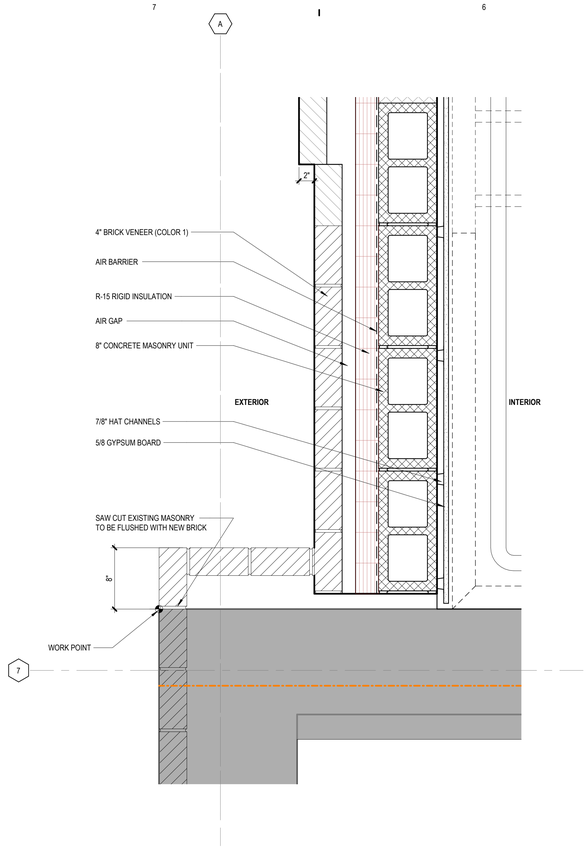
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

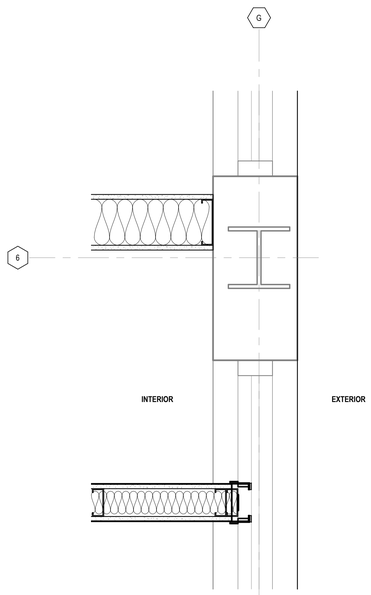
SECOND FLOOR PLAN
A102

7/24/2026 11:32:19 AM
Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
SECOND FLOOR PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. PROGRESSIVE AE INC. RETAINS ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



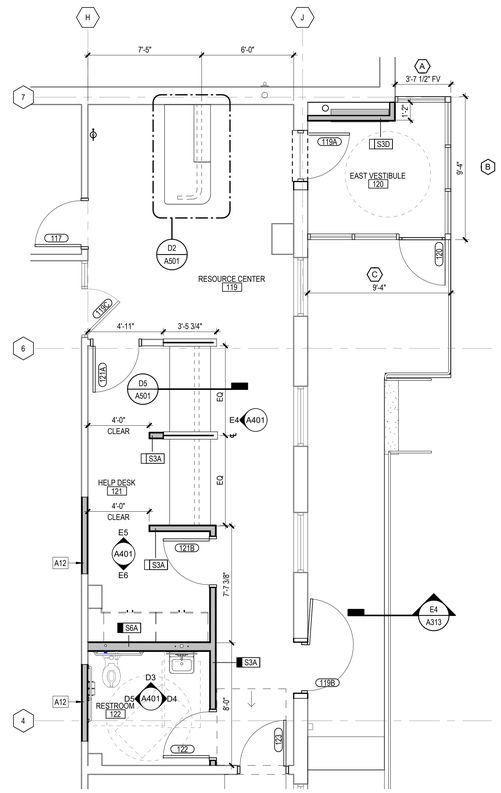
C7 EXISTING AND NEW WALL DETAIL

1 1/2" = 1'-0"



C5 PARTIAL WINDOW INFILL @ CLERESTORY PLAN

1 1/2" = 1'-0"



C3 ENLARGED PLAN

1/4" = 1'-0"

INTERIOR PARTITION GENERAL NOTES

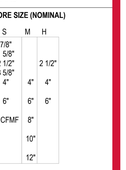
EXISTING WALL CONSTRUCTION

NEW STUD WALL CONSTRUCTION

NEW MASONRY WALL CONSTRUCTION

1. CONSTRUCT ALL WALLS TIGHT TO DECK ABOVE AND EXTEND INTO DECK FLUTES AND WEBS OF STEEL MEMBERS UNLESS OTHERWISE NOTED.
2. PROVIDE DEFLECTION TRACK AT THE TOP OF ALL INTERIOR NON-BEARING METAL STUD WALLS CAPABLE OF ACCOMMODATING 1" ROOF/FLOOR DEFLECTION. REFER TO DETAILS A501 FOR HEAD OF WALL CONDITION.
3. REFER TO CODE COMPLIANCE PLAN FOR RATED WALL LOCATIONS. FIRE RATED AND SMOKE RESISTANT ASSEMBLIES SHALL BE CONTINUOUS, WITH OTHER PARTITIONS ABUTTING THEM.
4. PROVIDE FIRESTOPPING/ SMOKE SEALANT AT ALL PENETRATIONS THROUGH FIRE RATED AND SMOKE RESISTANT ASSEMBLIES, CORRIDORS, AND FLOORS WITH OCCUPIABLE SPACES ABOVE AND BELOW.
5. PROVIDE ACOUSTICAL SEALANT AT ALL WALLS WITH ACOUSTICAL INSULATION.
6. PROVIDE 5/8" WATER RESISTANT GYPSUM WALLBOARD AT ALL WALLS OF TOILET ROOMS, WALLS RECEIVING TILE, AND WALLS BEHIND AND ADJACENT TO SINKS.
7. PROVIDE 5/8 TILE BACKER AT ALL WALLS OF SHOWER ENCLOSURES.
8. REFER TO STRUCTURAL DRAWINGS FOR MASONRY REINFORCING AND GROUTING.
9. PROVIDE BULLNOSE CONCRETE MASONRY UNITS AT EXPOSED SILLS AND AT ALL INTERIOR EXPOSED VERTICAL CORNERS, INCLUDING WINDOW AND DOOR JAMBS.
10. ALL WALLS ARE TYPE S3B UNLESS NOTED OTHERWISE.

INTERIOR PARTITION TAG LEGEND

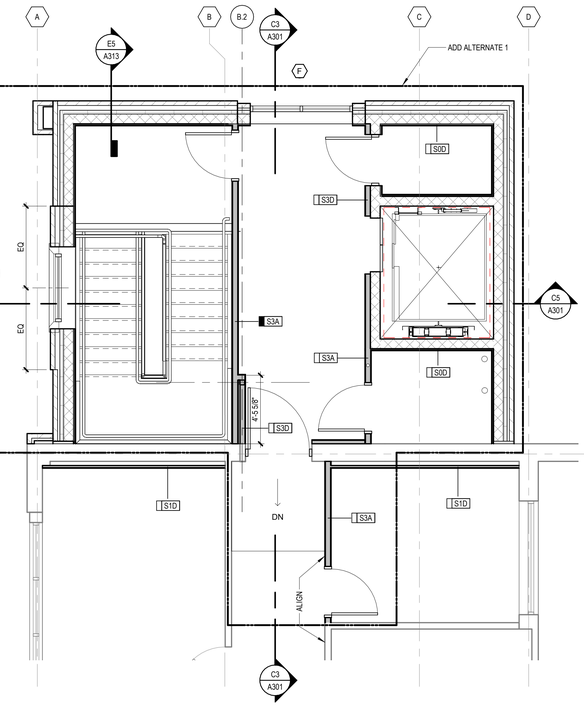


INTERIOR PARTITION TYPE SUFFIXES

A	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK (OR HARD CEILING WHERE IT OCCURS)
B	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
C	5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TAGGED SIDE TO DECK AND OTHER SIDE TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
D	5/8" GYPSUM BOARD ON ROOM SIDE ONLY; EXTEND TO DECK
E	5/8" GYPSUM BOARD ON ROOM SIDE ONLY; EXTEND TO 6" ABOVE CEILING (OR HARD CEILING WHERE IT OCCURS)
F1	(1) LAYER 5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK ABOVE; 1 HR RATED UL DESIGN #U465
F2	(2) LAYERS 5/8" GYPSUM BOARD ON BOTH SIDES; EXTEND TO DECK ABOVE; 2 HR RATED UL DESIGN #U419
H1	(1) LAYER 5/8" GYPSUM BOARD ON ROOM SIDE, 1" SHAFT LINER TO DECK ABOVE ON OTHER SIDE; 1 HR RATED UL DESIGN #U415-A

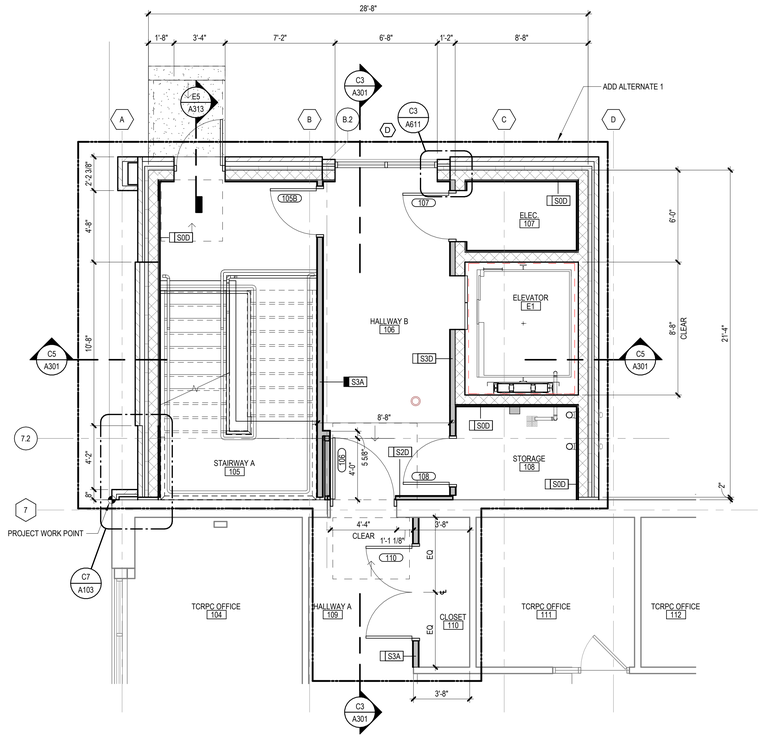
KEYNOTES

NUMBER	NOTE
A08	2'X 2' MOP SINK; REF PLUMBING DWG
A12	INFILL WINDOWS AND DOOR OPENINGS. WALL WIDTH TO MATCH EXISTING AND PROVIDE ACOUSTICAL INSULATION
A25	SURFACE MOUNTED MOP HOLDER BOBRICK B-223X24.



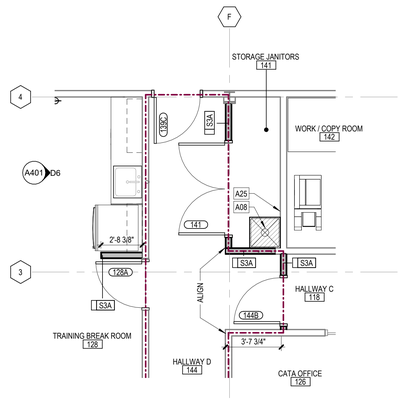
E7 ENLARGED PLAN

1/4" = 1'-0"



E5 ENLARGED PLAN

1/4" = 1'-0"



E3 ENLARGED PLAN

1/4" = 1'-0"

PROGRESSIVE COMPANIES

PROGRESSIVE AE INC.

weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY

CATA RENOVATION

511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

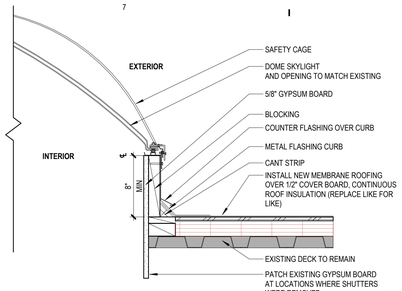
07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

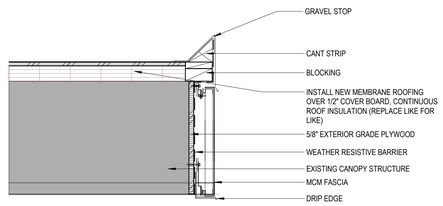
ENLARGED FLOOR PLANS

A103

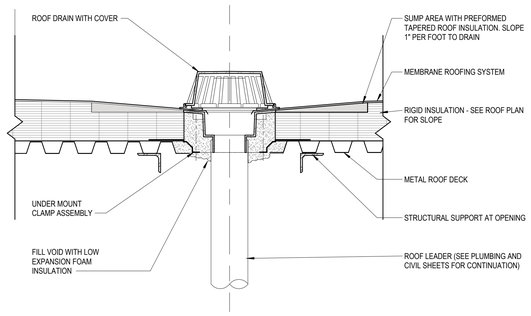
7/24/2026 1:09:37 PM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - A903.rvt
A103
ENLARGED FLOOR PLANS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE, AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE, AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. THE COPYRIGHT AND OTHER RESERVED RIGHTS INCLUDING THE COPYRIGHT THEREIN.



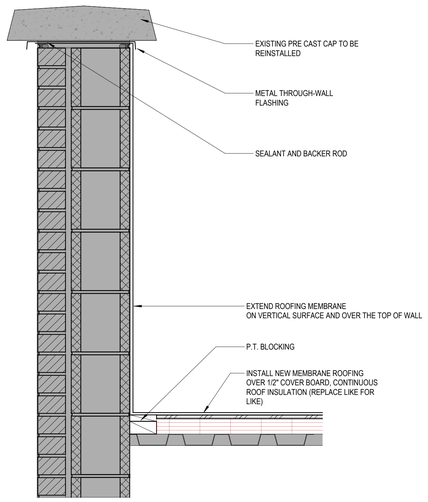
A7 SKYLIGHT CURB DETAIL
1 1/2" = 1'-0"



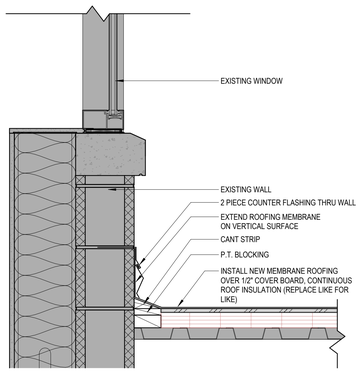
A6 SECTION AT CANOPY PARAPET
1 1/2" = 1'-0"



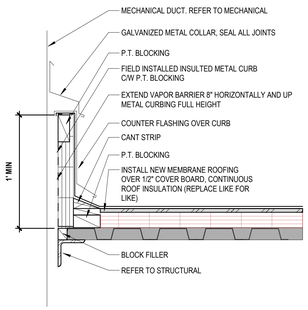
A4 ROOF DRAIN DETAIL
1 1/2" = 1'-0"



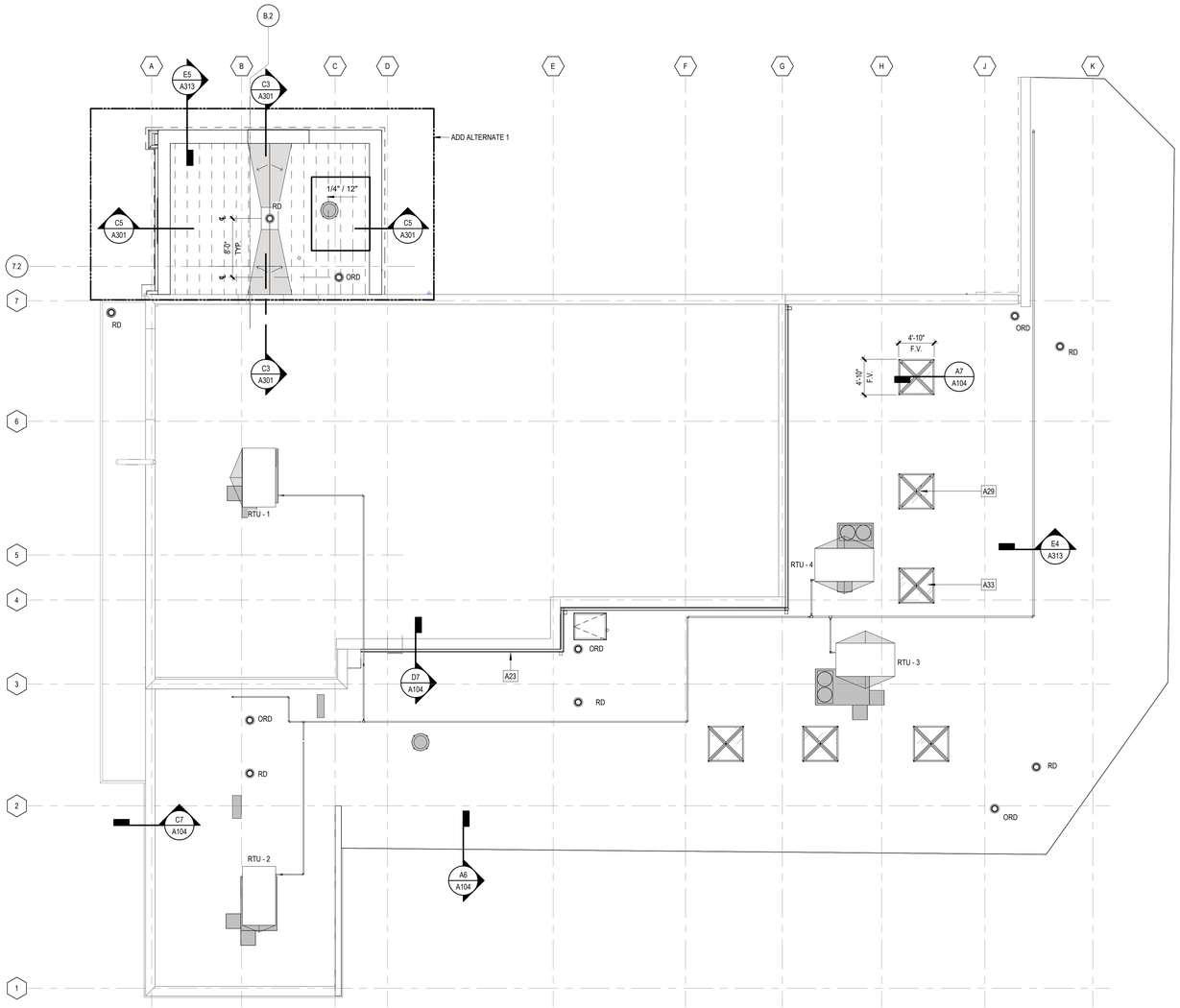
C7 EXISITNG PARAPET DETAIL
1 1/2" = 1'-0"



D7 WINDOW WALL CURB DETAIL
1 1/2" = 1'-0"



E7 DUCT CURB DETAIL
1 1/2" = 1'-0"



ROOF PLAN
1/8" = 1'-0"

ROOF LEGEND

- MEMBRANE ROOFING OVER 1/2" COVER BOARD OVER TAPERED ROOF INSULATION OVER BASE LAYER ROOF INSULATION ON FLAT ROOF DECK
- INSTALL NEW MEMBRANE ROOFING OVER 1/2" COVER BOARD, CONTINUOUS ROOF INSULATION (REPLACE LIKE FOR LIKE)
- INDICATES TAPERED INSULATION OVERLAY (SADDLE)
- EXISTING TO REMAIN
- ROOF SLOPE — INDICATES DIRECTION OF SLOPE - 1/4" PER FOOT UNLESS NOTED OTHERWISE
- ROOF DRAIN (RD) OR OVERFLOW ROOF DRAIN (ORD)
- EXISTING ROOF HATCH ACCESS

KEYNOTES

NUMBER	NOTE
A23	NEW DOWNSPOUT AND GUTTERS.
A29	NEW SKYLIGHTS TYP.
A33	INSTALL MANUAL SKYLIGHT SHADE IN THE PROPOSED RESTROOM. REF SPEC SECTION 12 2400

ADD ALTERNATE

ALT-1
2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

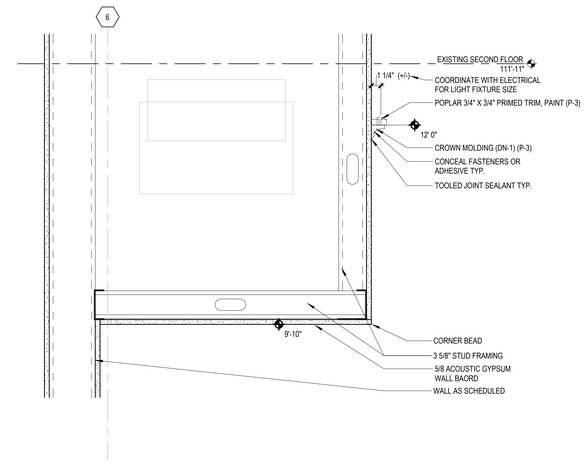
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

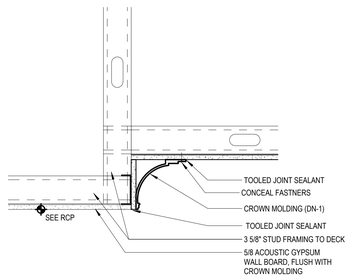
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

ROOF PLAN
A104

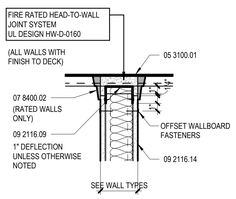
7/24/2026 11:13:43 AM
Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
JVACA
ROOF PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. ALL RIGHTS RESERVED. INCLUDING THE COPYRIGHT THERETO



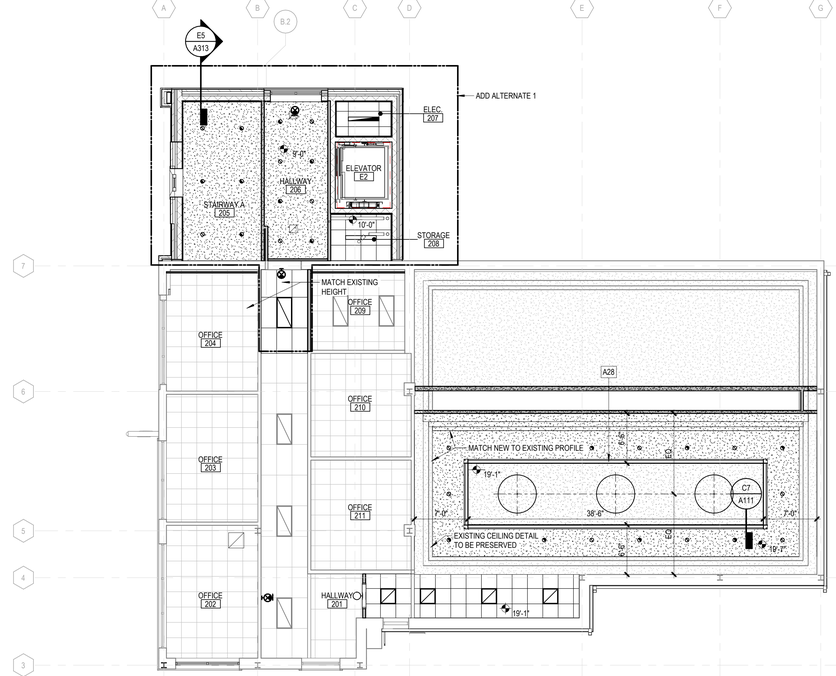
B7 CEILING DETAIL
1 1/2" = 1'-0"



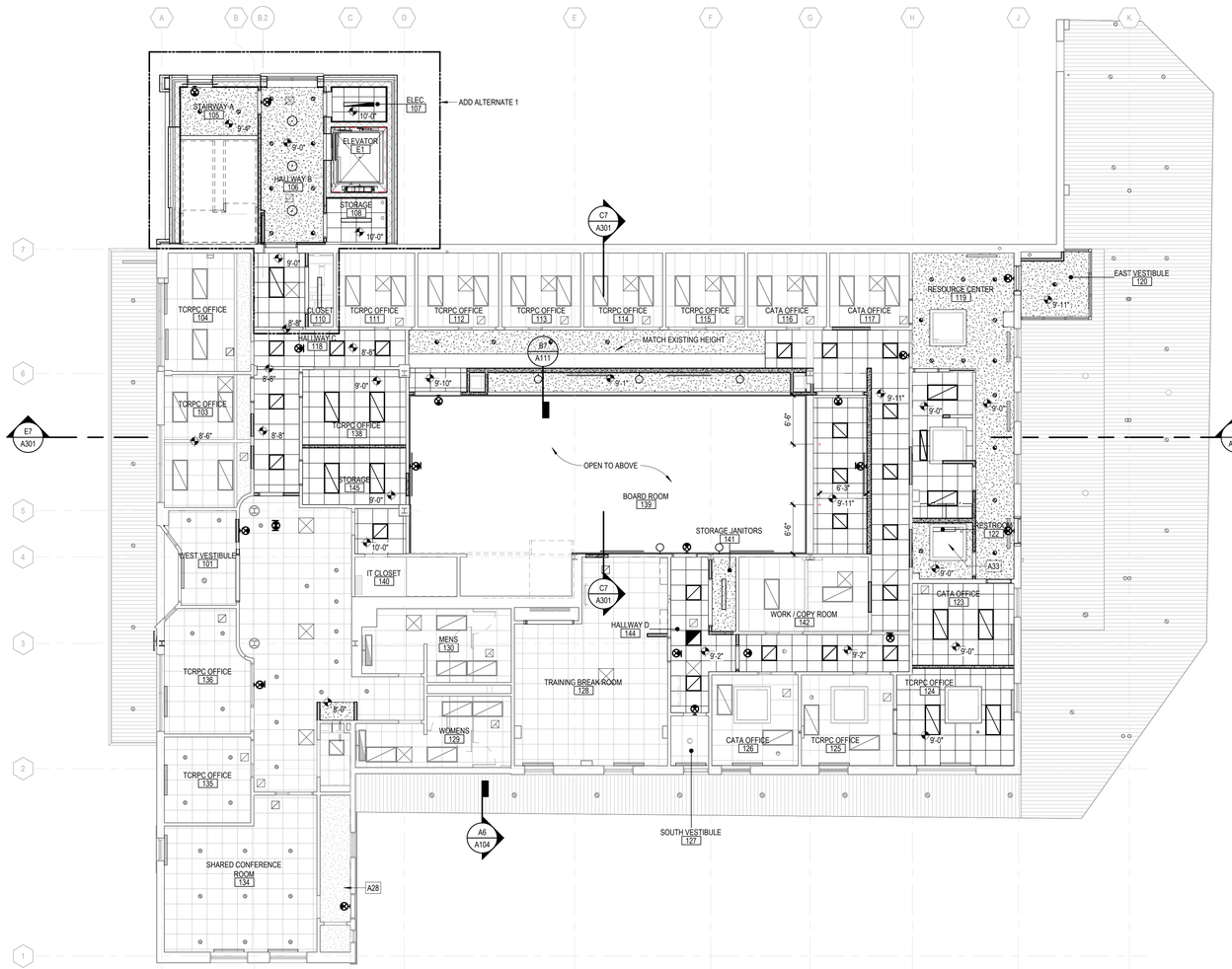
C7 CEILING DETAIL
1 1/2" = 1'-0"



D7 HEAD OF WALL DETAIL
1 1/2" = 1'-0"



SECOND FLOOR REFLECTED CEILING PLAN
1/8" = 1'-0"



FIRST FLOOR REFLECTED CEILING PLAN
1/8" = 1'-0"

REFLECTED CEILING PLAN LEGEND

1. ALL CEILING GRIDS ARE TO BE CENTERED IN ROOM / AREA OR ALIGNED WITH ADJACENT ROOM / AREA AS INDICATED, UNLESS NOTED OTHERWISE.
2. CEILING HEIGHTS INDICATED ARE DIMENSIONED FROM THE FINISHED FLOOR BELOW.
3. ALL LIGHT FIXTURES, SPRINKLER HEADS, RETURN AIR GRILLES AND SUPPLY AIR GRILLES ARE TO BE LOCATED IN THE CENTER OF THE CEILING PAD, UNLESS NOTED OTHERWISE.
4. COORDINATE MECHANICAL, ELECTRICAL AND FIRE PROTECTION TO ASSURE PROPER CLEARANCES AND LAYOUT.
5. MECHANICAL, ELECTRICAL AND FIRE PROTECTION CONTRACTORS TO PROVIDE ACCESS PANELS IN CEILINGS AS REQUIRED FOR MAINTENANCE OF EQUIPMENT. COORDINATE SIZE AND LOCATIONS OF ACCESS PANELS TO MINIMIZE QUANTITIES. CONTRACTOR IS REQUIRED TO PROVIDE LAYOUT TO ARCHITECT FOR REVIEW PRIOR TO INSTALLATION, UNLESS NOTED OTHERWISE.
6. REFER TO FINISH SCHEDULE(S) FOR CEILING AND/OR EXPOSED STRUCTURE TO BE PAINTED.

- EXPOSED
- ACOUSTIC GYPSUM BOARD
- 2X2 ACOUSTIC CEILING PANEL
- EXISTING PLASTER
- EXISTING 2X4 ACOUSTIC CEILING PANEL
- EXISTING 2X2 ACOUSTIC CEILING PANEL
- EXISTING TO REMAIN
- CJ — PLASTER OR GYPSUM WALL BOARD CONTROL JOINT
- CEILING ACCESS PANEL OR ROOF HATCH
- RECESSED ROUND LIGHT FIXTURE (EMERGENCY FIXTURES SHADED)
- 2X2 LIGHT FIXTURE
- 2X4 LIGHT FIXTURE
- LINEAR LIGHT FIXTURE
- HVAC SUPPLY GRILLE
- HVAC RETURN GRILLE
- FIRE EXIT SIGN LOCATION
- (S) SPEAKER LOCATION (SEE ELECTRICAL COMMUNICATIONS)
- (C) CAMERA LOCATION (SEE ELECTRICAL COMMUNICATIONS)

ADD ALTERNATE

ALT-1
2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE

KEYNOTES

NUMBER	NOTE
05 3100.01	STEEL ROOF DECK
07 8400.02	FIRESTOPPING BLANKET
09 2116.09	DEFLECTION TRACK
09 2116.14	5/8" GYPSUM WALLBOARD
A28	PATCH AND REPAINT EXISTING CEILING IN THIS AREA.
A33	INSTALL MANUAL SKYLIGHT SHADE IN THE PROPOSED RESTROOM. REF SPEC SECTION 12 2400

PROGRESSIVE AE
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

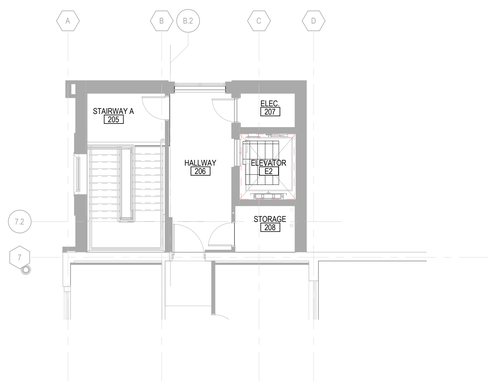
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

REFLECTED CEILING PLANS
A111

7/24/2026 11:36:10 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
A111
REFLECTED CEILING PLANS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. WHETHER THE PROJECT FOR WHICH IT WAS PREPARED IS EXECUTED OR NOT. ALL COPYRIGHT AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO



SECOND FLOOR

1/8" = 1'-0"

FIRST FLOOR PLAN

1/8" = 1'-0"

ROOM FINISH SCHEDULE

ROOM FINISH SCHEDULE	ROOM		FLOORS		WALLS				CEILING	CASEWORK			
Level	NO.	NAME	FINISH	BASE	NORTH	EAST	SOUTH	WEST	FINISH	CABINETS	COUNTER	REMARKS	Key Comment
FIRST FLOOR													
FIRST FLOOR	105	STAIRWAY A	CPT-1	B-2	P-1	P-1	P-1	P-1	P-1	-	-		
FIRST FLOOR	106	HALLWAY B	CPT-1	B-2	P-5	P-5	P-5	P-5	P-1	-	-		
FIRST FLOOR	107	ELEC	CONC-1	B-1	P-1	P-1	P-1	P-1	-	-	-		
FIRST FLOOR	108	STORAGE	CONC-1	B-1	P-1	P-1	P-1	P-1	-	-	-		
FIRST FLOOR	109	HALLWAY A	CPT-1	B-2	P-1	P-1	P-1	P-1	-	-	-		
FIRST FLOOR	110	CLOSET	CPT-1	B-1	P-1	P-1	P-1	P-1	-	-	-		
FIRST FLOOR	117	CATA OFFICE	CPT-2	B-1	P-2	P-2	P-2	P-2	-	-	-		
FIRST FLOOR	118	HALLWAY C	CPT-1	B-2	P-1	P-1	P-1	P-1	-	-	-		
FIRST FLOOR	119	RESOURCE CENTER	CONC-1	B-1	P-2	P-2, IP-2	P-2, IP-2	P-5, P-2, IP-2	P-1	PL-2	SS-1		
FIRST FLOOR	120	EAST VESTIBULE	CONC-1	B-1	P-1	-	-	-	P-1	-	-		
FIRST FLOOR	121	HELP DESK	CPT-2	B-1	P-2	P-2	P-2	P-5	-	PL-1, PL-2	SS-1, SS-2		
FIRST FLOOR	122	RESTROOM	CONC-1	B-1	IP-2	IP-2	IP-2	IP-2	-	-	-		
FIRST FLOOR	123	CATA OFFICE	CPT-2	B-1	P-2	P-2	P-2	P-2	-	-	-		
FIRST FLOOR	124	TCRPC OFFICE	CPT-2	B-1	P-2	P-2	P-2	P-2	-	-	-		
FIRST FLOOR	125	TCRPC OFFICE	CPT-2	B-1	P-2	P-2	P-2	P-2	-	-	-		
FIRST FLOOR	126	CATA OFFICE	CPT-2	B-1	P-1	P-2	P-2	P-2	-	-	-		
FIRST FLOOR	127	SOUTH VESTIBULE	WOM-1	B-2	P-1	P-1	P-1	P-1	-	-	-		
FIRST FLOOR	128	TRAINING BREAK ROOM	LVT-1	B-2	P-1	P-1	P-1	P-1	-	PL-1, PL-2	SS-1	2	
FIRST FLOOR	132	STAIRS	WOC-1, EXIST	B-3	P-1	P-1	P-1	P-1	P-1	-	-	1	
FIRST FLOOR	139	BOARD ROOM	CPT-3 EXIST	B-2	P-2, P-3	P-2, P-3	P-2, P-3	P-2, P-3	P-2	-	-		
FIRST FLOOR	141	STORAGE JANITORS	CONC-1	B-1	P-1	P-1, IP-1	P-1, IP-1	P-1	-	-	-		
FIRST FLOOR	144	HALLWAY D	CPT-1	B-2	P-1	P-1	P-1	P-1	-	-	-		
FIRST FLOOR	145	STORAGE	CPT-1	B-2	P-1	P-1	P-1	P-1	-	-	-		
FIRST FLOOR	E1	ELEVATOR	CPT-1	-	-	-	-	-	-	-	-		
SECOND FLOOR													
SECOND FLOOR	206	HALLWAY	CPT-1	B-2	P-1	P-1	P-1	P-1	-	-	-		
SECOND FLOOR	208	STORAGE	CONC-1	B-1	P-1	P-1	P-1	P-1	-	-	-		

INTERIOR FINISH MATERIALS

MARK	TYPE	MANUFACTURER	STYLE / PATTERN / FINISH	SIZE	COLOR	MATERIAL NOTES	REPRESENTATIVE
06 0660							
PF-1	PLASTIC FABRICATIONS	3 FORM	SIERRA	48" X96"	SIERRA		
06 2000							
DM-1	DECORATIVE MOLDING	MOLDINGS 1	CUSTOM S4S, UNSFINISHED	3/8" X 6-1/2"	PRIMED	PAINTED P-2	
DM-2	DECORATIVE MOLDING	MOLDINGS 1	8039 WOOD	13/16 X 1-3/4"	PRIMED	PAINTED P-3	
06 4100							
DP-1	DRAWER PULL	MOCKETT	DP3D	8"	17SS SATIN NICKEL		
PL-1	PLASTIC LAMINATE	FORMICA	NATURAL GRAIN	-	PLANKED URBAN OAK 9312-NG		
PL-2	PLASTIC LAMINATE	FORMICA	NATURAL GRAIN	-	GRAPHITE 837-NG		
08 8856.11							
WF-1	WINDOW FILM	CLEAR ARMOR	BR ONE WAY BULLET RESISTANT LAMINATE		-		
09 3000							
CONC-1	SEALED CONCRETE	-	-	-	-		
GRT-1	GROUT	MAPEI	-	-	5010 BLACK		
T-1	CERAMIC TILE	BEAVER TILE & STONE	RONDINE SOHO - GLOSS	2 1/4" X 9 1/2"	EMERALD	GRT-1	
T-2	CERAMIC TILE	BEAVER TILE & STONE	RONDINE NOHO - MATTE	2 1/4" X 9 1/2"	EMERALD	GRT-1	
09 5100							
ACP-1	ACOUSTIC CEILING PANELS	ARMSTRONG	ULTIMA TEGULAR LAYIN WITH SUPRAFINE XL 9/16" GRID	-			
09 6500							
B-1	RESILIENT BASE	ROPPE	PINNACLE RUBBER BASE	4 1/2"	147 LIGHT BROWN		
B-2	RESILIENT BASE	ROPPE	CONTOURS PROFILE WALL BASE #55	5 1/2"	147 LIGHT BROWN		
B-3	BASE	-	MATCH EXISTING, USE ATTAIC STOCK IF AVAILABLE	-	-		
RT-1	RESILIENT TILE	SHAW	TERRAIN II 20MIL 04541	6" X 48"	PRIME 00240		
SN-1	VINYL STAIR NOSING	TARKETT	SLN- 63 - A, MATERIAL 44999201140	-	63 BURNT UMBER B		
09 6813							
CPT-1	CARPET TILE	INTERFACE	EE711	24" X 24"	EARTH 103463	MONOLITHIC	
CPT-2	CARPET TILE	INTERFACE	THREAD LIGHTLY	24" X 24"	108540 FOSSIL	MONOLITHIC	
WOC-1	WALK OFF CARPET	SHAW	SWIFT 5T414	24" X 24"	TROT	MONOLITHIC	
09 6816							
CPT-3	BROADLOOM	SHAW	GROUNDED ULT 5A190	12'W	SAMARA 38803	-	
09 9123							
P-1	PAINT	SHERWIN WILLIAMS	-	-	SW 7646 FIRST STAR		
P-2	PAINT	SHERWIN WILLIAMS	-	-	SW 7015 REPOSE GRAY		
P-3	PAINT	SHERWIN WILLIAMS	-	-	SW 7622 HOMBURG GRAY		
P-4	PAINT	SHERWIN WILLIAMS	-	-	SW 7048 URBANE BRONZE		
P-5	PAINT	SHERWIN WILLIAMS	-	-	SW 9635 STARGAZER		
P-6	PAINT	SHERWIN WILLIAMS	-	-	SW 6258 TRICORN BLACK		
10 2600							
CG-1	CORNER GUARD	INPRO	150 SERIES CORNER GUARD	3" WING FULL HEIGHT	TAUPE 0113		
CG-2	CORNER GUARD	INPRO	150 SERIES D HIGH IMPACT END WALL PROTECTOR	3" WING FULL HEIGHT	TAUPE 0113		
IP-1	IMPACT PROTECTION PANEL	MARLITE	FIBERGLASS REINFORCED PANELS	4'X 10'	DARK GRAY		
IP-2	IMPACT PROTECTION PANEL	INPRO	PALLADIUM RIGID VINYL SHEET	.04, 4', ROLL	TAUPE 0113		
12 3600							
SDS-1	SOLD SURFACE	CORIAN	-	1/2"	WILLOW		
SDS-2	SOLD SURFACE	CORIAN	-	1/2"	DEEP MINK		

FINISH GENERAL NOTES

1. GENERAL
   A. REPAIR ALL EXISTING MATERIALS SCHEDULED TO REMAIN, USING OWNER'S ATTIC STOCK. IF NO ATTIC STOCK EXISTS, USE NEW MATERIAL TO MATCH EXISTING.
2. FLOORING:
   A. INSTALL FLOORING MATERIAL IN DIRECTION INDICATED ON FINISH PLAN. UNLESS NOTED OTHERWISE ON INTERIOR FINISH MATERIALS
   B. PROVIDE A CEMENTITIOUS COMPOUND BETWEEN FLOOR MATERIALS OF DIFFERENT THICKNESS. FEATHER FLOOR FOR SMOOTH TRANSITION.
3. USE RUBBER TRANSITION STRIPS AT CARPET TERMINATING TO CONCRETE AND TERRAZZO.
4. BASE:
   A. TYPICAL BASE PROFILE AT CARPET SHALL BE STRAIGHT.
5. WALLS:
   A. PAINT FIRE EXTINGUISHER CABINETS TO MATCH ADJACENT WALL COLOR, UNLESS STAINLESS STEEL OR BRUSHED ALUMINUM FINISH .
   B. REPAINT ENTIRE WALL SECTION WHERE DEMOLITION OCCURS TO PROVIDE THE BEST FINISH LOOK. COLOR TO MATCH ADJACENT WALL.
   C. HIGH IMPACT WALL PROTECTION TO 51" A.F.F. U.N.O WITH COLOR MATCHED CAULK EDGE
   D. BULKHEADS:
   E. PAINT BULKHEAD UNDERSIDES TO MATCH ADJACENT WALL COLOR.
   F. PAINT BULKHEAD FACE TO MATCH ADJACENT WALL COLOR.
6. DOORS AND FRAMES:
   A. PAINT ALL INTERIOR HOLLOW METAL DOOR FRAMES. TO MATCH ADJACENT WALL COLOR
   B. PAINT ALL INTERIOR HOLLOW METAL DOORS. COLOR TO BE P-4.
   C. PAINT EXTERIOR HOLLOW METAL DOORS.
      a. INTERIOR COLOR TO MATCH EXISTING WINDOW FINISH.
      b. EXTERIOR COLOR TO MATCH EXISTING WINDOW FINISH.
   D. FRAME COLOR TRANSITION TO TAKE PLACE AT INSIDE CORNER OF STOP ON DOOR SIDE.
7. DIFFUSERS AND COVERS:
   A. PAINT WALL DIFFUSER AND AIR GRILLE COVERS TO MATCH ADJACENT WALL.
8. WINDOW TRIM:
   A. PAINT WOOD WINDOW TRIM TO MATCH ADJACENT WALL

INTERIOR FINISH PLAN

- FLOORING PATTERN DIRECTION
- W-3 — WALL FINISH EXTENTS
- FLOOR FINISH EXTENTS
- WALL PROTECTION TO 51 A.F.F.
- WALL PROTECTION - FLOOR TO CEILING

INTERIOR FINISH REMARKS

1. WOC-1 AT LANDING, EXISTING TREADS AND RISERS TO REMAIN.
2. UPPER CABINETS AND SHELVES PL-1 LOWER CABINETS PL-2

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

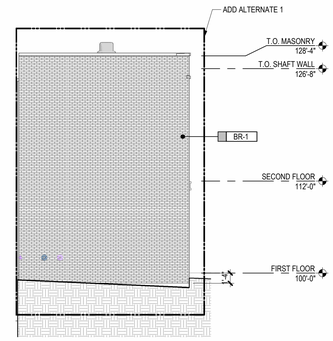
ISSUANCE

07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

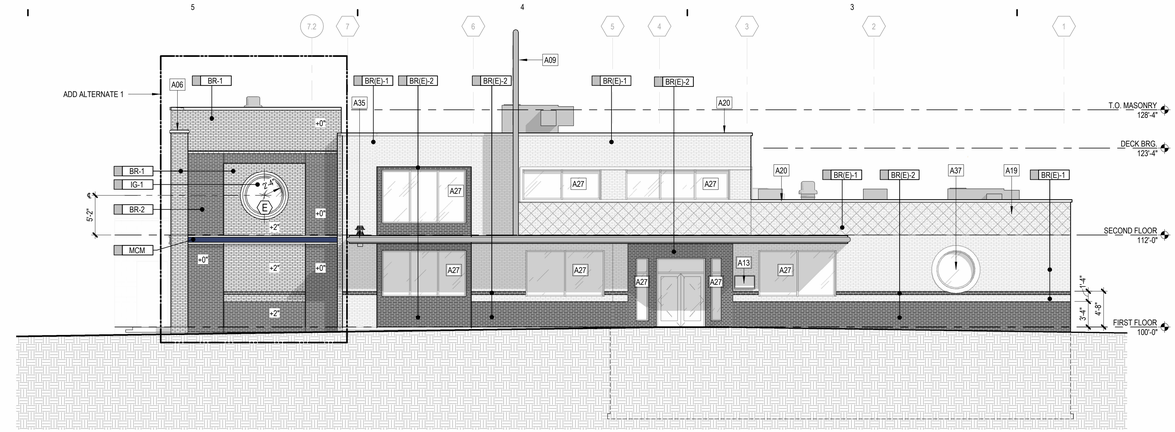
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
A.MARLATT
CHECKED BY
J. COATS

FINISH PLAN
A121

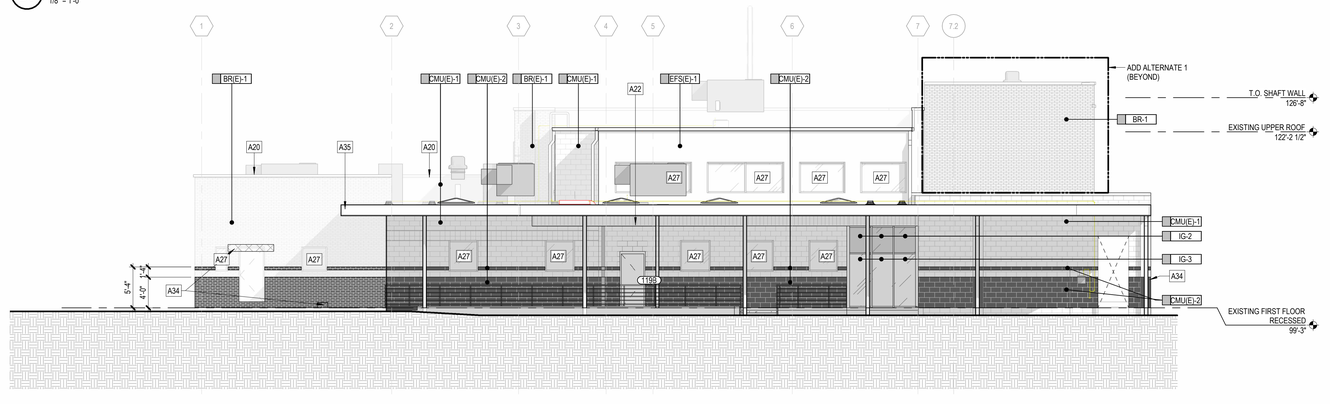
7/24/2026 11:23:0 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
JS_ATLAS
FINISH PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS OTHERWISE RESERVED, INCLUDING THE COPYRIGHT THERETO.



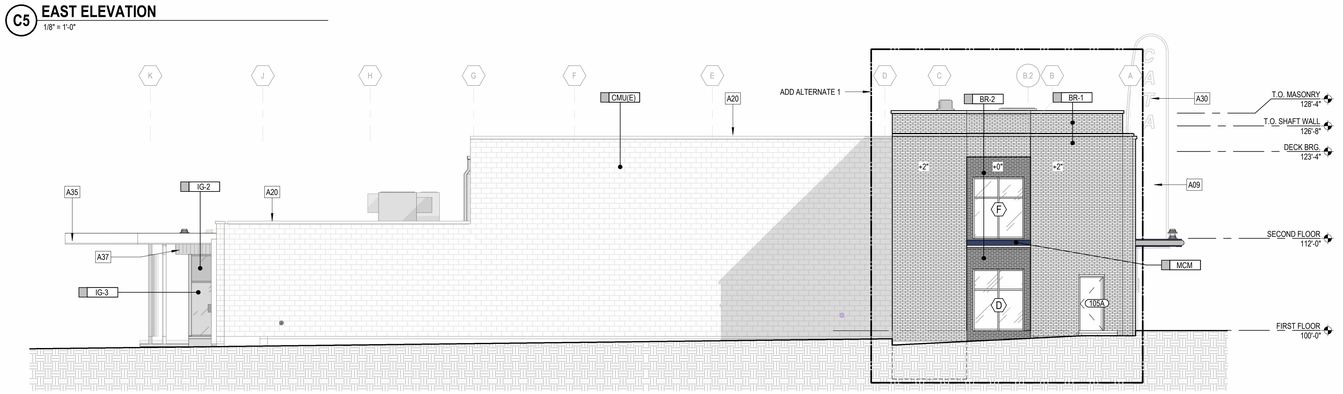
C7 PARTIAL EAST ELEVATION
1/8" = 1'-0"



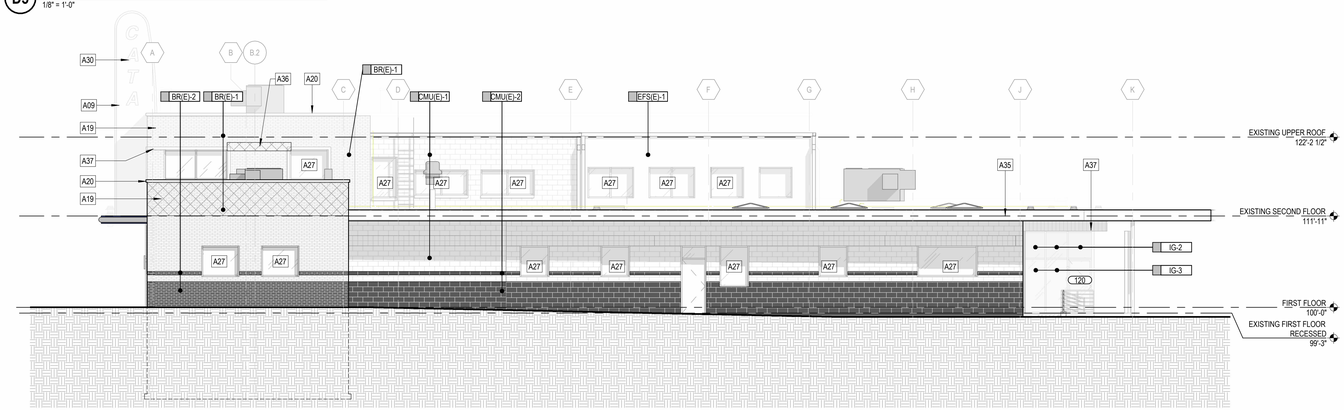
B5 WEST ELEVATION
1/8" = 1'-0"



C5 EAST ELEVATION
1/8" = 1'-0"



D5 NORTH ELEVATION
1/8" = 1'-0"



E5 SOUTH ELEVATION
1/8" = 1'-0"

EXTERIOR MATERIALS LEGEND

(NEW) EXTERIOR MATERIALS

BR-1 - PAINTED EXTERIOR WALL (COLOR 1, OWNER TO SELECT)

BR-2 - PAINTED EXTERIOR WALL (COLOR 2, OWNER TO SELECT)

IG-1 - INSULATED GLAZING

IG-2 - INSULATED SPANDREL GLAZING

IG-3 - INSULATED TEMPERED GLAZING

MCM - MCM PANEL (COLOR 4, OWNER TO SELECT)

CJ - CONTROL JOINT / MOVEMENT JOINT

(EXISTING) EXTERIOR MATERIALS

CMU(E)1 - EXISTING CONCRETE MASONRY UNIT TO REMAIN (COLOR 1, OWNER TO SELECT)

CMU(E)2 - EXISTING CONCRETE MASONRY UNIT TO REMAIN (COLOR 2, OWNER TO SELECT)

CMU(E) - EXISTING CONCRETE MASONRY UNIT TO REMAIN

BR-E1 - EXISTING CONCRETE MASONRY UNIT TO REMAIN (COLOR 1, OWNER TO SELECT)

BR-E2 - EXISTING CONCRETE MASONRY UNIT TO REMAIN (COLOR 2, OWNER TO SELECT)

EFS-E1 - EXISTING EFIS TO REMAIN (COLOR 1, OWNER TO SELECT)

ADD ALTERNATE

ALT-1
2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE

KEYNOTES

NUMBER	NOTE
A06	CAST STONE
A09	PREP EXISTING METAL SIGN ELEMENT FOR REPAINTING, INCLUDING REMOVAL OF RUST, LOOSE PAINT, AND SURFACE CONTAMINANTS AND REPAIR ALL JOINT SEALANT; REPAIR ANY HOLES LEFT AFTER REMOVAL OF EXISTING SIGNAGE. PRIME AND REPAINT ALL EXPOSED SURFACES
A13	TV MONITORS BY OWNER
A19	TUCK POINT EXISTING MASONRY WHERE INDICATED, INCLUDING REMOVAL OF DETERIORATED MORTAR AND RE-POINTING TO MATCH EXISTING MORTAR COLOR, PROFILE AND JOINT TOOLING.
A20	REMOVE, CLEAN AND REINSTALL ALL CAST STONE CAPS.
A22	PAINT EXISTING SOFFIT (COLOR 3 - OWNER TO SELECT)
A27	REPLACE GASKETS AT EXISTING STOREFRONT AND RE-CAULK TO THE WALL.
A30	SIGNAGE IS UNDER SEPARATE PERMIT PROVIDED BY SIGNAGE VENDOR.
A34	REMOVE AND REPLACE SPALLED OR DAMAGED MASONRY UNITS WITH NEW MASONRY UNITS TO MATCH EXISTING IN SIZE COLOR, TEXTURE, AND MORTAR JOINT PROFILE.
A35	PREP EXISTING METAL FASCIA FOR REPAINTING, INCLUDING REMOVAL OF RUST, LOOSE PAINT, AND SURFACE CONTAMINANTS. APPLY RUST-INHIBITIVE METAL PRIMER AND TWO FINISH COATS OF INDUSTRIAL ENAMEL PAINT SUITABLE FOR EXTERIOR FERROUS METAL SURFACES.
A36	INSTALL ROOF HATCH OPENER TO THE EXISTING LADDER ROOF ACCESS
A37	REMOVE AND REPLACE DAMAGED CAST STONE WINDOW SURROUND. MATCH EXISTING SHAPE, COLOR, AND TEXTURE.

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

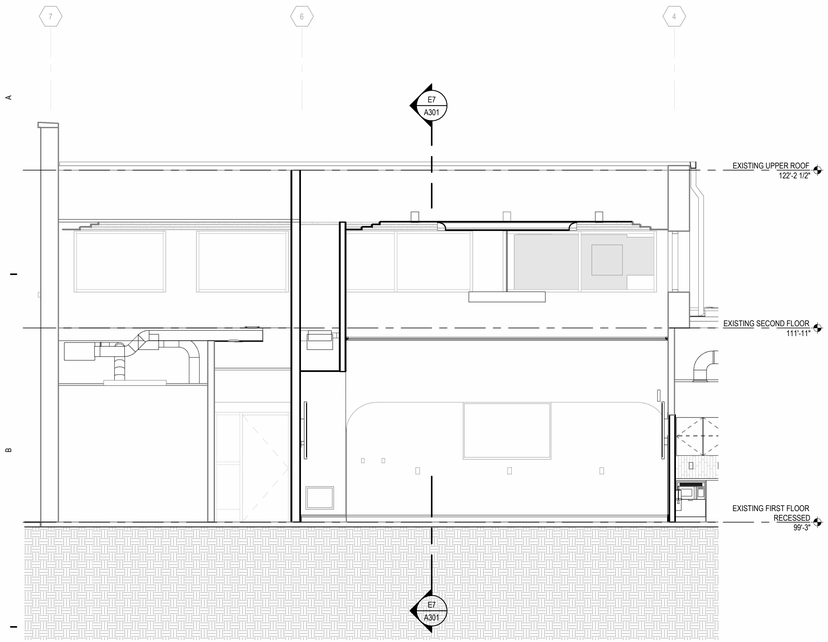
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

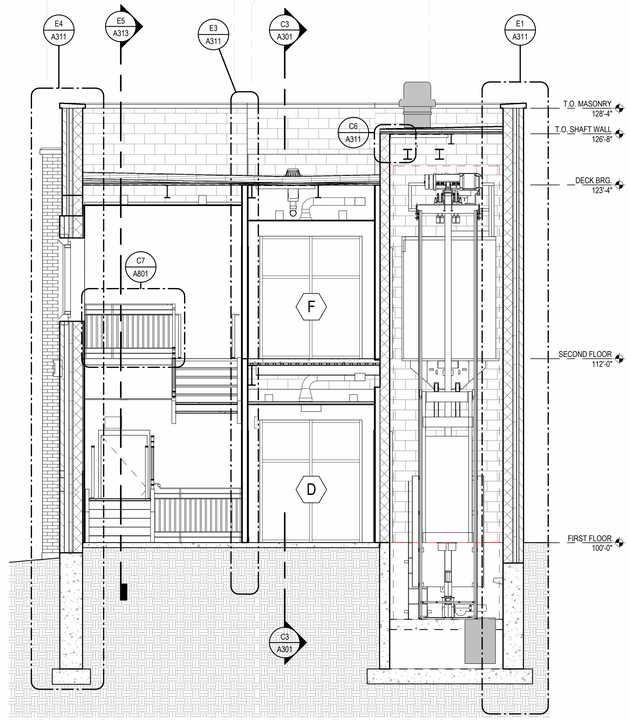
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

EXTERIOR ELEVATIONS
A201

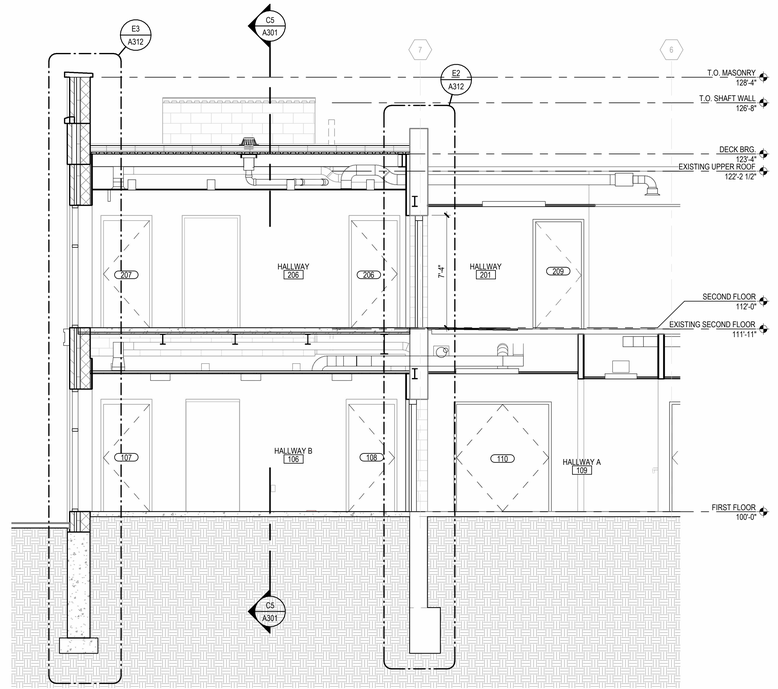
7/24/2026 2:09:11 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revit 511 S Washington - ARCH.rvt
THE DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND IS THE PROPERTY OF PROGRESSIVE AE INC. ANY REPRODUCTION OF OTHER REUSE RIGHTS, INCLUDING THE COPYRIGHT THERETO.



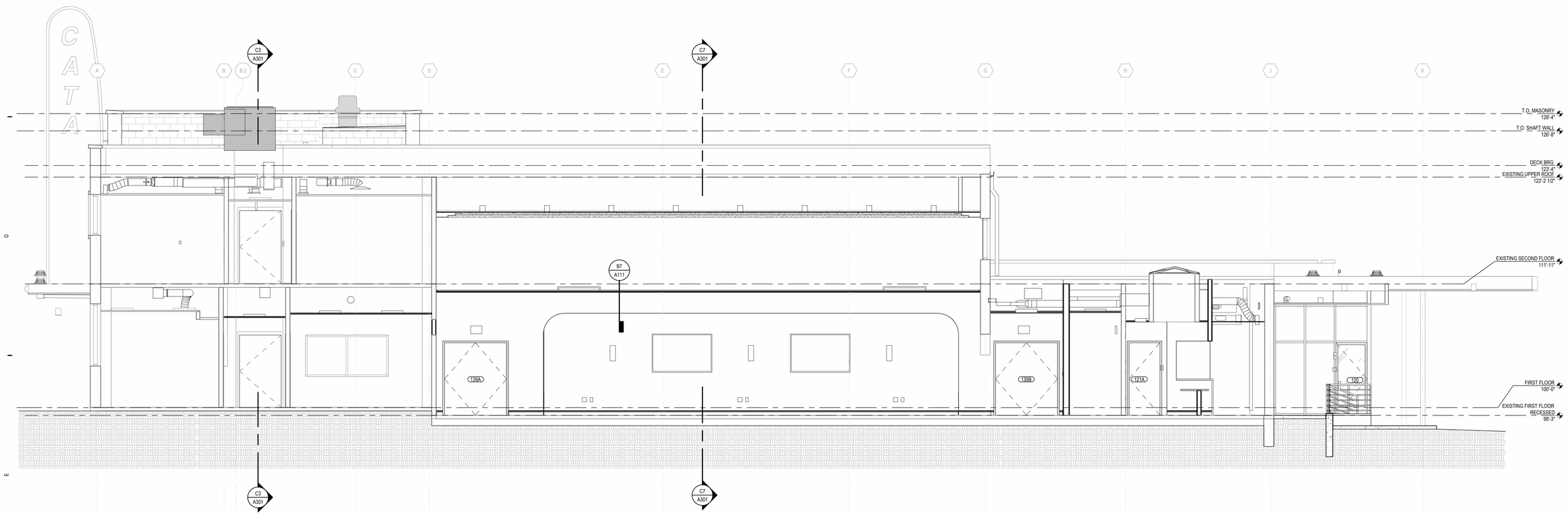
C7 **BUILDING SECTION D**
1/4" = 1'-0"



C5 **BUILDING SECTION C**
1/4" = 1'-0"



C3 **BUILDING SECTION B**
1/4" = 1'-0"



E7 **BUILDING SECTION A**
1/4" = 1'-0"

PROGRESSIVE AE
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

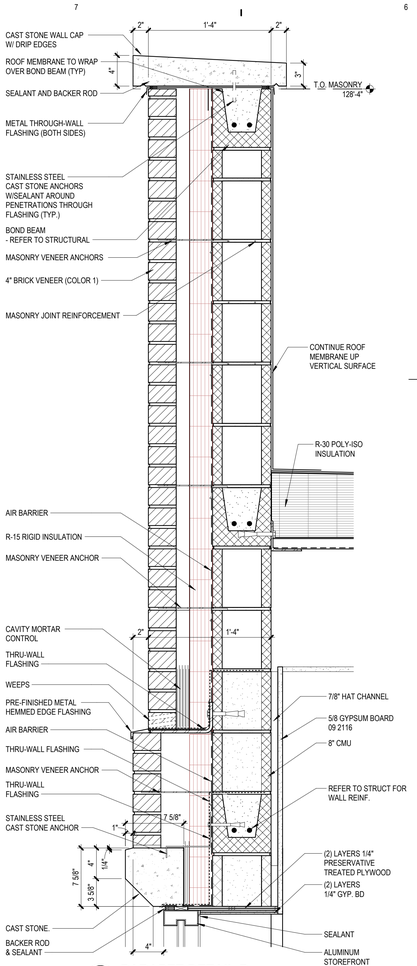
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

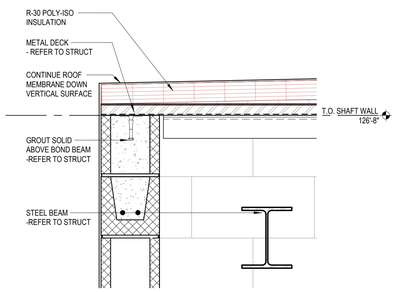
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J. CANGRO
DRAWN BY
R. VACA
CHECKED BY
J. COATS

BUILDING SECTIONS
A301

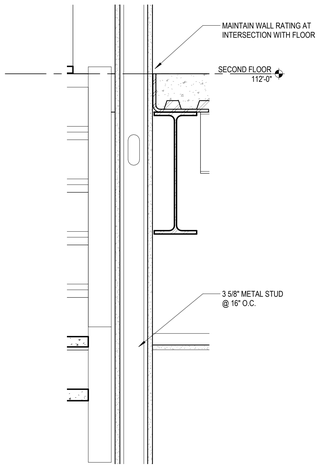
7/24/2026 2:10:45 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revit 511 S Washington - ARCH.rvt
BUILDING SECTIONS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF PROFESSIONAL SERVICE. IT IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY PURPOSE OR PROJECT OTHER THAN THE ONE SPECIFICALLY INTENDED. ALL REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PROGRESSIVE AE INC. FOR THE SPECIFIED PROJECT SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PROGRESSIVE AE INC. ALL RIGHTS RESERVED. COPYRIGHT 2026. ALL RIGHTS RESERVED. INCLUDING THE COPYRIGHT THEREIN.



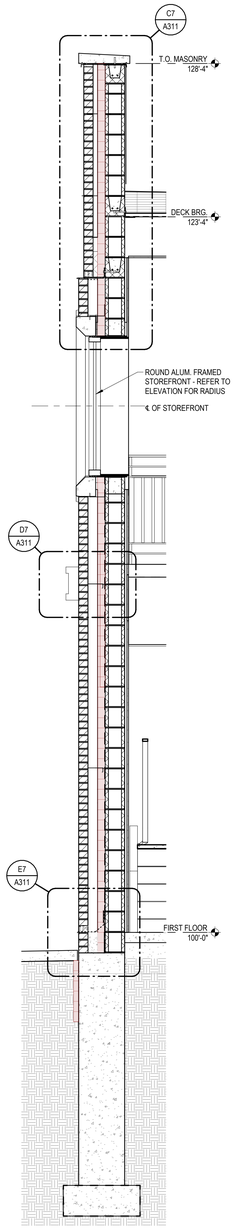
C7 PARAPET DETAIL B
1 1/2" = 1'-0"



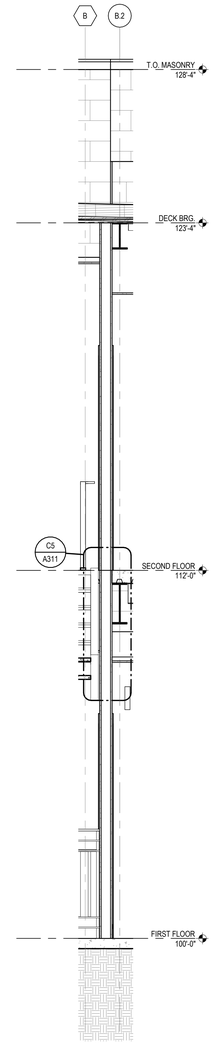
C6 SHAFT WALL ROOF DETAIL
1 1/2" = 1'-0"



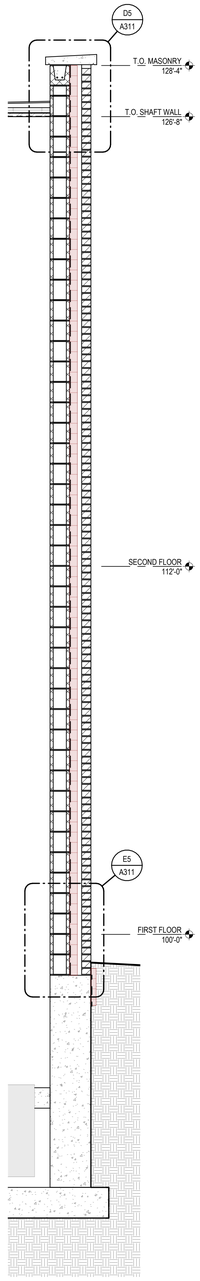
C5 DETAIL @ STAIR
1 1/2" = 1'-0"



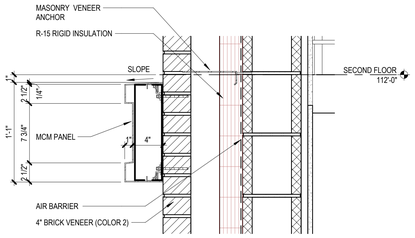
E4 WALL SECTION B
1/2" = 1'-0"



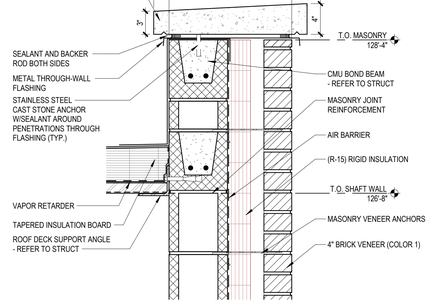
E3 WALL SECTION E
1/2" = 1'-0"



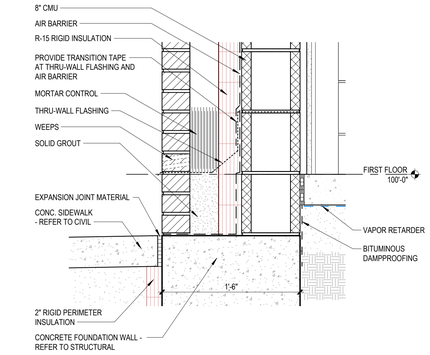
E1 WALL SECTION C
1/2" = 1'-0"



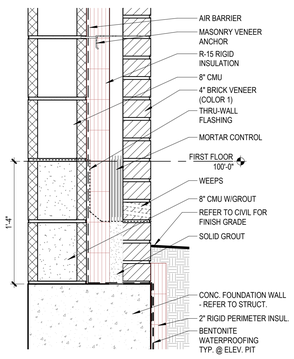
D7 PANEL DETAIL B
1 1/2" = 1'-0"



D5 PARAPET DETAIL C
1 1/2" = 1'-0"



E7 FOUNDATION DETAIL B
1 1/2" = 1'-0"



E5 FOUNDATION DETAIL C
1 1/2" = 1'-0"

7/24/2026 11:23:40 AM Autodesk Docs://7582002 3 - CATA Renovation of 511 S Washington/7582002 CATA Reno 511 S Washington - ARCH.rvt
WALL SECTIONS AND DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE. IT IS THE PROPERTY OF PROGRESSIVE AE INC. AND IS PROTECTED BY COPYRIGHT AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

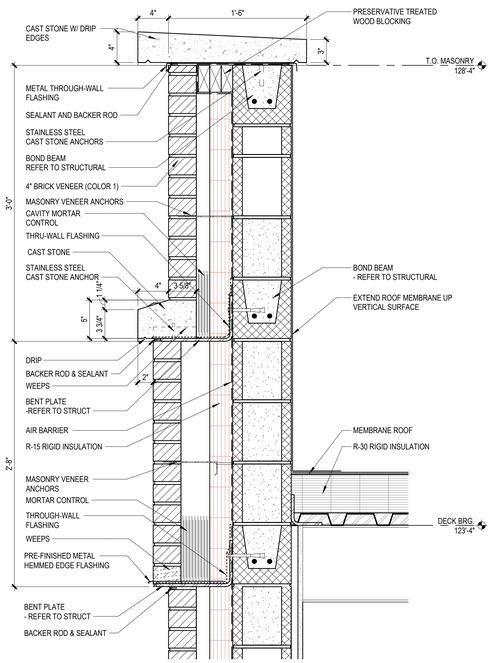
If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

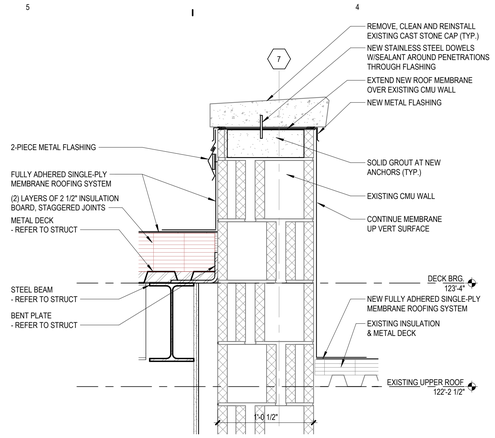
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
7582002
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY
J. COATS

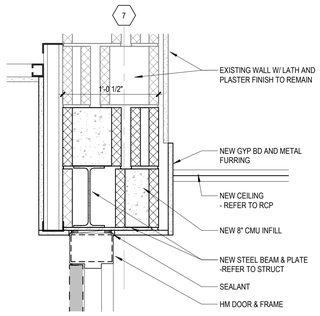
WALL SECTIONS AND DETAILS
A311



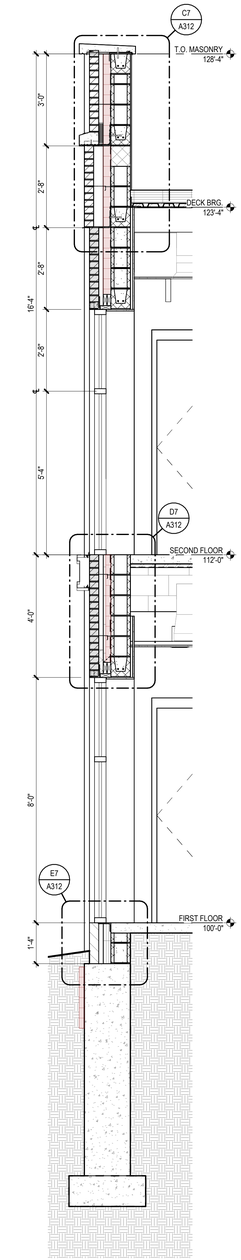
C7 PARAPET DETAIL A
1 1/2" = 1'-0"



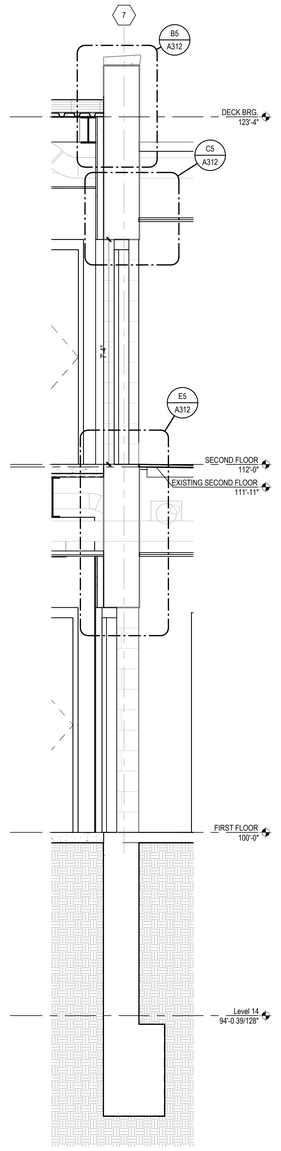
B5 PARAPET DETAIL D
1 1/2" = 1'-0"



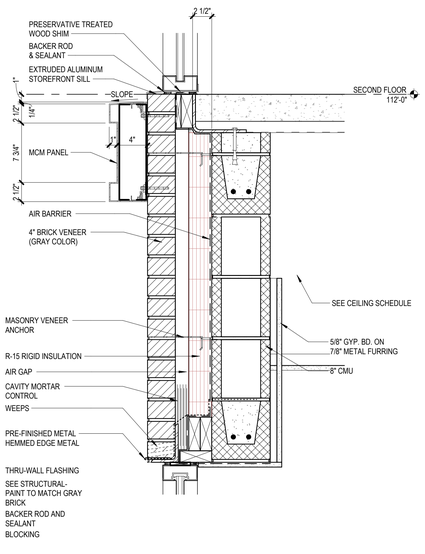
C5 WALL DETAIL
1 1/2" = 1'-0"



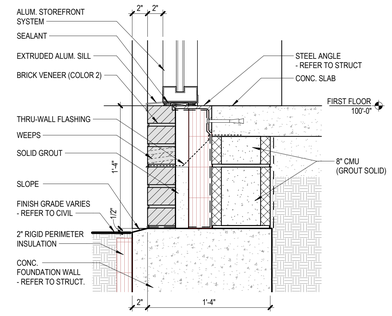
E3 WALL SECTION A
1/2" = 1'-0"



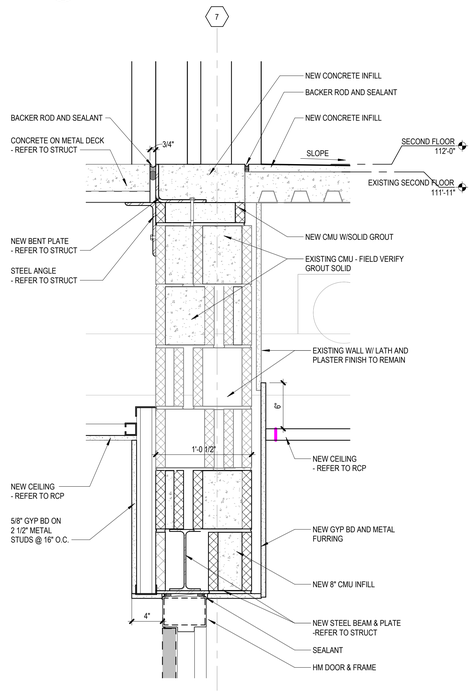
E2 WALL SECTION D
1/2" = 1'-0"



D7 PANEL DETAIL A
1 1/2" = 1'-0"



E7 FOUNDATION DETAIL A
1 1/2" = 1'-0"



E5 WALL DETAIL
1 1/2" = 1'-0"

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

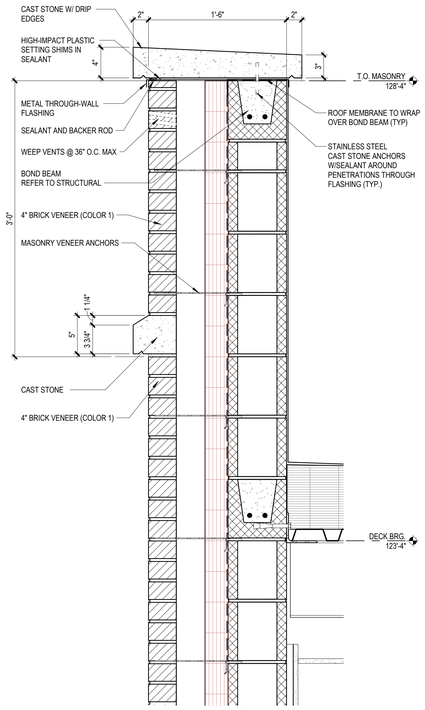
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

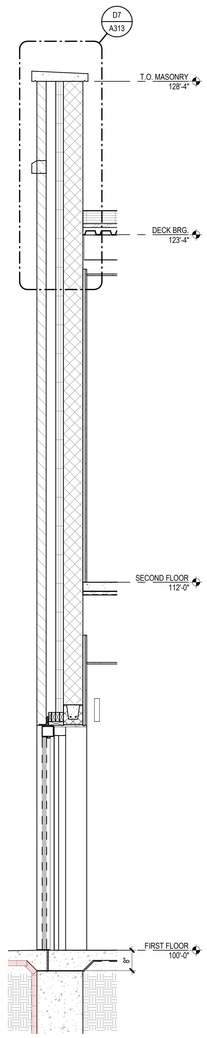
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
R.VACA
CHECKED BY

WALL SECTIONS AND DETAILS
A312

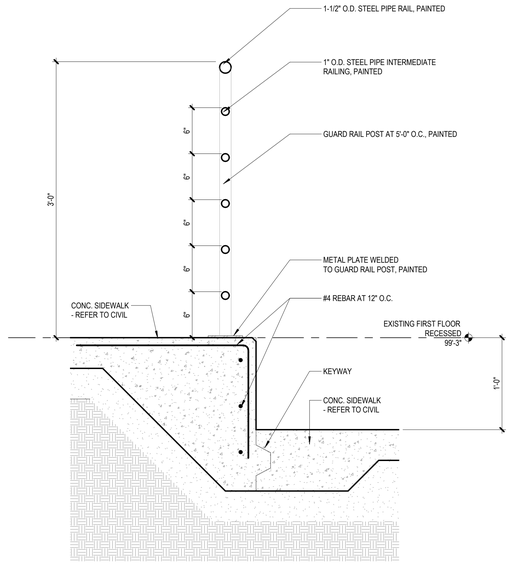
7/24/2026 11:23:43 AM Autodesk Docs://75820023 - CATA Renovation of 5715 Washington/75820023 CATA Reno 5715 Washington - ARCH.rvt
WALL SECTIONS AND DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND IS THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. NO PART OF THIS DOCUMENT MAY BE REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF PROGRESSIVE AE INC. © 2026 PROGRESSIVE AE INC. OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



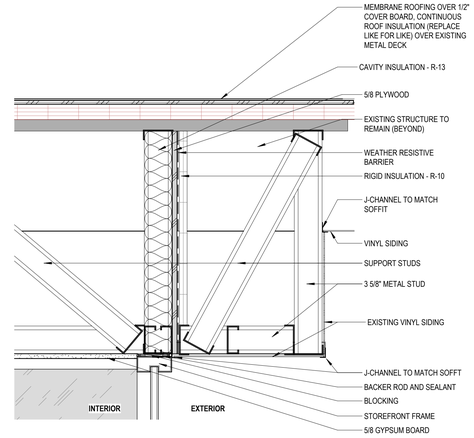
D7 PARAPET DETAIL
1 1/2" = 1'-0"



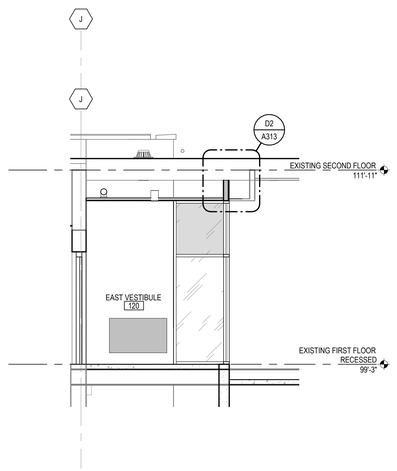
E5 WALL SECTION
1/2" = 1'-0"



E4 HANDRAIL AND SIDEWALK UNDER CANOPY
1 1/2" = 1'-0"



D2 VESTIBULE SOFFIT SECTION
1 1/2" = 1'-0"



E2 SECTION AT VESTIBULE
1/4" = 1'-0"

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

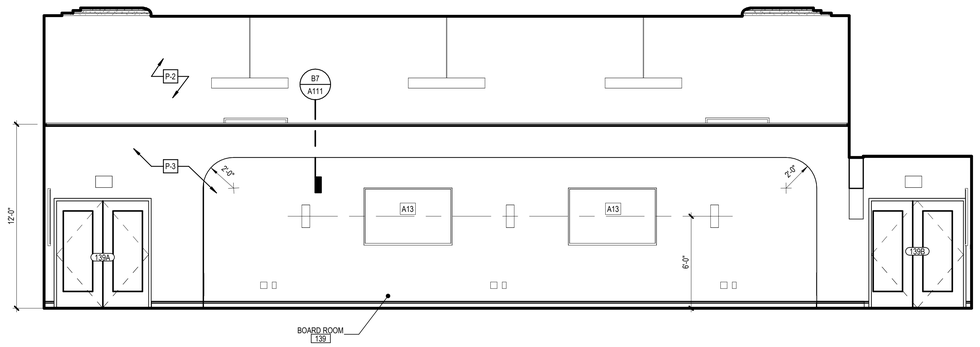
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

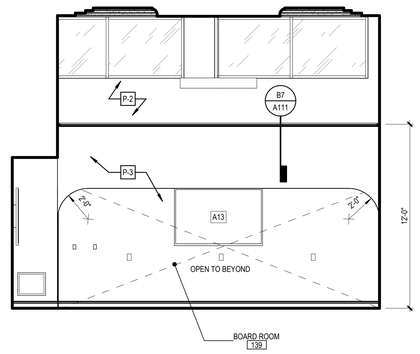
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
A.MARLATT
CHECKED BY
J. COATS

WALL SECTIONS AND DETAILS
A313

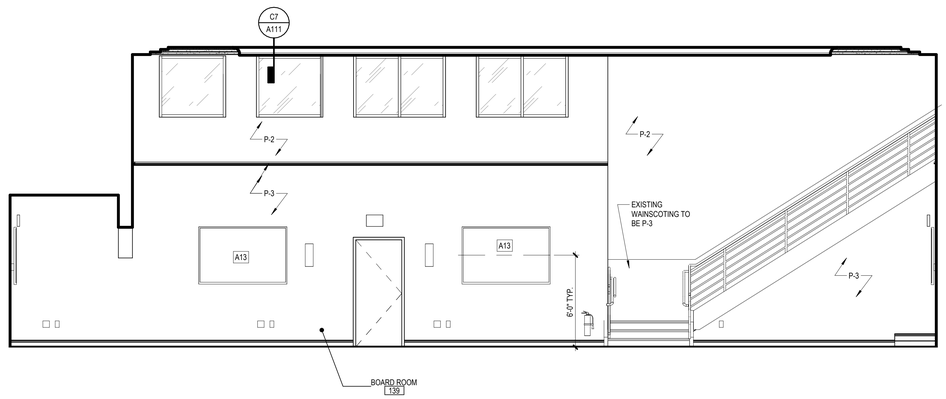
7/24/2026 11:23:48 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revit 511 S Washington - ARCH.rvt
WALL SECTIONS AND DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED UNDER FEDERAL AND OTHER APPLICABLE COPYRIGHT LAWS. THIS DOCUMENT MAY NOT BE REPRODUCED, PUBLISHED OR USED IN ANY WAY WITHOUT THE PRIOR WRITTEN CONSENT OF PROGRESSIVE AE INC. OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



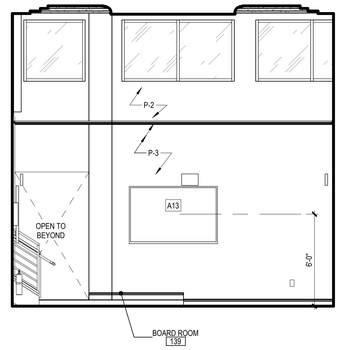
B6 BOARD ROOM
1/4" = 1'-0"



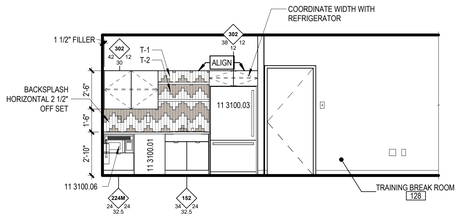
B2 BOARD ROOM
1/4" = 1'-0"



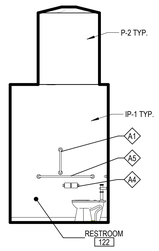
C6 BOARD ROOM
1/4" = 1'-0"



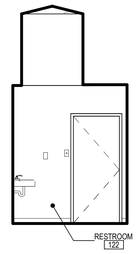
C2 BOARD ROOM
1/4" = 1'-0"



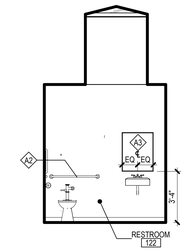
D6 TRAINING BREAK ROOM
1/4" = 1'-0"



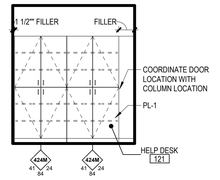
D5 RESTROOM
1/4" = 1'-0"



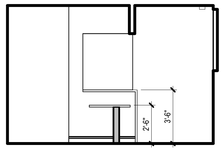
D4 RESTROOM
1/4" = 1'-0"



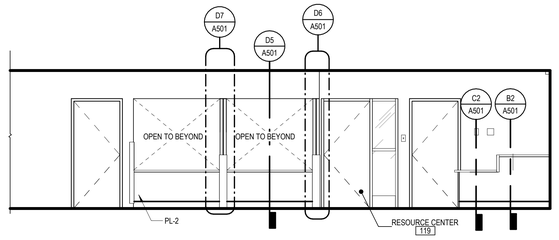
D3 RESTROOM
1/4" = 1'-0"



E6 RESOURCE CENTER
1/4" = 1'-0"



E5 RESOURCE CENTER
1/4" = 1'-0"



E4 RESOURCE CENTER
1/4" = 1'-0"

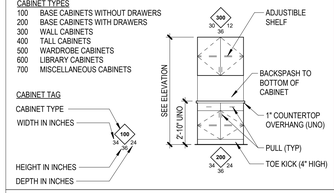
CASEWORK LEGEND AND NOTES

1. ALL SHELVES ARE ADJUSTABLE
2. FINISH EXPOSED PANELS, CABINET ENDS, AND INTERIORS, TO MATCH ADJACENT FACES.
3. PROVIDE EQUAL SIZED FILLER AT WALL AND BETWEEN CABINETS AS REQUIRED FOR DOOR CLEARANCE. MINIMUM 1" AND MAXIMUM 6"
4. PROVIDE FINISH BASE AT ALL BASE CABINETS TO MATCH ADJACENT WALL BASE UNLESS NOTED OTHERWISE.
5. PROVIDE SEALANT AT BOTTOM, TOP AND ENDS OF BACKSPLASHES AND SIDESPLASHES.
6. ALL SOLID SURFACE SINKS TO BE SS-2
7. BASE CABINETS: 24" DEEP
8. WALL CABINETS: 12" DEEP CLEAR
9. SEE INTERIOR DETAILS FOR MORE INFORMATION
10. UPPER CASEWORK CEILING ENCLOSURE FLUSH WITH FACE OF CABINET TIGHT TO CEILING

CABINET TYPES

100	BASE CABINETS WITHOUT DRAWERS
200	BASE CABINETS WITH DRAWERS
300	WALL CABINETS
400	TALL CABINETS
500	WARDROBE CABINETS
600	LIBRARY CABINETS
700	MISCELLANEOUS CABINETS

CABINET TAG



INTERIOR ELEVATION GENERAL NOTES

1. REFER TO DRAWING A121 FOR FINISH MATERIAL LIST AND DETAILED FINISH INFORMATION.
2. REFER TO CASEWORK LEGEND ON THIS SHEET FOR TYPICAL CASEWORK ANNOTATIONS AND SYMBOLOGY.
3. ALL COUNTERTOPS SHALL BE 34" AFF (AS REQUIRED FOR ACCESSIBILITY) UNLESS NOTED OTHERWISE.
4. ALL WORK SURFACES SHALL BE 30" AFF UNLESS NOTED OTHERWISE.
5. EXPOSED OUTSIDE CORNERS OF COUNTERTOPS SHALL BE EASED. REFER TO DRAWINGS FOR ADDITIONAL RADIUS REQUIREMENTS.

KEYNOTES

NUMBER	NOTE
11 3100.01	DISHWASHER
11 3100.03	REFRIGERATOR
11 3100.06	MICROWAVE
A13	TV MONITORS BY OWNER

RESTROOM ACCESSORIES

MARK	MODEL	MANUFACTURER	DESCRIPTION
A1	B-6806 18"	BOBRICK	18" GRAB BAR
A2	B-6806 36"	BOBRICK	36" GRAB BAR
A3	B-165 1836	BOBRICK	18" x 36" MIRROR
A4	B-2840	BOBRICK	SURFACE MOUNTED TOILET TISSUE DISPENSER
A5	B-6806 42"	BOBRICK	42" GRAB BAR

PROGRESSIVE AE

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

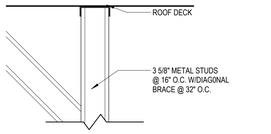
ISSUANCE

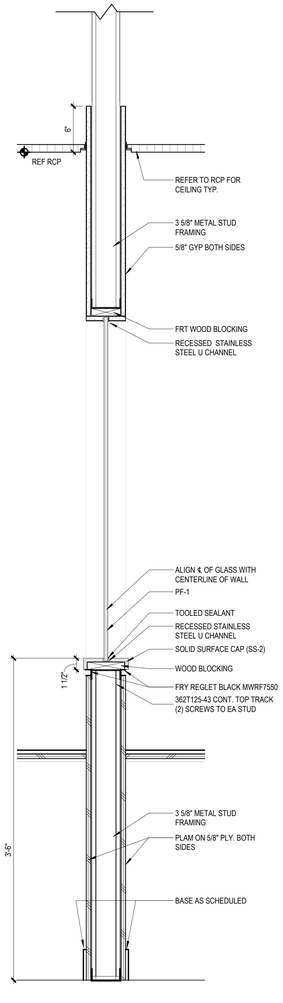
07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
A.MARATT
CHECKED BY
M.POWELL SHEPPARD

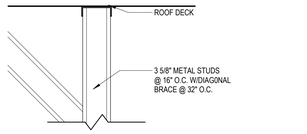
INTERIOR ELEVATIONS
A401

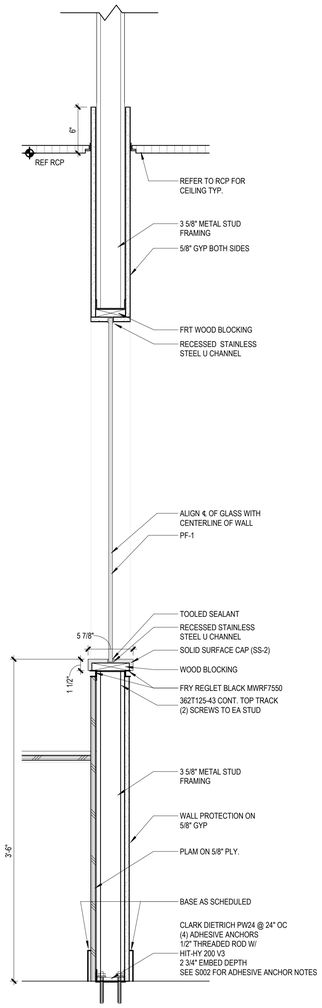
7/24/2026 11:23:50 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
A401 INTERIOR ELEVATIONS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND IS THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. THIS DOCUMENT MAY NOT BE REPRODUCED IN WHOLE OR IN PART, BY ANY MEANS WHATSOEVER, EXCEPT FOR LIMITED REPRODUCTIONS FOR OFFICE RECORDS, INCLUDING THE COPYRIGHT THEREON.



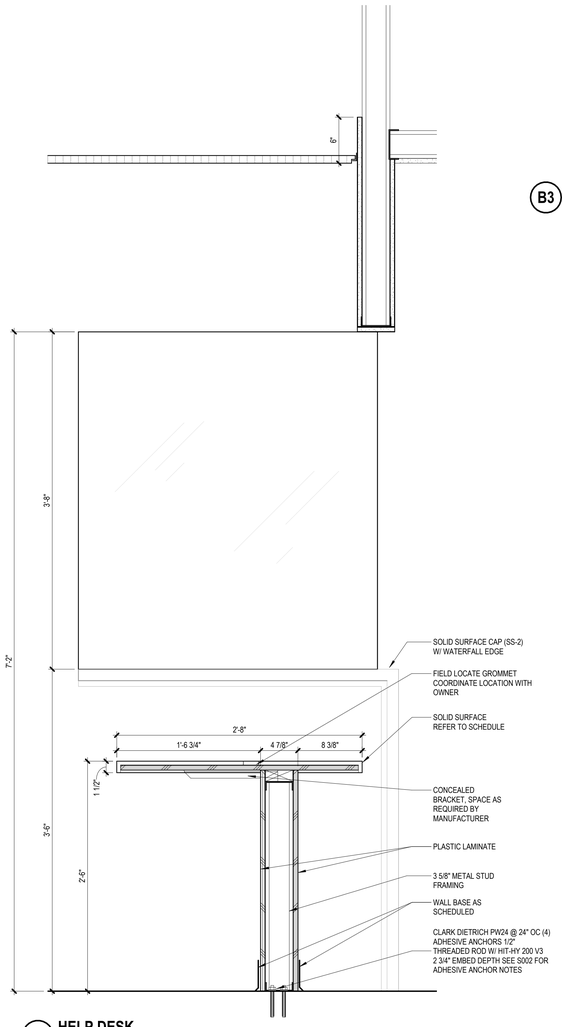


D7 HELP DESK PARTITION
1 1/2" = 1'-0"

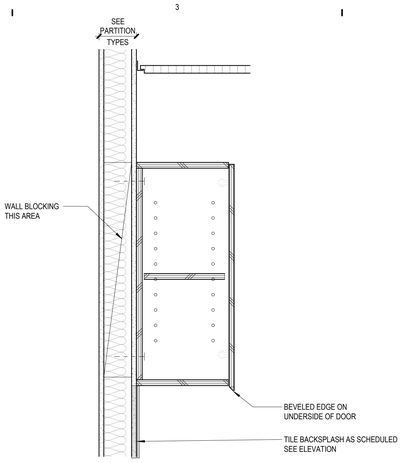




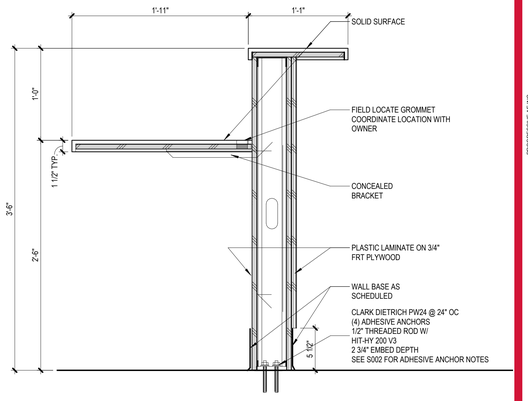
D6 HELP DESK END WALL
1 1/2" = 1'-0"



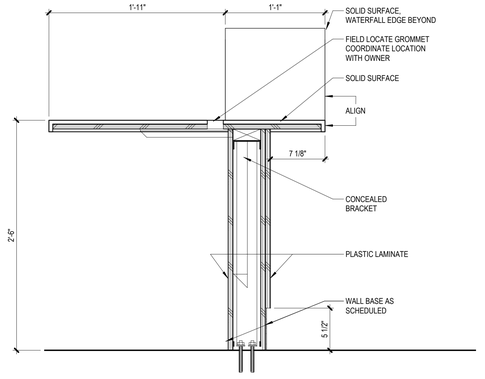
D5 HELP DESK
1 1/2" = 1'-0"



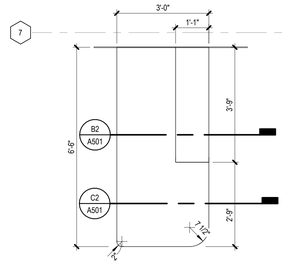
B3 TYPICAL WALL CABINET
1 1/2" = 1'-0"



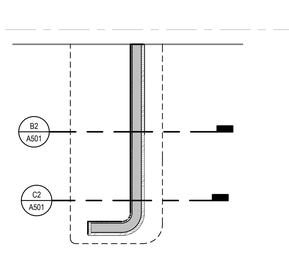
B2 RESOURCE CENTER DESK - TRANSACTION
1 1/2" = 1'-0"



C2 RESOURCE CENTER DESK - ADA
1 1/2" = 1'-0"



D2 RESOURCE CENTER DESK
1/2" = 1'-0"



D1 RESOURCE CENTER DESK
1/2" = 1'-0"

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

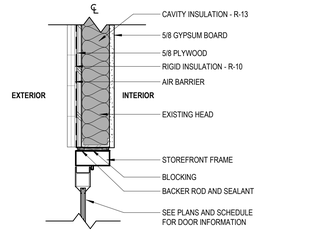
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J.CANGRO
DRAWN BY
A.MARLATT
CHECKED BY
M POWELL SHEPPARD

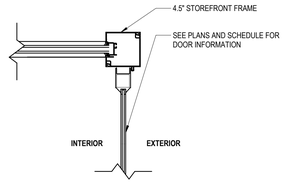
INTERIOR DETAILS
A501

7/24/2026 11:23:53 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH r.rvt
A501
INTERIOR DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED UNDER FEDERAL AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO



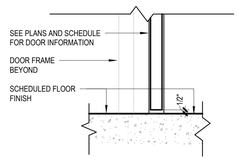
B7 STOREFRONT FRAME HEAD DETAIL AT EAST VESTIBULE

1 1/2" = 1'-0"



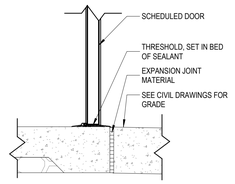
B6 STOREFRONT FRAME JAMB DETAIL

1 1/2" = 1'-0"



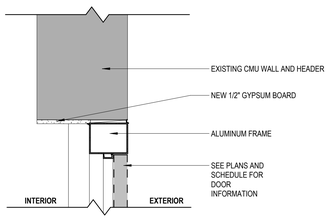
A4 INTERIOR DOOR SILL

1 1/2" = 1'-0"



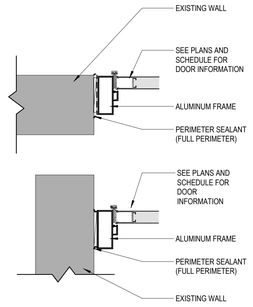
A3 EXTERIOR DOOR SILL

1 1/2" = 1'-0"



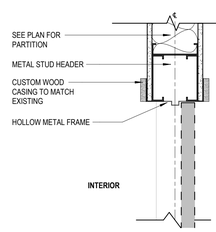
C7 ALUMINUM FRAME HEAD DETAIL AT EXISTING EXTERIOR WALL

1 1/2" = 1'-0"



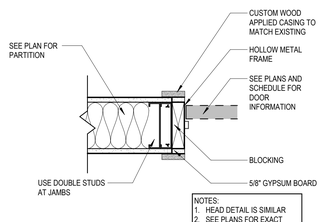
C6 ALUMINUM FRAME JAMB AT EXISTING EXTERIOR WALL

1 1/2" = 1'-0"



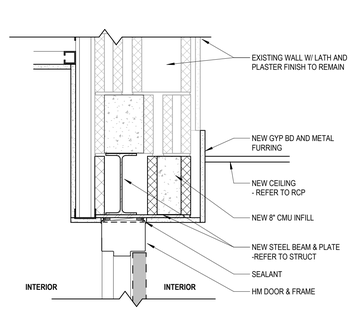
C5 WOOD DOOR HEAD DETAIL

1 1/2" = 1'-0"



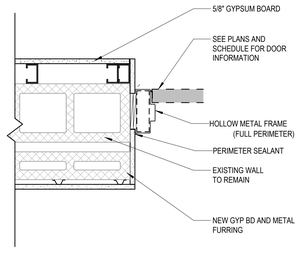
C3 WOOD DOOR JAMB DETAIL

1 1/2" = 1'-0"



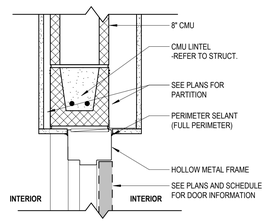
D7 HOLLOW METAL HEAD DETAIL AT EXISTING 2HR FIRE BARRIER WALL

1 1/2" = 1'-0"



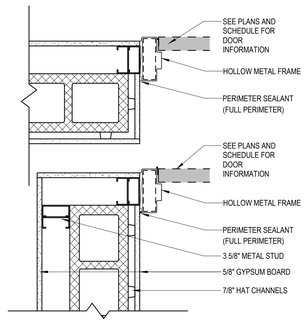
D6 HOLLOW METAL JAMB DETAIL AT 2 HR FIRE BARRIER WALL

1 1/2" = 1'-0"



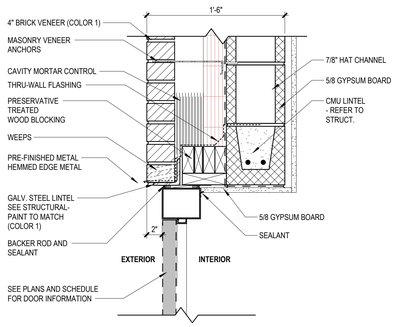
D5 HOLLOW METAL HEAD DETAIL AT NEW INTERIOR CMU WALL

1 1/2" = 1'-0"



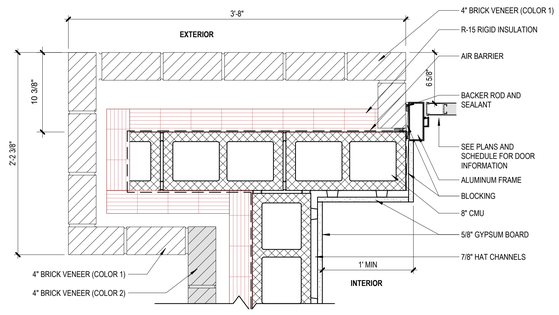
D3 HOLLOW METAL JAMB DETAIL AT NEW INTERIOR CMU WALL

1 1/2" = 1'-0"



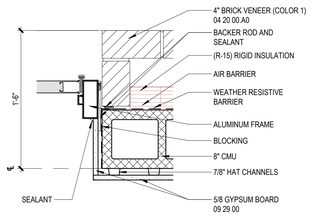
E6 HEAD FRAME DETAIL AT DOOR 105A

1 1/2" = 1'-0"



E5 JAMB DETAIL DOOR 105A

1 1/2" = 1'-0"



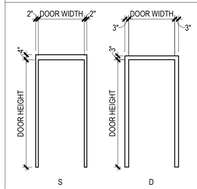
E3 JAMB DOOR 105A

1 1/2" = 1'-0"

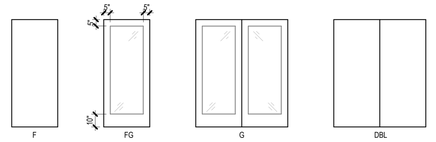
NEW CONSTRUCTION DOOR SCHEDULE

MARK	NAME	DOOR WIDTH	DOOR HEIGHT	DOOR TYPE	DOOR MATERIAL	FRAME TYPE	FRAME MATERIAL	RATING	HDW	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	COMMENTS
EXISTING FIRST FLOOR RECESSED													
117	CATA OFFICE	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
119A	RESOURCE CENTER	3'-0"	7'-0"	F	ALUM	S	ALUM		1B	C7	C6	A3	
119B	RESOURCE CENTER	3'-0"	7'-0"	F	ALUM	S	ALUM		3	C7	C6	A3	EXIT ONLY; NO INGRESS
119C	HALLWAY C	3'-0"	7'-0"	---	---	---	---			---	---	---	EXISTING DOOR TO REMAIN. PROVIDE NEW HARDWARE ONLY
120	EAST VESTIBULE	3'-0"	7'-0"						1	B7	B6	A3	CARD ACCESS (A) WALL MOUNTED (B) MULLION MOUNTED (C) POST MOUNTED (A) PULL SIDE (Y) PUSH SIDE (Z) BOTH SIDES
121A	HELP DESK	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
121B	HELP DESK	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
122	RESTROOM	3'-0"	7'-0"	F	WD	D	HM/WD		5	C5	C3	A4	
123	CATA OFFICE	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
127A	SOUTH VESTIBULE	3'-0"	7'-0"	---	---	---	---		2	---	---	---	EXISTING DOOR TO REMAIN. PROVIDE NEW HARDWARE ONLY
127B	SOUTH VESTIBULE	3'-0"	7'-0"	---	---	---	---		2	---	---	---	EXISTING DOOR TO REMAIN. PROVIDE NEW HARDWARE ONLY
128A	HALLWAY D	3'-0"	7'-0"	F	WD	D	HM/WD	20	3	C5	C3	A4	
128B	TRAINING BREAK ROOM	6'-0"	7'-0"	DBL	WD	D	HM/WD		4	C5	C3	A4	
139A	BOARD ROOM	6'-0"	7'-0"	G	WD	D	HM/WD		2	C5	C3	A4	WF-1 APPLIED TO GLAZING
139B	BOARD ROOM	6'-0"	7'-0"	G	WD	D	HM/WD		2	C5	C3	A4	WF-1 APPLIED TO GLAZING
139C	HALLWAY D	3'-0"	7'-0"	F	WD	D	HM/WD	20	2	C5	C3	A4	
141	STORAGE JANITORS	6'-0"	7'-0"	DBL	WD	D	HM/WD		4	C5	C3	A4	
144B	HALLWAY D	3'-0"	7'-0"	F	WD	D	HM/WD	20	3	C5	C3	A4	
FIRST FLOOR													
100	WEST VESTIBULE	6'-0"	7'-0"	---	---	---	---		1D	---	---	---	EXISTING DOOR TO REMAIN. PROVIDE NEW HARDWARE ONLY
101	WEST VESTIBULE	6'-0"	7'-0"	G	WD	D	HM/WD		1C	C5	C3	A4	
103	TCRPC OFFICE	3'-0"	7'-0"	F	WD	D	HM/WD			C5	C3	A4	
105A	STAIRWAY A	3'-0"	7'-0"	F	ALUM	S	ALUM		6	E6	E3/E5	A3	
105B	STAIRWAY A	3'-0"	7'-0"	F	HM	S	HM	60	7	D5	D3	A4	
106	HALLWAY A	4'-0"	7'-0"	F	HM	S	HM	90	2	D5	D3	A4	
107	ELEC.	3'-0"	7'-0"	F	HM	S	HM		7	D5	D3	A4	
108	STORAGE	3'-0"	7'-0"	F	HM	S	HM		7	D5	D3	A4	
109	RECEPTION	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
110	CLOSET	6'-0"	7'-0"	DBL	WD	D	HM/WD		4	C5	C3	A4	
124	TCRPC OFFICE	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
138	HALLWAY A	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
139D	RECEPTION	3'-0"	7'-0"	---	---	---	---			---	---	---	EXISTING DOOR TO REMAIN. PROVIDE NEW HARDWARE ONLY
145	HALLWAY A	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
EXISTING SECOND FLOOR													
201	HALLWAY	3'-0"	7'-0"	F	WD	D	HM/WD		4	C5	C3	A4	CARD ACCESS (A) WALL MOUNTED (B) MULLION MOUNTED (C) POST MOUNTED (X) PULL SIDE (Y) PUSH SIDE (Z) BOTH SIDES
209	OFFICE	3'-0"	7'-0"	F	WD	D	HM/WD		3	C5	C3	A4	
SECOND FLOOR													
205	STAIRWAY A	3'-0"	7'-0"	F	HM	S	HM	60	7	D5	D3	A4	
206	HALLWAY	4'-0"	7'-0"	F	HM	S	HM	90	2	D5	D3	A4	
207	HALLWAY	3'-0"	7'-0"	F	HM	S	HM		4	D5	D3	A4	
208	STORAGE	3'-0"	7'-0"	F	HM	S	HM		4	D5	D3	A4	

FRAME TYPES



DOOR TYPES



PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com
CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

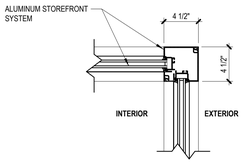
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J. CANGRO
DRAWN BY
R. VACA
CHECKED BY
J. COATES

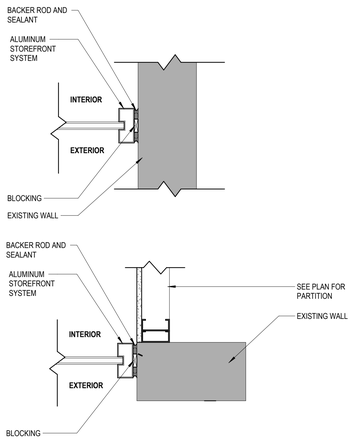
DOOR SCHEDULE, ELEVATIONS, AND DETAILS

A601

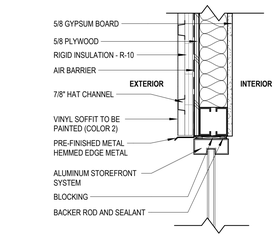
7/24/2026 11:23:54 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revit 511 S Washington - ARCH.rvt
DOOR SCHEDULE, ELEVATIONS, AND DETAILS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. WHETHER THE PROJECT FOR WHICH IT WAS PREPARED IS EXECUTED OR NOT. ALL RIGHTS RESERVED. THIS DOCUMENT MAY NOT BE REPRODUCED IN ANY FORM OR BY ANY MEANS WITHOUT THE PRIOR WRITTEN PERMISSION OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED UNDER THE COPYRIGHT LAWS OF THE UNITED STATES AND OTHER COUNTRIES. THIS DRAWING IS FOR USE ONLY ON THE PROJECT AND SITE NAMED HEREIN. THIS DRAWING AND THE INFORMATION CONTAINED HEREIN SHALL NOT BE USED BY ANY PERSON OR ENTITY FOR ANY OTHER PROJECT OR ADDITIONS TO THIS PROJECT, OR FOR COMPLETION OF THIS PROJECT BY OTHERS, EXCEPT BY AGREEMENT IN WRITING AND WITH APPROPRIATE COMPENSATION TO PROGRESSIVE AE INC., OTHERWISE, THE USER WILL HOLD HARMLESS AND INDEMNIFY PROGRESSIVE AE INC. FROM ANY AND ALL LIABILITY ARISING FROM THE USE OF THIS DRAWING AND THE INFORMATION CONTAINED HEREIN. ANY REPRODUCTION OF THIS DRAWING AND THE INFORMATION CONTAINED HEREIN, WITHOUT THE PRIOR WRITTEN PERMISSION OF PROGRESSIVE AE INC., SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO PROGRESSIVE AE INC.



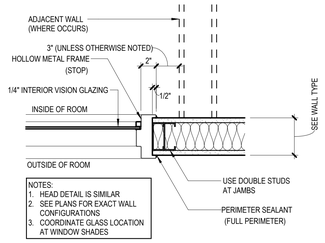
C7 **STOREFRONT CORNER W-J4**
1 1/2" = 1'-0"



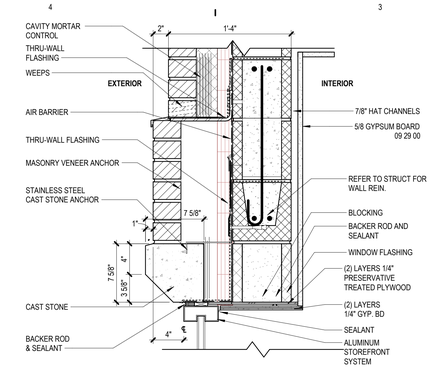
C6 **STOREFRONT JAMB AT VESTIBULE**
1 1/2" = 1'-0"



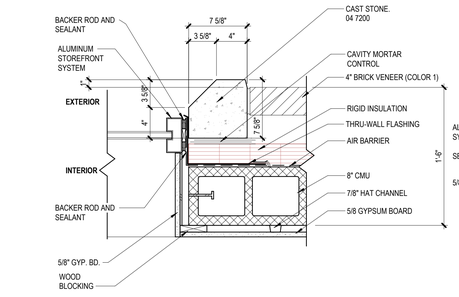
B5 **HEAD AT VESTIBULE (STOREFRONT) W-H3**
1 1/2" = 1'-0"



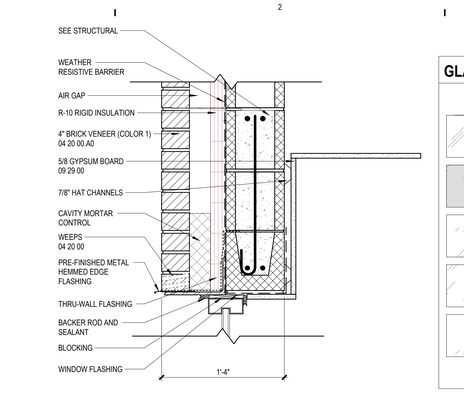
C5 **INTERIOR HM FRAME WINDOW W-J3**
1 1/2" = 1'-0"



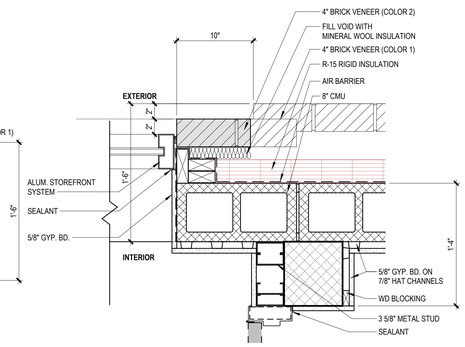
B4 **HEAD DETAIL AT CIRCLE WINDOW W-H2**
1 1/2" = 1'-0"



C4 **CHAMFERED WINDOW W-J2**
1 1/2" = 1'-0"



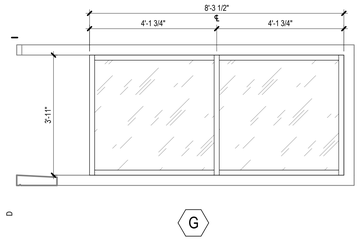
B3 **STOREFRONT WINDOW HEAD DETAIL W-H1**
1 1/2" = 1'-0"

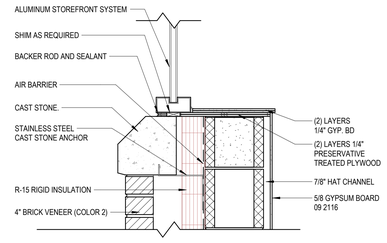


C3 **WINDOW JAMB AT BRICK OFFSET W-J1**
1 1/2" = 1'-0"

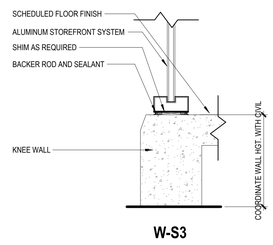
GLAZING LEGEND

- **(IG-1) -** INSULATED GLAZING
- **(IG-2) -** INSULATED SPANDREL GLAZING
- **(IG-3) -** INSULATED TEMPERED GLAZING
- **(G-1) -** 1/4" GLAZING
- **(G-2) -** TEMPERED GLAZING

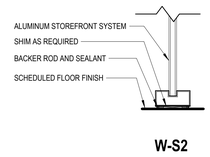




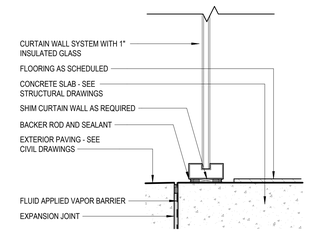
D6 **SILL DETAIL AT CIRCLE WINDOW**
1 1/2" = 1'-0"



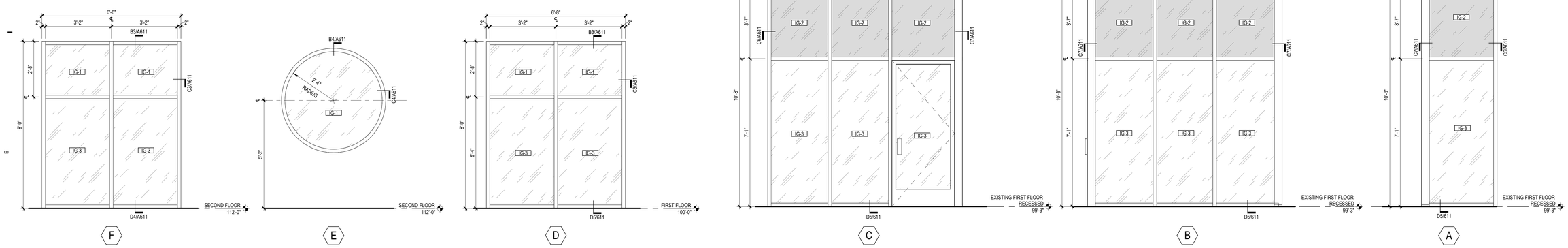
D5 **STOREFRONT SILL DETAIL @ KNEE WALL**
1 1/2" = 1'-0"



D4 **WINDOW SILL DETAIL 1**
1 1/2" = 1'-0"



D3 **STOREFRONT SILL @ EXTERIOR GRADE W-S1**
1 1/2" = 1'-0"



7/24/2026 11:23:57 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revo 511 S Washington - ARCH.rvt
WINDOWS AND STOREFRONT ELEVATIONS AND DETAILS
THE CONCEPTS AND DESIGNS EMBODIED IN PROGRESSIVE AE INC.'S INSTRUMENTS OF SERVICE ARE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. ALL COPYRIGHT AND OTHER PROPERTY RIGHTS, INCLUDING THE COPYRIGHT THEREIN.

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com
CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

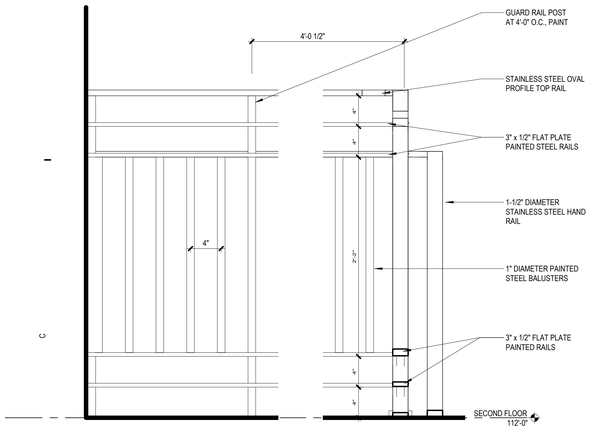
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J. CANGRO
DRAWN BY
R. VACA
CHECKED BY
J. COATS

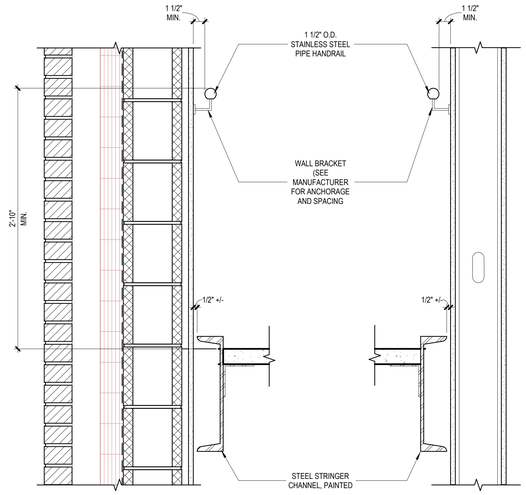
WINDOWS AND STOREFRONT ELEVATIONS AND DETAILS

A611



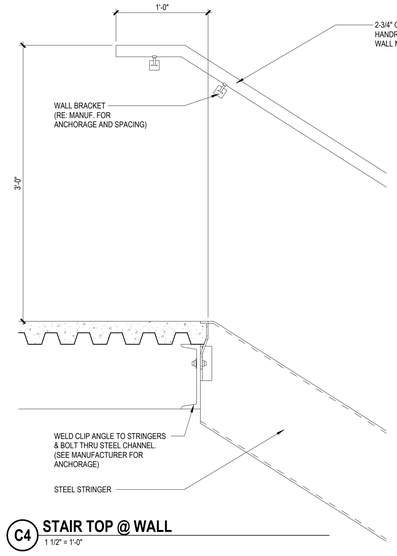
GUARDRAIL ELEVATION @ SECOND FLOOR LANDING

C7 1 1/2" = 1'-0"



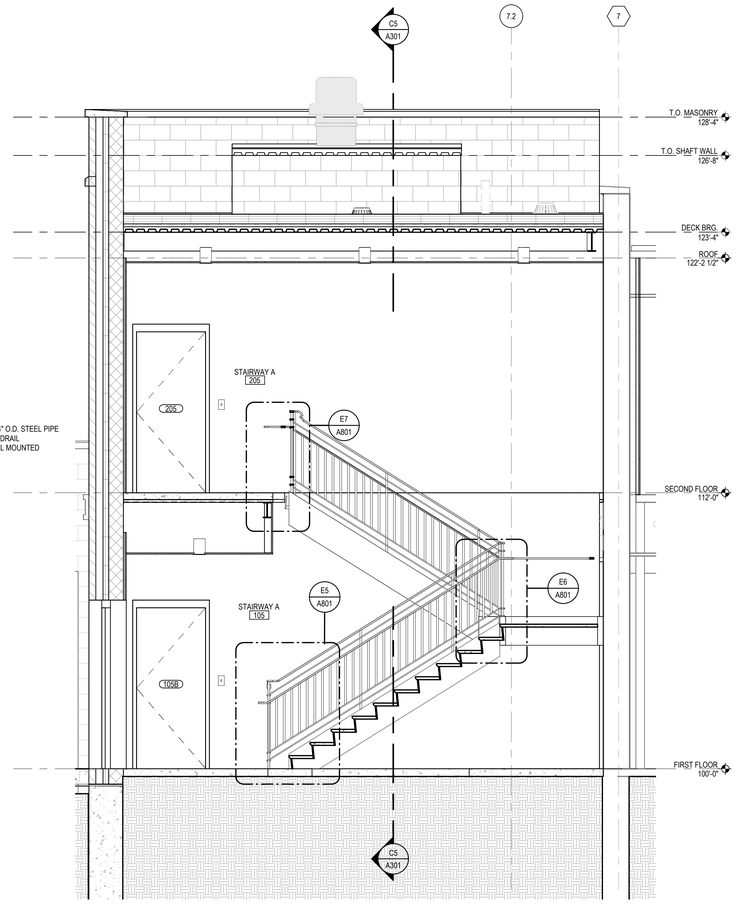
STAIR HANDRAIL @ WALLS

C5 1 1/2" = 1'-0"



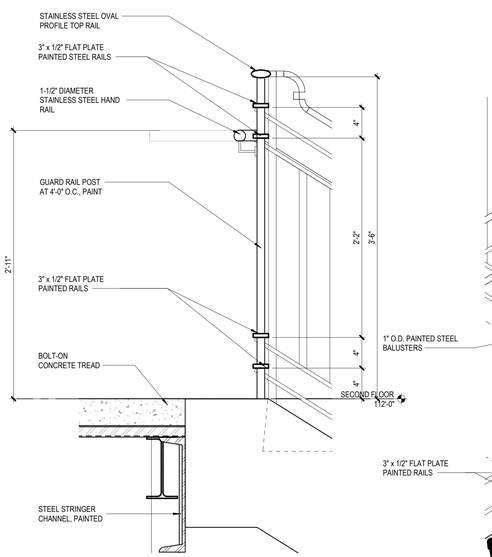
STAIR TOP @ WALL

C4 1 1/2" = 1'-0"



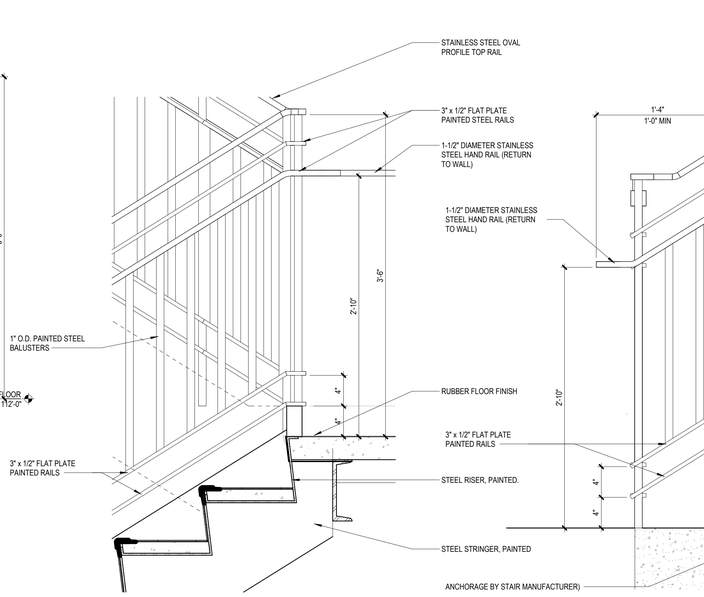
SECTION AT STAIRCASE A

C2 3/8" = 1'-0"



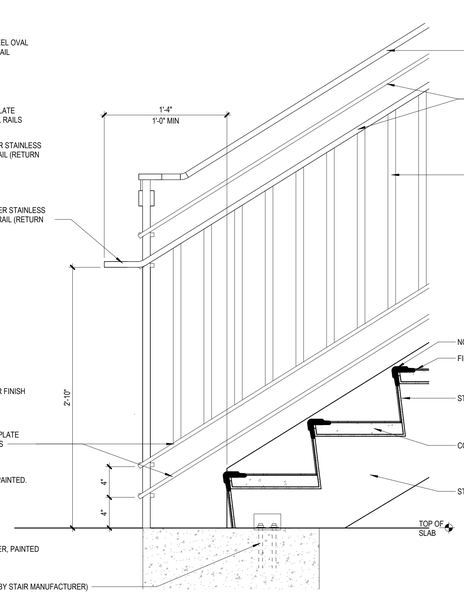
GUARDRAIL SECTION @ SECOND FLOOR LANDING

E7 1 1/2" = 1'-0"



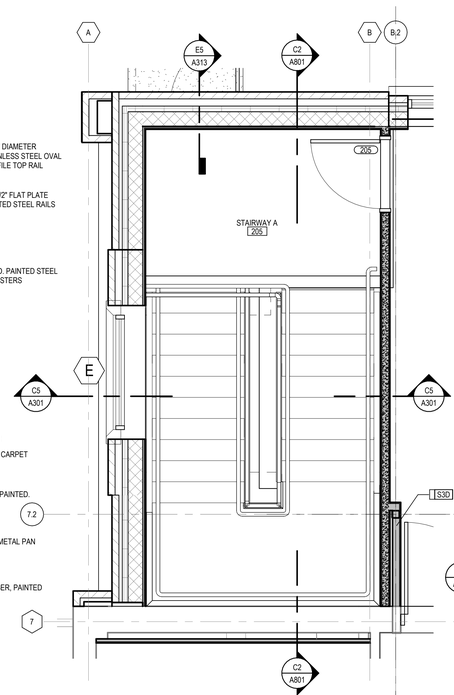
STAIR LANDING @ GUARDRAIL

E6 1 1/2" = 1'-0"



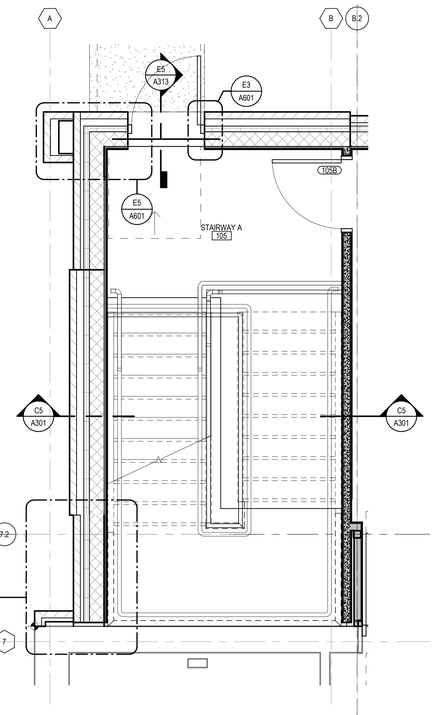
STAIR BASE @ GUARDRAIL

E5 1 1/2" = 1'-0"



ENLARGED SECOND FLOOR STAIRCASE PLAN

E4 3/8" = 1'-0"



ENLARGED FIRST FLOOR STAIRCASE PLAN

E2 3/8" = 1'-0"

7/24/2026 11:24:02 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ARCH.rvt
STAIRCASE VERTICAL CIRCULATION
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND IS THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. NO OTHER USE OR DISTRIBUTION WITHOUT THE WRITTEN CONSENT OF PROGRESSIVE AE INC. IS PERMITTED. ALL OTHER RIGHTS RESERVED, INCLUDING THE COPYRIGHT THERETO.

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

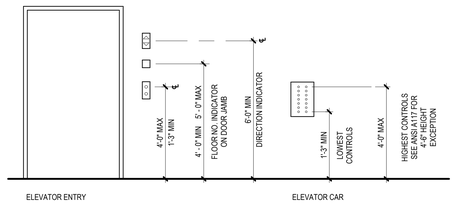
If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

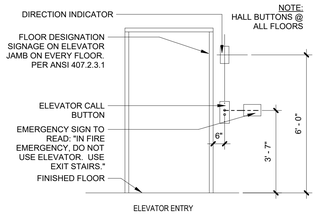
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

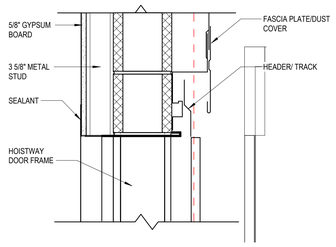
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUINONS
PROFESSIONAL
J.CANGRO
DRAWN BY
A. MARLATT
CHECKED BY
J. COATS

STAIRCASE VERTICAL CIRCULATION
A801

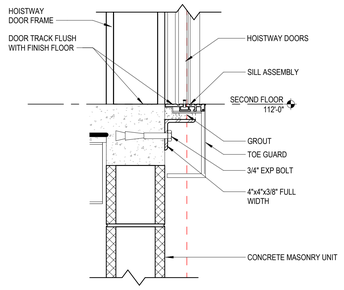




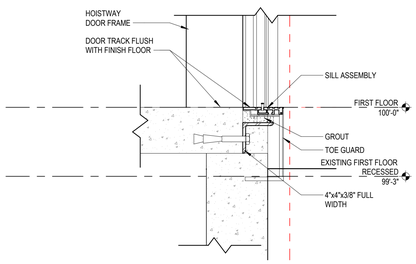
B6 ELEVATOR DOOR DETAILS
3/8" = 1'-0"



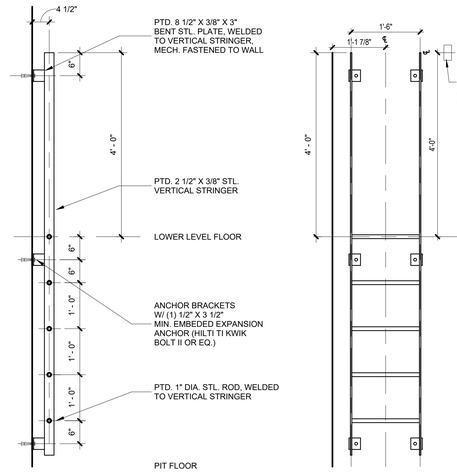
C6 ELEVATOR HEAD DETAIL
1 1/2" = 1'-0"



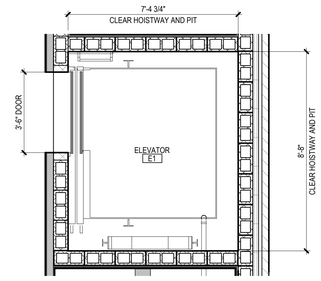
D6 ELEVATOR SILL DETAIL
1 1/2" = 1'-0"



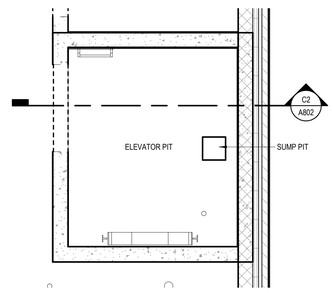
E6 ELEVATOR SILL @ PIT
1 1/2" = 1'-0"



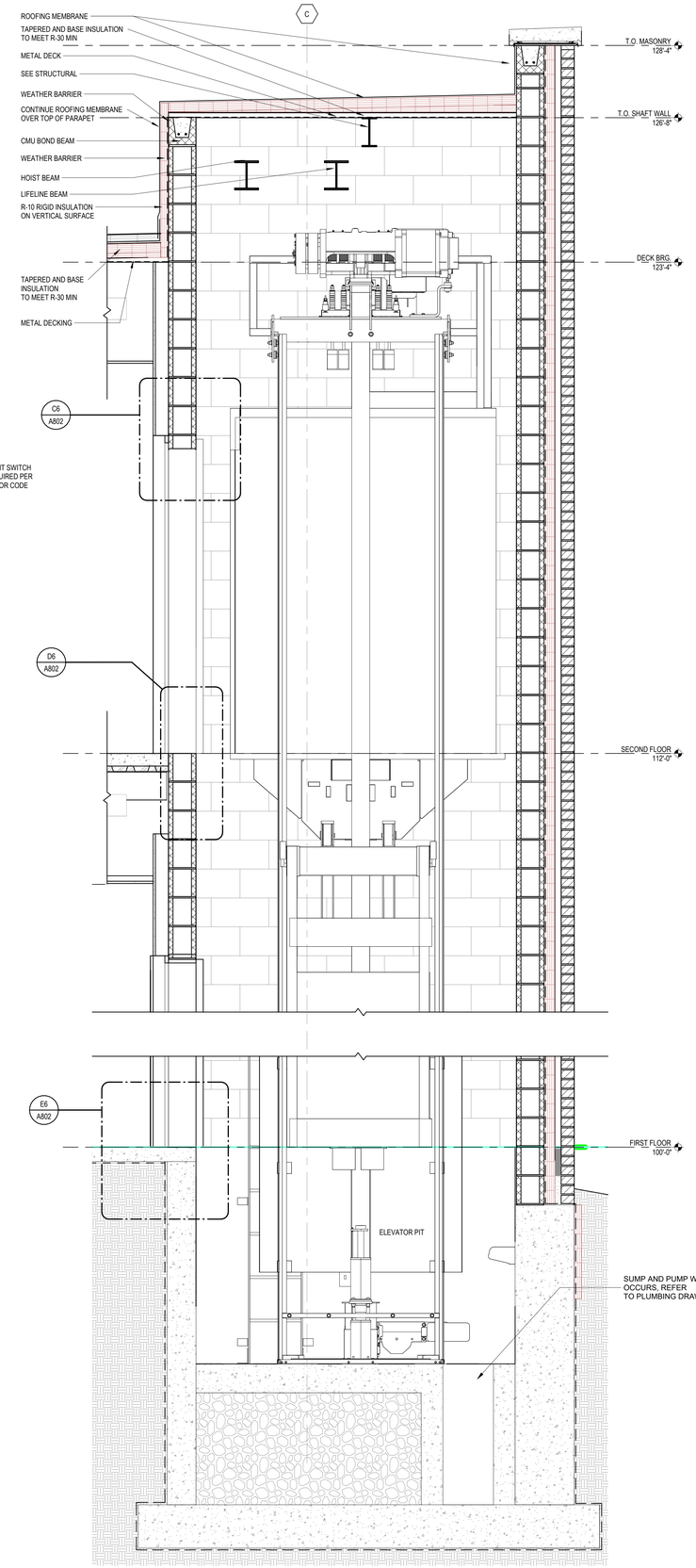
C4 ELEVATOR STAIRS
3/4" = 1'-0"



ENLARGED FIRST & SECOND FLOOR ELEVATOR PLAN
D4
3/8" = 1'-0"



E4 ENLARGED ELEVATOR PIT PLAN
3/8" = 1'-0"



C2 WALL SECTION AT ELEVATOR
3/4" = 1'-0"

PROGRESSIVE AE
PROGRESSIVE COMPANIES
weareprogressive.com
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

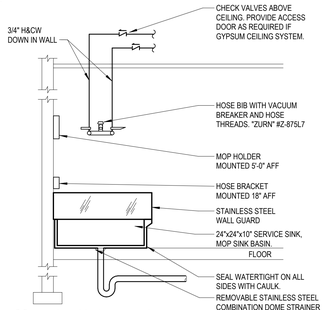
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

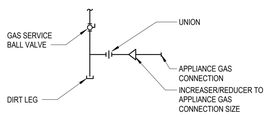
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
J. CANGRO
DRAWN BY
N. JAMES
CHECKED BY
J. COATS

ELEVATOR VERTICAL CIRCULATION
A802

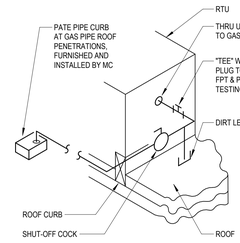
7/24/2026 11:24:06 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revo 511 S Washington - ARCH.rvt
ELEVATOR VERTICAL CIRCULATION
THE DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. PROGRESSIVE AE INC. RETAINS ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



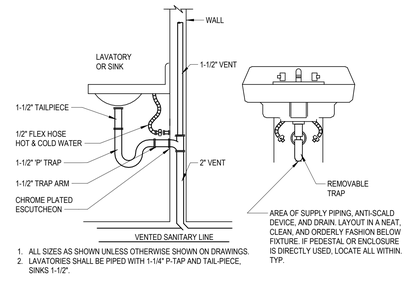
A7 MOP SINK DETAIL
NOT TO SCALE



A6 GAS PIPING DIAGRAM
NOT TO SCALE

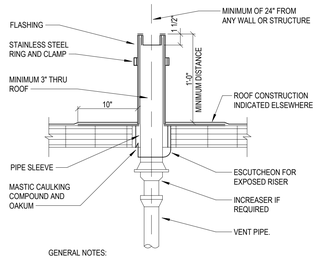


A5 RTU GAS PIPING
NOT TO SCALE



1. ALL SIZES AS SHOWN UNLESS OTHERWISE SHOWN ON DRAWINGS.
2. LAVATORIES SHALL BE PIPED WITH 1-1/4" P-TAP AND TAIL-PIECE, SINKS 1-1/2".

B6 TYPICAL SINK/LAVATORY DETAIL
NOT TO SCALE



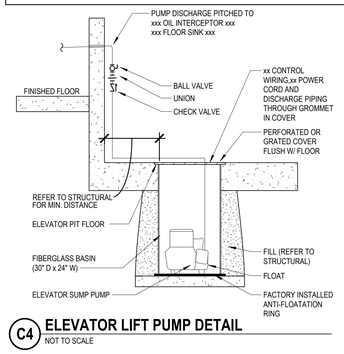
GENERAL NOTES:

1. VENT THRU ROOF (VTR) FOR PIPES SIZES SMALLER THAN 3" MUST BE INCREASED TO MINIMUM OF 3".
2. INCREASE IN PIPE DIAMETER MUST BE MADE A MINIMUM OF 12" INSIDE THE BUILDING.

B5 PLUMBING VENT THROUGH ROOF DETAIL
NOT TO SCALE

ABBREVIATIONS - PLUMBING

AC	AIR COMPRESSER
AC	ARCHITECTURAL CONTRACTOR
ADA	AMERICANS WITH DISABILITIES ACT
AVS	ACID VENT STACK
AW	ACID WASTE
B	BOILER
BV	BALL VALVE
CB	CATCH BASIN
CBS	COMBINATION BALANCE & SHUTOFF VALVE
CIP	CAST IRON PIPE
CO	CLEANOUT
COMP	COMPARTMENT
CS	CLINICAL SINK
CV	CHECK VALVE
CW	COLD WATER
D&T	DRIP AND TRAP
DB	DIALYSIS WASTE & SUPPLY BOX
DCP	DOMESTIC WATER CIRCULATING PUMP
DCR	DOMESTIC COLD WATER RETURN
DN	DISCHARGE NOZZLE
DSN	DOWNSPOUT NOZZLE
DW	DISHWASHER
DWH	DOMESTIC WATER HEATER
EWT	ENTER WATER TEMPERATURE
EX	EXISTING
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FS	FLOOR SINK
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR
G	GAS
GLR	GROUND LOOP RETURN
GLS	GROUND LOOP SUPPLY
HB	HOSE BIBB
HO	HUB OUTLET
HTP	HEAT PUMP
HW	HOT WATER
HWR	HOT WATER RETURN (DOMESTIC)
HYD	HYDRANT
IE	INVERT ELEVATION
IW	INDIRECT WASTE
KVAR	KILOVOLT-AMPERES REACTIVE
L	LAVATORY
LAV	LAVATORY
LEED	LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN
LWT	LEAVING WATER TEMPERATURE
MB	MOP BASIN
MCA	MINIMUM CIRCUIT AMPS
MH	MANHOLE
MOP	MAXIMUM OVERCURRENT PROTECTION
NG	NATURAL GAS
OHD	OVERHEAD DOOR
ORD	OVERFLOW ROOF DRAIN
PF	PUMP - FIRE PROTECTION
PP	PUMP - PLUMBING
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH GAUGE
RD	ROOF DRAIN, ROAD
RIO	ROUGH-IN ONLY
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
RPM	REVOLUTIONS PER MINUTE
RR	REST ROOM
RV	RELIEF VENT
S	SINK
SAN	SANITARY
SCW	SOFT COLD WATER
SD	STORM DRAIN
SG	SPECIFIC GRAVITY
SH	SHOWER
SK	SINK
SNS	SANITARY SEWER
SPHD	SPRINKLER HEAD
SPKR	SPRINKLER
SS	SERVICE SINK
SSK	SERVICE SINK
ST	STORM
TD	TRENCH DRAIN
THERM	100 CUBIC FEET OF NATURAL GAS
TOW	TOP OF WALL
UR	URINAL
V	VENT
VS	VENT STACK
VTR	VENT THROUGH ROOF
W	WASTE
WC	WATER CLOSET
WCO	WALL CLEANOUT
WH	WALL HYDRANT
WHTR	WATER HEATER
WS	WASTE STACK
ZVB	ZONE VALVE BOX



C4 ELEVATOR LIFT PUMP DETAIL
NOT TO SCALE

GAS LOAD SCHEDULE

EQUIPMENT	BTUH	PRESSURE MIN	PRESSURE MAX
RTU-1	50,000	7 IN-W.C.	10.5 IN-W.C.
RTU-2	80,000	7 IN-W.C.	10.5 IN-W.C.
RTU-3	150,000	7 IN-W.C.	10.5 IN-W.C.
RTU-4	100,000	7 IN-W.C.	10.5 IN-W.C.
EX. WATER HEATER	75,000	7 IN-W.C.	10.5 IN-W.C.
TOTAL BUILDING	555,000		

NOTES:
1. GAS PIPING HAS BEEN SIZED BASED ON TOTAL CAPACITY SHOWN AND EQUIVALENT DEVELOPED LENGTH OF THE MOST REMOTE OUTLET.
2. VERIFY GAS METER, REGULATOR, AND UTILITY SERVICE CAPACITY ARE ADEQUATE FOR TOTAL BUILDING LOAD SHOWN. COORDINATE WITH LOCAL GAS SERVICE UTILITY.

PLUMBING SYMBOLS

- ANGLE RELIEF VALVE
- ANGLED STOP CHECK VALVE
- BALANCING VALVE
- BUTTERFLY VALVE
- BALL VALVE
- CHECK VALVE W/ARROW INDICATING FLOW
- GATE VALVE
- GLOBE VALVE
- LINEAR STOP CHECK VALVE
- GAS VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- PRESSURE RELIEF VALVE
- SOLENOID VALVE
- PRESSURE REGULATING VALVE - TWO WAY
- PRESSURE REGULATING VALVE - THREE WAY
- MOTORIZED CONTROL VALVE - 2-WAY
- MOTORIZED CONTROL VALVE - 3-WAY
- FLOW MEASURING DEVICE
- HOSE BIBB
- MANUAL AIR VENT
- PRESSURE INDICATOR
- TEMPERATURE INDICATOR
- THERMOMETER
- ANCHOR
- CAP
- CB — CATCH BASIN
- CO — END OF LINE, CLEANOUT
- CO — FLOOR, CLEANOUT
- WCO — WALL, CLEANOUT
- EXPANSION COMPENSATOR OR EXPANSION JOINT
- FLEXIBLE PIPE CONNECTOR
- FD — FLOOR DRAINS
- PIPE GUIDE
- MH — MANHOLE
- MGS — MASTER GAS SHUT OFF
- PRS — PRESSURE REDUCING STATION
- RPBP — REDUCED PRESSURE BACKFLOW PREVENTER
- STRAINER
- UNION

PLUMBING GENERAL NOTES

1. COORDINATE ROUTING OF PIPING WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO AVOID CONFLICTS.
2. VERIFY ALL CONDITIONS IN FIELD BEFORE START OF CONSTRUCTION. NOTIFY ARCHITECT/ENGINEER OF DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS.
3. COMPLY WITH ALL APPLICABLE LOCAL AND STATE CODES.
4. PROVIDE ROUGH-INS AND FINAL CONNECTIONS TO FIXTURES AND EQUIPMENT FURNISHED BY LAB EQUIPMENT CONTRACTOR. USE ONLY APPROVED EQUIPMENT AND FIXTURE SHOP DRAWINGS, FROM FSEC, FOR ROUGH-IN SIZES AND LOCATIONS.
5. COORDINATE ANY REQUIRED SHUTDOWN OF SERVICES OR EQUIPMENT WITH OWNER'S REPRESENTATIVE, MINIMIZE INTERRUPTION OF EXISTING SERVICES. VERIFY ALL SYSTEMS BEFORE STARTING DEMOLITION TO ASSURE OTHER AREAS WILL NOT LOSE SERVICE.
6. PROVIDE TRAP SEAL PROTECTION ON ALL FLOOR DRAINS, FLOOR SINKS AND HUB DRAINS SUBJECT TO EVAPORATION. INSTALL PER MANUFACTURERS RECOMMENDATIONS.
7. PROVIDE ASSE 1070 MIXING VALVE AT ALL BARRIER FREE SINKS AND ALL HAND WASHING SINKS TO PROVIDE TEMPERED WATER TO HOT WATER SIDE OF FAUCET.
8. PIPING INSTALLED IN THE WAY OF ACCESS OR MAINTENANCE TO EQUIPMENT SHALL BE RELOCATED AT THE EXPENSE OF THE INSTALLING CONTRACTOR.
9. PROVIDE SHUTOFF VALVES AT ALL FIXTURES AND EQUIPMENT.
10. COORDINATE ALL FLOOR CUTTING WITH STRUCTURAL TRADES BEFORE CUTTING.
11. COORDINATE LOCATIONS OF FLOOR DRAINS AND FLOOR SINKS WITH LOCATIONS OF EQUIPMENT AND EQUIPMENT HOUSEKEEPING PADS. COORDINATE WITH SLOPING OF FLOOR SO THAT RIM OF DRAIN IS FLUSH WITH FINISH FLOOR.
12. COORDINATE HANGING AND SUPPORT OF PIPING WITH STRUCTURAL.
13. COORDINATE FLOOR, WALL, AND ROOF PENETRATIONS ETC. WITH ARCHITECTURAL TRADES. PROVIDE TEMPORARY WATER TIGHT SEAL FOR ALL EXTERIOR WALL AND ROOF PENETRATION AS NECESSARY.
14. PROVIDE PIPE SLEEVES WHERE PIPES PENETRATE WALLS.
15. HOLES AND PENETRATIONS IN RATED WALLS SHALL BE PATCHED WITH APPROPRIATE FIRESTOP MATERIALS FOR RATING REQUIRED.
16. PROVIDE PIPE SLEEVES WHERE PIPES RUN BELOW FOOTING.
17. INSTALL EXTERIOR CLEAN OUTS FLUSH WITH SURFACE.
18. INSTALL PIPING IN AN ORGANIZED MANNER. DO NOT ROUTE IN FRONT OF WINDOWS.
19. THE INSTALLATION OF ALL PIPING SHALL BE CLOSELY COORDINATED WITH NEW SHEET METAL, HVAC PIPING, ELECTRICAL, AND STRUCTURAL CONDITIONS. NOT ALL REQUIRED OFFSETS AND FITTINGS ARE INDICATED, BUT SHALL BE PROVIDED. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR CLEARANCES. THE LOCATION OF SANITARY, STORM AND VENT LINES SHALL TAKE PRECEDENCE OVER HVAC AND FIRE PROTECTION PIPING AND ELECTRICAL CONDUIT AND CABLE TRAY.
20. PROVIDE WATER HAMMER ARRESTORS PER PDI WH-201 AND UP STREAM OF ALL AUTOMATIC AND FAST CLOSING VALVES INCLUDING BUT NOT LIMITED TO SOLENOID VALVES.
21. ALL EMERGENCY EYEWASH UNITS AND EMERGENCY SHOWERS SHALL BE PROVIDED WITH TEMPERED WATER AND SHALL BE IN COMPLIANCE WITH ANSI Z358.1.

PHASING

- EXISTING - TO REMAIN
- EXISTING - FOR DEMOLITION
- POINT OF DISCONNECTION BETWEEN EXISTING AND DEMOLITION
- POINT OF CONNECTION BETWEEN PROPOSED AND EXISTING

PLUMBING SYMBOLOGY

- CW — COLD WATER
- HW — HOT WATER
- HR — HOT WATER RETURN
- SAN — SANITARY WASTE
- ST — STORM
- OD — STORM (OVERFLOW DRAINAGE)
- V — VENT
- CD — CONDENSATE DRAIN
- CA — COMPRESSED AIR
- G — NATURAL GAS
- G(EPS) — NATURAL GAS, EMERGENCY POWER

PLUMBING DEMOLITION NOTES

1. NO ITEMS TO BE ABANDONED IN PLACE.
2. ALL ITEMS TO BE DEMOLISHED TO BE REMOVED AND REMAINING OPEN SYSTEMS TO BE PATCHED, CAPPED AND SEALED TO PROVIDE A FINISHED SYSTEM.
3. DEMOLISHED PLUMBING LINE SHALL NOT BE ALLOWED TO REMAIN OPEN, CAP AND PROTECT TO AVOID CONTAMINATION TO AND FROM THE SURROUNDING AREAS.
4. ALL SYSTEMS OPENED DURING DEMOLITION SHALL BE CLOSED AND RETURNED TO OPERATION BY END OF SHIFT, NO SYSTEMS ALLOWED TO BE LEFT OPEN WHEN NOT BEING SUPERVISED BY CONTRACTOR RESPONSIBLE FOR THAT WORK TRADE.

PLUMBING FIXTURE SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	CW	HW	SAN	VENT	REMARKS
EWC-1	ELKAY	LZSTL8WSSP	BI-LEVEL ADA ELECTRIC WATER COOLER WITH INTEGRAL SENSOR OPERATED BOTTLE FILLER. PROVIDE ELKAY MODEL LZSTL8WSSP ENHANCED EZH2O STAINLESS STEEL UNIT WITH PUSHBAR ACTIVATION, 20-SECOND AUTO SHUTOFF, BOTTLES SAVED COUNTER, LED FILTER STATUS INDICATOR, 3000 GALLON NSF 42/53 FILTER, AND ACCESSORIES.	1/2"		1 1/4"	1 1/2"	1
FS-1	JAY R. SMITH	3006-Y04	STAINLESS STEEL FLOOR SINK / INDIRECT WASTE RECEPTOR WITH SEDIMENT BUCKET, 12" SQUARE ADA GRATE, AND NO-HUB OUTLET. PROVIDE J.R. SMITH MODEL 3006-Y04 SANI-CEPTOR WITH TYPE 304 STAINLESS STEEL BODY, TYPE 316 STAINLESS STEEL ADA GRATE, SEEPAGE CONTROL HOLES, AND ACCESSORIES.					1
LAV-1	SLOAN	SS-3003	VITREOUS CHINA WALL-HUNG LAVATORY WITH INTEGRAL BACKSPLASH, FRONT OVERFLOW, AND ALL MOUNTING HARDWARE. PROVIDE CHICAGO FAUCETS MODEL 116.201.AB.1.0.5 GPM BATTERY-POWERED SENSOR FAUCET WITH SINGLE TEMPERED WATER SUPPLY, POLISHED CHROME FINISH, INFRARED SENSOR, AND FLEXIBLE SUPPLY HOSES. PROVIDE SYMMONS MODEL 8210DX ASSE 1070 THERMOSTATIC MIXING VALVE, MCGUIRE MODEL PW2125 INSULATED P-TRAP, AND SUPPLY COVERS.	1/2"	1/2"	1 1/4"	1 1/2"	1
S-1	ELKAY	ELUHAD191655	STAINLESS STEEL SINGLE BOWL UNDERMOUNT ADA SINK WITH REAR CENTER DRAIN.PROVIDE FAUCET ELKAY MODEL LK6000CR GOOSENECK FAUCET WITH PULL-DOWN SPRAY AND CERAMIC DISC VALVE, McGUIRE MODEL 152 WIDE TOP SINK STRAINER, P-TRAP, SUPPLY STOPS, AND ACCESSORIES.	1/2"	1/2"	2"	1 1/2"	1
SS-1	MUSTEE	MODEL 63M	MOLDED FIBERGLASS SERVICE BASIN. PROVIDE WITH CHICAGO FAUCETS MODEL 897-MPRCF EXPOSED WALL-MOUNT SERVICE FAUCET WITH VACUUM BREAKER, PAIL HOOK, WALL BRACE, AND ADJUSTABLE ARMS. PROVIDE McGUIRE MODEL 152 WIDE TOP SINK STRAINER, P-TRAP, SUPPLY STOPS, AND ACCESSORIES.	3/4"	3/4"	3"	2"	1
WC-1	SLOAN	WETS-2020.1401	VITREOUS CHINA FLOOR-MOUNTED ADA WATER CLOSET MODEL ST-2029 WITH ELONGATED BOWL AND TOP SPUD. G2 8111 1.28 GPF EXPOSED SENSOR FLUSHOMETER, BATTERY OPERATED, POLISHED CHROME FINISH, CONTROL STOP, VACUUM BREAKER, HEAVY DUTY OPEN FRONT SEAT.	1 1/2"		4"	2"	1

NOTES:
1. ALL PLUMBING MATERIALS AND FIXTURES SHALL COMPLY WITH BUILD AMERICA BUY AMERICA REQUIREMENTS IN ACCORDANCE WITH 49 U.S.C. 5323(j) AND 49 CFR PART 661.

PLUMBING FIXTURE SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	SIZE	REMARKS
DSN-1	ZURN INDUSTRIES, LLC	Z199	BASIS OF DESIGN DOWNSPOUT NOZZLE. ALL NICKEL BRONZE BODY WITH NO-HUB CONNECTION, DECORATIVE WALL FLANGE, AND REMOVABLE STAINLESS STEEL SCREEN.	<varies>	<varies>
OD-1	JAY R. SMITH	1010Y-E	LARGE GENERAL PURPOSE OVERFLOW ROOF DRAIN WITH LOW PROFILE DOME, DUCO CAST IRON BODY, COMBINED FLASHING CLAM, POLYETHYLENE DOME, NO-HUB OUTLET, EXTENSION HEIGHT AS REQUIRED FOR OVERFLOW WEIR, UNDERDECK CLAMP, SUMP RECEIVER	4"	1
RD-1	JAY R. SMITH	1010Y	LARGE GENERAL PURPOSE ROOF DRAIN WITH LOW PROFILE DOME, DUCO CAST IRON BODY, COMBINED FLASHING CLAM, POLYETHYLENE DOME, NO-HUB OUTLET, UNDERDECK CLAMP, SUMP RECEIVER	4"	1

NOTES:
1. ALL PLUMBING MATERIALS AND FIXTURES SHALL COMPLY WITH BUILD AMERICA BUY AMERICA REQUIREMENTS IN ACCORDANCE WITH 49 U.S.C. 5323(j) AND 49 CFR PART 661.

PLUMBING PUMP SCHEDULE

MARK	MANUFACTURER	PUMP TYPE	PUMP SERIES	MODEL	FLOW (GPM)	TOTAL HEAD (FT-H2O)	PUMP SPEED (RPM)	MOTOR HP	MOTOR V	MOTOR PH	MOTOR HZ	REMARKS
SP-1	ZOELLER	SUBMERSIBLE EFFLUENT PUMP	HIGH HEAD FLOW-MATE	N4161	50	15	3450	1	115	1	60	1,2,3,4

NOTES:
1. COMPLY WITH BUILD AMERICA BUY AMERICA REQUIREMENTS IN ACCORDANCE WITH 49 U.S.C. 5323(j) AND 49 CFR PART 661.
2. EQUIPMENT LISTED PROVIDED IN ADD ALTERNATE.
3. PROVIDE PIVOT PRO SIMPLEX CONTROL PANEL MODEL 11334-0001.
4. PROVIDE SWITCH-MATE FLOAT SWITCHES AND HIGH-WATER ALARM FLOATS AS REQUIRED FOR COMPLETE OPERATION.
5. PROVIDE 30-0152, 2" CAST IRON NPT FULL-FLOW CHECK VALVE.
6. PROVIDE TOPP INDUSTRIES FB24x30F FIBERGLASS BASIN WITH C24ELE COVER.

PLUMBING SHEET INDEX

NUMBER	DESCRIPTION
P001	GENERAL PLUMBING INFORMATION
PD101	FIRST FLOOR PLUMBING DEMOLITION PLAN
PD102	ROOF PLUMBING DEMOLITION PLAN
P100	BASEMENT PLUMBING PLAN
P101	FIRST FLOOR PLUMBING PLAN
P102	SECOND FLOOR AND ROOF PLUMBING PLAN

PROGRESSIVE COMPANIES
PROGRESSIVE AE, INC.
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

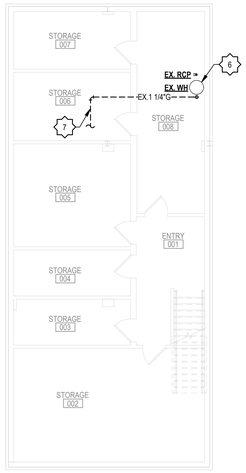
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

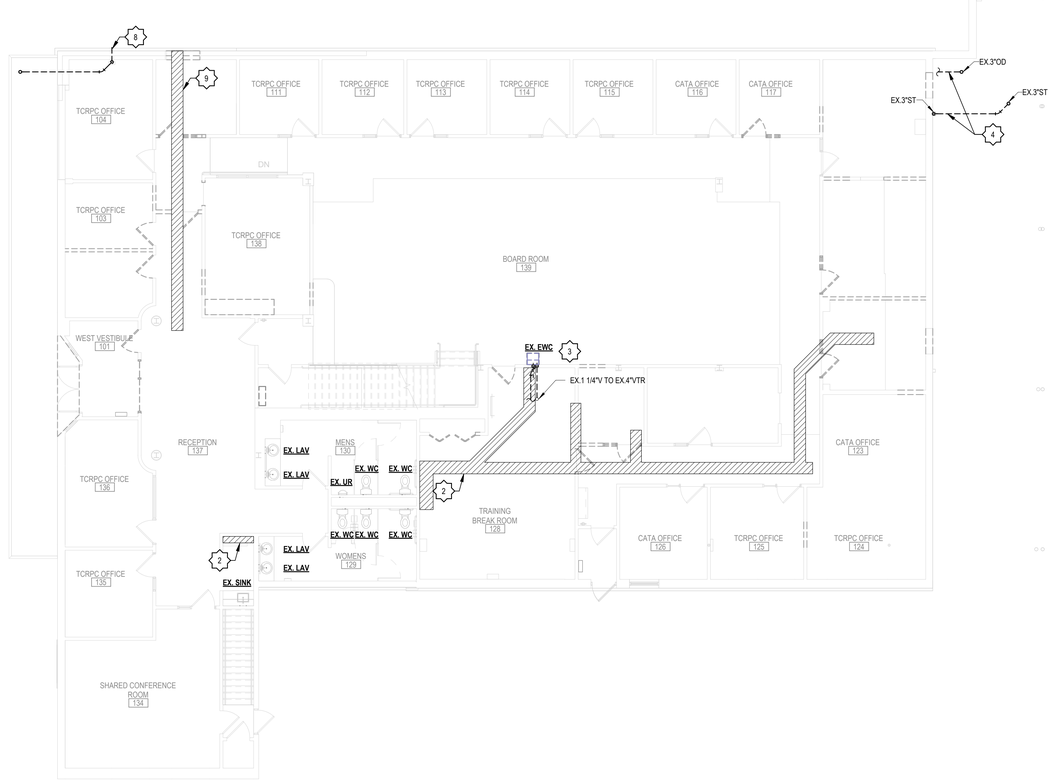
PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

GENERAL PLUMBING INFORMATION
P001

7/24/2026 12:23:55 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
P001
GENERAL PLUMBING INFORMATION
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE, AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT HERETO.



BASEMENT PLUMBING DEMOLITION PLAN
1/8" = 1'-0"



FIRST FLOOR PLUMBING DEMOLITION PLAN
1/8" = 1'-0"

PLUMBING DEMOLITION KEYNOTES

1. REMOVE EXISTING GAS PIPING SERVING DEMOLITION AREA BACK TO EXISTING GAS METER, CAP AND SEAL GAS PIPING AT METER CONNECTION OR AS REQUIRED TO MAINTAIN EXISTING SYSTEM OPERATION.
2. COORDINATE REQUIRED SAWCUTTING WITH ARCHITECTURAL PLANS FOR NEW PLUMBING FIXTURE CONNECTIONS. PREPARE EXISTING WASTE PIPING FOR NEW CONNECTIONS. FIELD VERIFY EXISTING PIPE LOCATIONS, FLOW DIRECTION, AND INVERT ELEVATIONS PRIOR TO DEMOLITION AND INSTALLATION OF NEW WORK. VERIFY EXISTING CONDITIONS ARE SUITABLE FOR PROPOSED GRAVITY DRAINAGE.
3. DISCONNECT AND REMOVE EXISTING DRINKING FOUNTAIN, BOTTLE FILLER, TRIM, AND ASSOCIATED ACCESSORIES. REMOVE ASSOCIATED DOMESTIC WATER, SANITARY, AND WASTE PIPING AS REQUIRED AND CAP AND SEAL AT ACTIVE MAIN.
4. DISCONNECT AND REMOVE EXISTING STORM DRAIN PIPING AS REQUIRED FOR NEW CONSTRUCTION. STORM PIPING SHALL BE REROUTED UNDER NEW WORK. CONTRACTOR SHALL FIELD VERIFY EXACT EXISTING ROUTING AND CONNECTION LOCATIONS PRIOR TO DEMOLITION.
5. DISCONNECT AND REMOVE EXISTING GAS BRANCH PIPING SERVING ROOFTOP UNIT AND ASSOCIATED ACCESSORIES.
6. EXISTING WATER HEATER SHALL REMAIN. CONTRACTOR SHALL FIELD VERIFY CONDITION, CAPACITY, GAS PRESSURE REQUIREMENTS, AND SERVICEABILITY OF EXISTING UNIT FOR REUSE WITH NEW CONSTRUCTION PRIOR TO INSTALLATION OF NEW WORK.
7. DEMOLISH EXISTING GAS PIPING UP TO EXISTING WATER HEATER. FIELD VERIFY EXACT EXTENT AND ROUTING TO MAIN.
8. DISCONNECT AND DEMOLISH EXISTING STORM PIPING FROM ROOF DRAIN DOWN TO OUTLET. TO BE REROUTED DURING NEW CONSTRUCTION.
9. ADD ALTERNATE 1: SAWCUT AND REMOVE EXISTING FLOOR SLAB AS REQUIRED FOR ELEVATOR SUMP PIPING. CONTRACTOR SHALL FIELD VERIFY EXACT EXTENT AND LOCATION OF EXISTING PIPING AND REQUIRED SAWCUTTING PRIOR TO DEMOLITION. COORDINATE SAWCUTTING WITH ARCHITECTURAL DEMOLITION PLANS

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

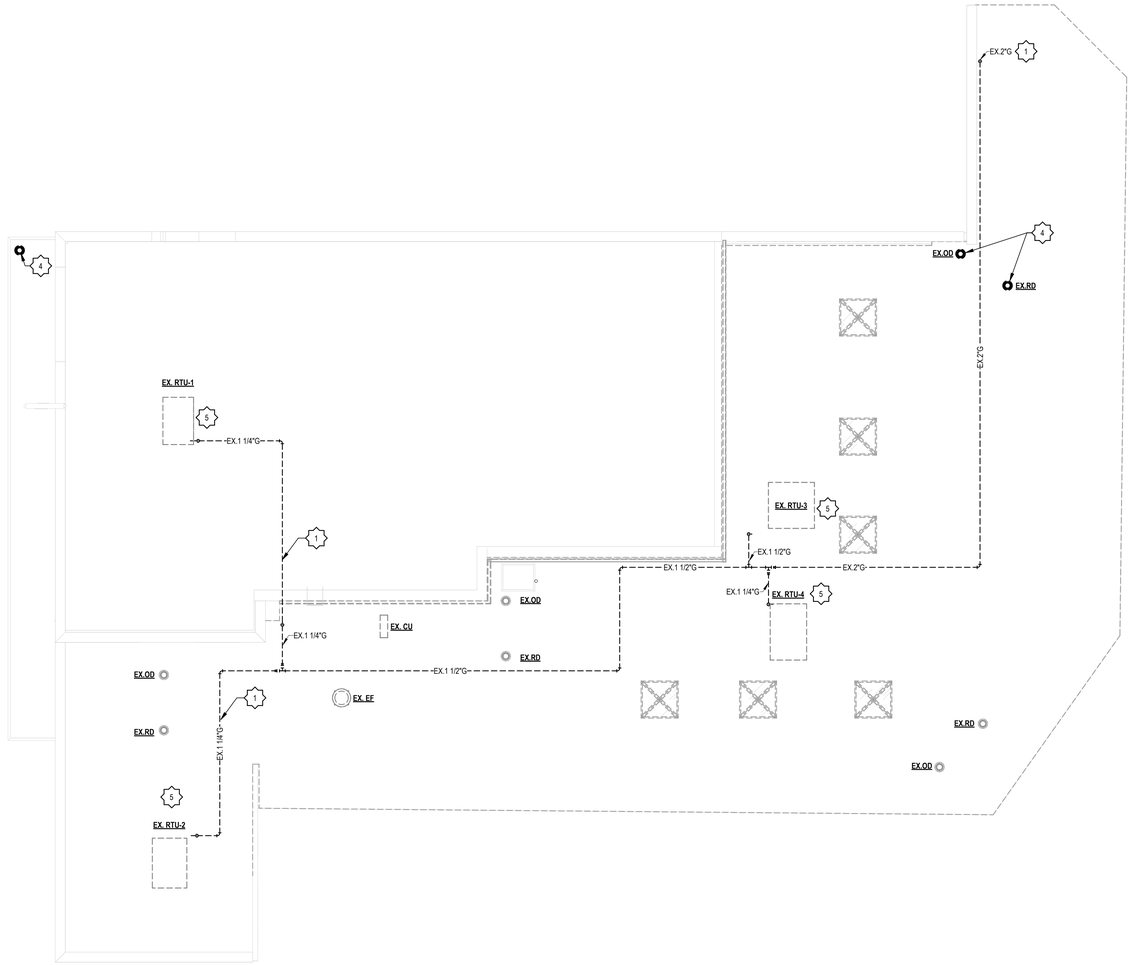
07/04/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

FIRST FLOOR PLUMBING DEMOLITION PLAN

PD101

7/24/2026 12:24:37 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington_ME2CH.rvt
PD101
FIRST FLOOR PLUMBING DEMOLITION PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE, AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



ROOF PLUMBING DEMOLITION PLAN
1/8" = 1'-0"

PLUMBING DEMOLITION KEYNOTES

1. REMOVE EXISTING GAS PIPING SERVING DEMOLITION AREA BACK TO EXISTING GAS METER. CAP AND SEAL GAS PIPING AT METER CONNECTION OR AS REQUIRED TO MAINTAIN EXISTING SYSTEM OPERATION.
2. COORDINATE REQUIRED SAWCUTTING WITH ARCHITECTURAL PLANS FOR NEW PLUMBING FIXTURE CONNECTIONS. PREPARE EXISTING WASTE PIPING FOR NEW CONNECTIONS. FIELD VERIFY EXISTING PIPE LOCATIONS, FLOW DIRECTION, AND INVERT ELEVATIONS PRIOR TO DEMOLITION AND INSTALLATION OF NEW WORK. VERIFY EXISTING CONDITIONS ARE SUITABLE FOR PROPOSED GRAVITY DRAINAGE.
3. DISCONNECT AND REMOVE EXISTING DRINKING FOUNTAIN, BOTTLE FILLER, TRIM, AND ASSOCIATED ACCESSORIES. REMOVE ASSOCIATED DOMESTIC WATER, SANITARY, AND WASTE PIPING AS REQUIRED AND CAP AND SEAL AT ACTIVE MAIN.
4. DISCONNECT AND REMOVE EXISTING STORM DRAIN PIPING AS REQUIRED FOR NEW CONSTRUCTION. STORM PIPING SHALL BE REROUTED UNDER NEW WORK. CONTRACTOR SHALL FIELD VERIFY EXACT EXISTING ROUTING AND CONNECTION LOCATIONS PRIOR TO DEMOLITION.
5. DISCONNECT AND REMOVE EXISTING GAS BRANCH PIPING SERVING ROOFTOP UNIT AND ASSOCIATED ACCESSORIES.
6. EXISTING WATER HEATER SHALL REMAIN. CONTRACTOR SHALL FIELD VERIFY CONDITION, CAPACITY, GAS PRESSURE REQUIREMENTS, AND SERVICEABILITY OF EXISTING UNIT FOR REUSE WITH NEW CONSTRUCTION PRIOR TO INSTALLATION OF NEW WORK.
7. DEMOLISH EXISTING GAS PIPING UP TO EXISTING WATER HEATER. FIELD VERIFY EXACT EXTENT AND ROUTING TO MAIN.
8. DISCONNECT AND DEMOLISH EXISTING STORM PIPING FROM ROOF DRAIN DOWN TO OUTLET. TO BE REROUTED DURING NEW CONSTRUCTION.
9. ADD ALTERNATE 1: SAWCUT AND REMOVE EXISTING FLOOR SLAB AS REQUIRED FOR ELEVATOR SUMP PIPING. CONTRACTOR SHALL FIELD VERIFY EXACT EXTENT AND LOCATION OF EXISTING PIPING AND REQUIRED SAWCUTTING PRIOR TO DEMOLITION. COORDINATE SAWCUTTING WITH ARCHITECTURAL DEMOLITION PLANS

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

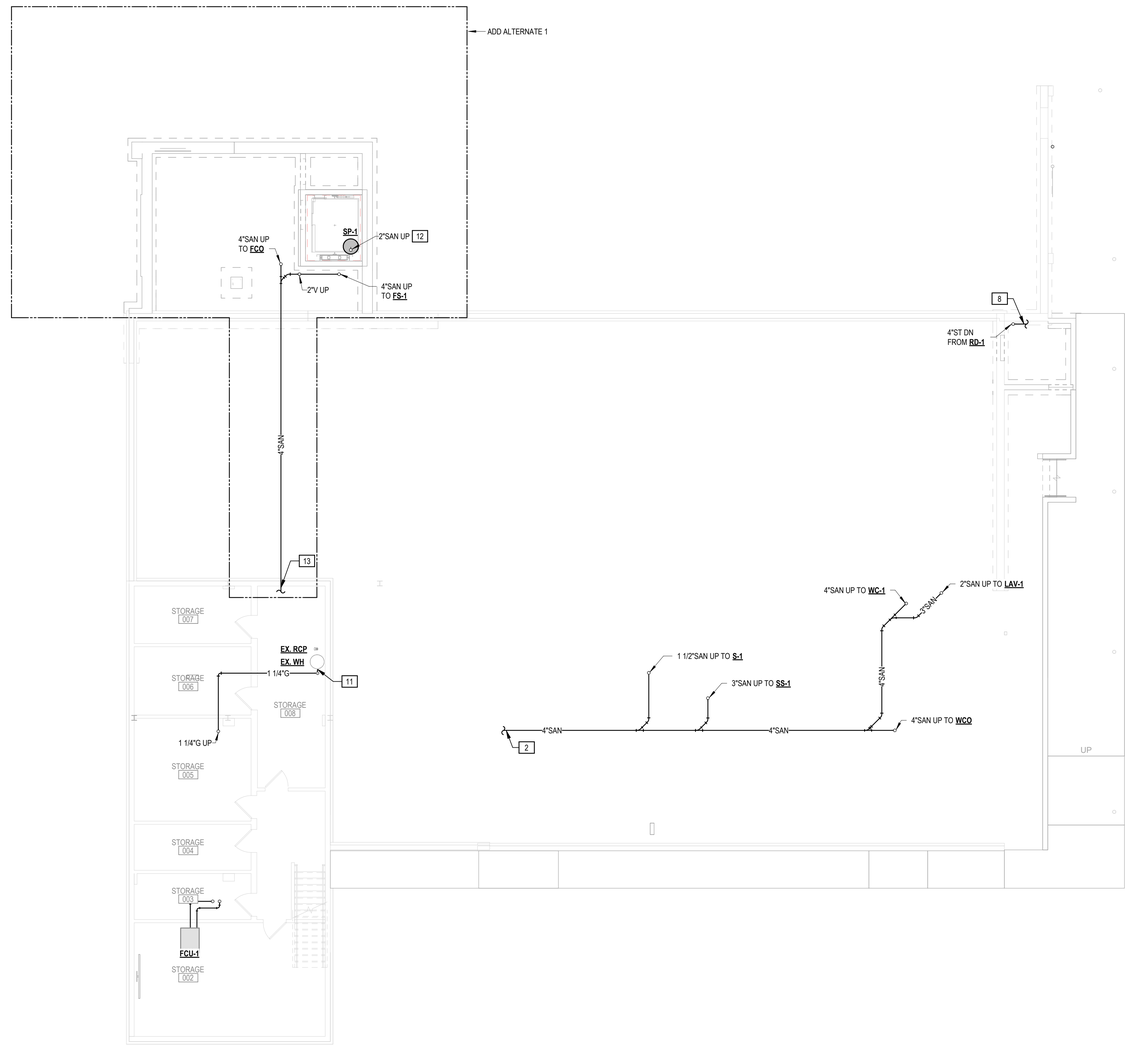
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

ROOF PLUMBING DEMOLITION PLAN
PD102

7/24/2026 12:24:19 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023-CATA-Revit-511 S Washington - MECH.rvt
PD - PD102
ROOF PLUMBING DEMOLITION PLAN
THIS DOCUMENT WAS DATA PREPARED BY PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE. AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO



BASEMENT PLUMBING PLAN
1/8" = 1'-0"

PLUMBING KEYNOTES

1. PROVIDE NEW NATURAL GAS PIPING FROM EXISTING GAS METER TO SERVE NEW PLUMBING AND MECHANICAL EQUIPMENT AS INDICATED ON PLANS.
2. CONNECT NEW SANITARY PIPING TO EXISTING BATHROOM GROUP WASTE SYSTEM. VERIFY FIELD CONDITIONS AND CONNECTION POINT PRIOR TO INSTALLATION.
3. PROVIDE NEW DOMESTIC WATER, VENT, AND WASTE PIPING CONNECTIONS TO NEW DRINKING FOUNTAIN AND BOTTLE FILLER.
4. PROVIDE NEW STORM DRAIN PIPING ROUTING AS REQUIRED FOR NEW CONSTRUCTION AND COORDINATE CONNECTIONS TO EXISTING STORM SYSTEM.
5. CONNECT GAS PIPING TO NEW ROOFTOP UNIT AND PROVIDE SHUTOFF VALVES, DRIP LEGS, UNIONS, AND ACCESSORIES. REFER TO DETAIL A5 & A6 ON SHEET P001.
6. CONNECT NEW DOMESTIC WATER PIPING TO EXISTING BATHROOM GROUP PIPING AS INDICATED ON PLANS. CONTRACTOR SHALL FIELD VERIFY EXISTING ROUTING AND CONFIRM EXISTING PIPE SIZES ARE ADEQUATE TO SERVE NEW CONNECTIONS PRIOR TO INSTALLATION.
7. PROVIDE THERMOSTATIC BALANCING VALVE AT NEW HOT WATER RECIRCULATION BRANCH. SET VALVE TO MAINTAIN DESIGN RETURN WATER TEMPERATURE. INSTALL IN ACCORDANCE WITH MANUFACTURER 'S REQUIREMENTS.
8. ROUTE STORM PIPING BELOW GRADE AND CONNECT TO EXTERIOR TRENCH DRAIN SYSTEM. REFER TO CIVIL PLANS FOR CONTINUATION OF SITE STORM PIPING AND FINAL CONNECTION. COORDINATE CONNECTION IN FIELD.
9. ROUTE DOMESTIC AND VENT PIPING IN SOFFIT AROUND SKYLIGHT SUPPORT.
10. CONNECT NEW VENT PIPING TO VENT RISER THROUGH ROOF. VERIFY CONDITION OF EXISTING PIPING AND WATER SEAL AT ROOF.
11. CONNECT GAS PIPING TO EXISTING WATER HEATER AND PROVIDE SHUTOFF VALVES, DRIP LEGS, UNIONS, AND ACCESSORIES

ADD ALTERNATE

ALT-1
2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE:

12. ROUTE SUMP PUMP DISCHARGE PIPING TO FLOOR SINK ON FIRST FLOOR AS INDICATED ON PLANS. PROVIDE INDIRECT WASTE CONNECTION IN ACCORDANCE WITH APPLICABLE CODE REQUIREMENTS.

13. ROUTE NEW SANITARY PIPING TO EXISTING BASEMENT LEVEL. VERIFY IN FIELD SCOPE OF SAWCUT AND WASTE PIPING CONNECTION OF FLOOR SINK TO MAIN SANITARY LINE.

14. ROUTE VENT UP IN WALL TO SECOND FLOOR CEILING. PROVIDE 4" ROOF TERMINATION AT ROOF.

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

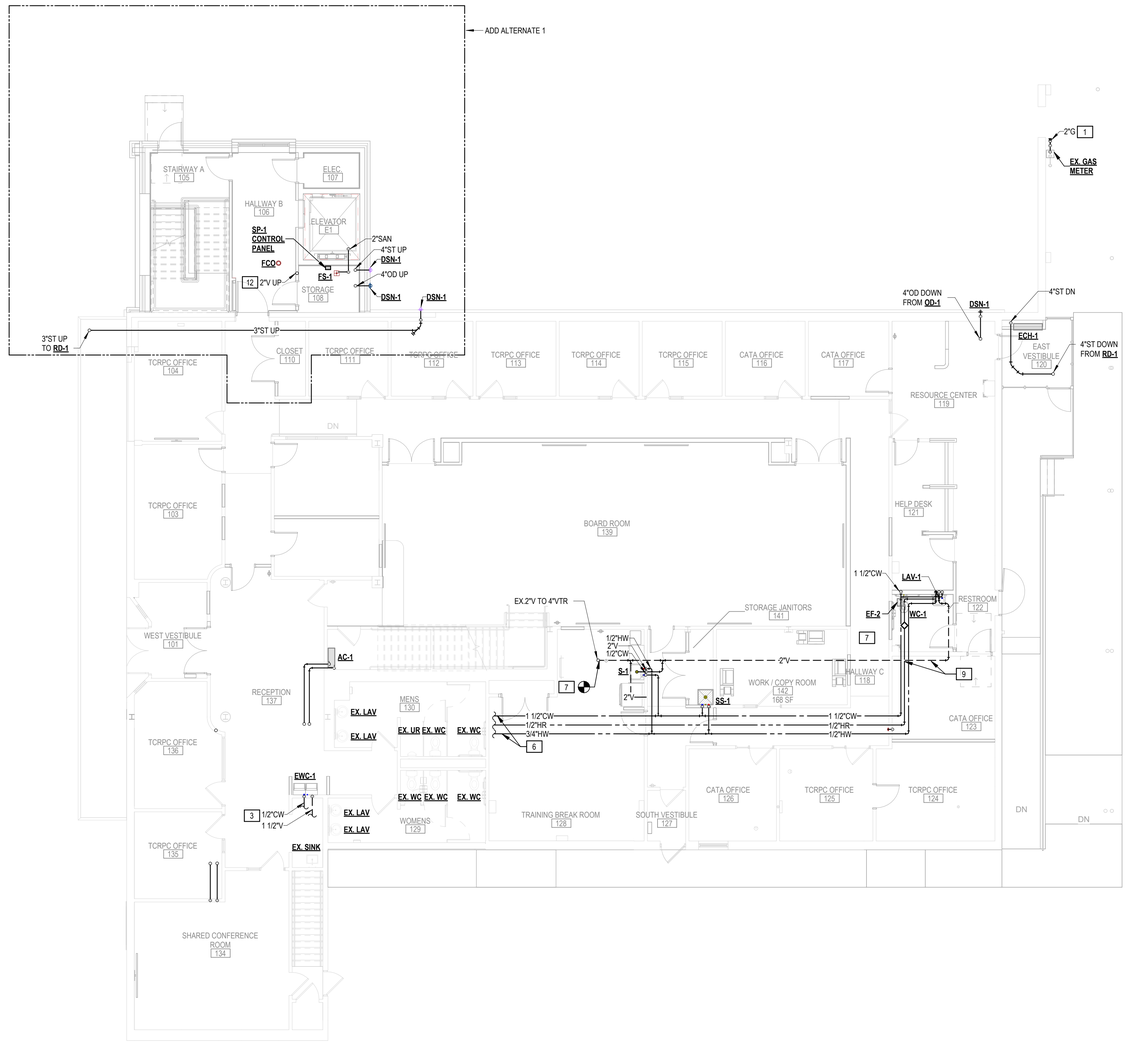
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

BASEMENT PLUMBING PLAN
P100

THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AE AND IS INSTRUMENT OF SERVICE. AE/PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO

7/24/2026 12:23:5 PM Autodesk Docs://75820023 - CATA Renovation of 511 S Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
BA - P100
BASEMENT PLUMBING PLAN



FIRST FLOOR PLUMBING PLAN

1/8" = 1'-0"

PLUMBING KEYNOTES

1. PROVIDE NEW NATURAL GAS PIPING FROM EXISTING GAS METER TO SERVE NEW PLUMBING AND MECHANICAL EQUIPMENT AS INDICATED ON PLANS.
2. CONNECT NEW SANITARY PIPING TO EXISTING BATHROOM GROUP WASTE SYSTEM. VERIFY FIELD CONDITIONS AND CONNECTION POINT PRIOR TO INSTALLATION.
3. PROVIDE NEW DOMESTIC WATER, VENT, AND WASTE PIPING CONNECTIONS TO NEW DRINKING FOUNTAIN AND BOTTLE FILLER.
4. PROVIDE NEW STORM DRAIN PIPING ROUTING AS REQUIRED FOR NEW CONSTRUCTION AND COORDINATE CONNECTIONS TO EXISTING STORM SYSTEM.
5. CONNECT GAS PIPING TO NEW ROOFTOP UNIT AND PROVIDE SHUTOFF VALVES, DRIP LEGS, UNIONS, AND ACCESSORIES. REFER TO DETAIL A5 & A6 ON SHEET P001.
6. CONNECT NEW DOMESTIC WATER PIPING TO EXISTING BATHROOM GROUP PIPING AS INDICATED ON PLANS. CONTRACTOR SHALL FIELD VERIFY EXISTING ROUTING AND CONFIRM EXISTING PIPE SIZES ARE ADEQUATE TO SERVE NEW CONNECTIONS PRIOR TO INSTALLATION.
7. PROVIDE THERMOSTATIC BALANCING VALVE AT NEW HOT WATER RECIRCULATION BRANCH. SET VALVE TO MAINTAIN DESIGN RETURN WATER TEMPERATURE. INSTALL IN ACCORDANCE WITH MANUFACTURER 'S REQUIREMENTS.
8. ROUTE STORM PIPING BELOW GRADE AND CONNECT TO EXTERIOR TRENCH DRAIN SYSTEM. REFER TO CIVIL PLANS FOR CONTINUATION OF SITE STORM PIPING AND FINAL CONNECTION. COORDINATE CONNECTION IN FIELD.
9. ROUTE DOMESTIC AND VENT PIPING IN SOFFIT AROUND SKYLIGHT SUPPORT.
10. CONNECT NEW VENT PIPING TO VENT RISER THROUGH ROOF. VERIFY CONDITION OF EXISTING PIPING AND WATER SEAL AT ROOF.
11. CONNECT GAS PIPING TO EXISTING WATER HEATER AND PROVIDE SHUTOFF VALVES, DRIP LEGS, UNIONS, AND ACCESSORIES

ADD ALTERNATE

ALT-1

2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE:

12. ROUTE SUMP PUMP DISCHARGE PIPING TO FLOOR SINK ON FIRST FLOOR AS INDICATED ON PLANS. PROVIDE INDIRECT WASTE CONNECTION IN ACCORDANCE WITH APPLICABLE CODE REQUIREMENTS.
13. ROUTE NEW SANITARY PIPING TO EXISTING BASEMENT LEVEL. VERIFY IN FIELD SCOPE OF SAWCUT AND WASTE PIPING CONNECTION OF FLOOR SINK TO MAIN SANITARY LINE.
14. ROUTE VENT UP IN WALL TO SECOND FLOOR CEILING. PROVIDE 4" ROOF TERMINATION AT ROOF.

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

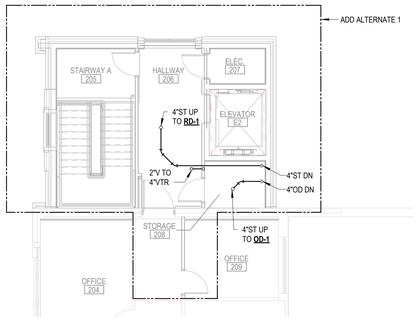
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

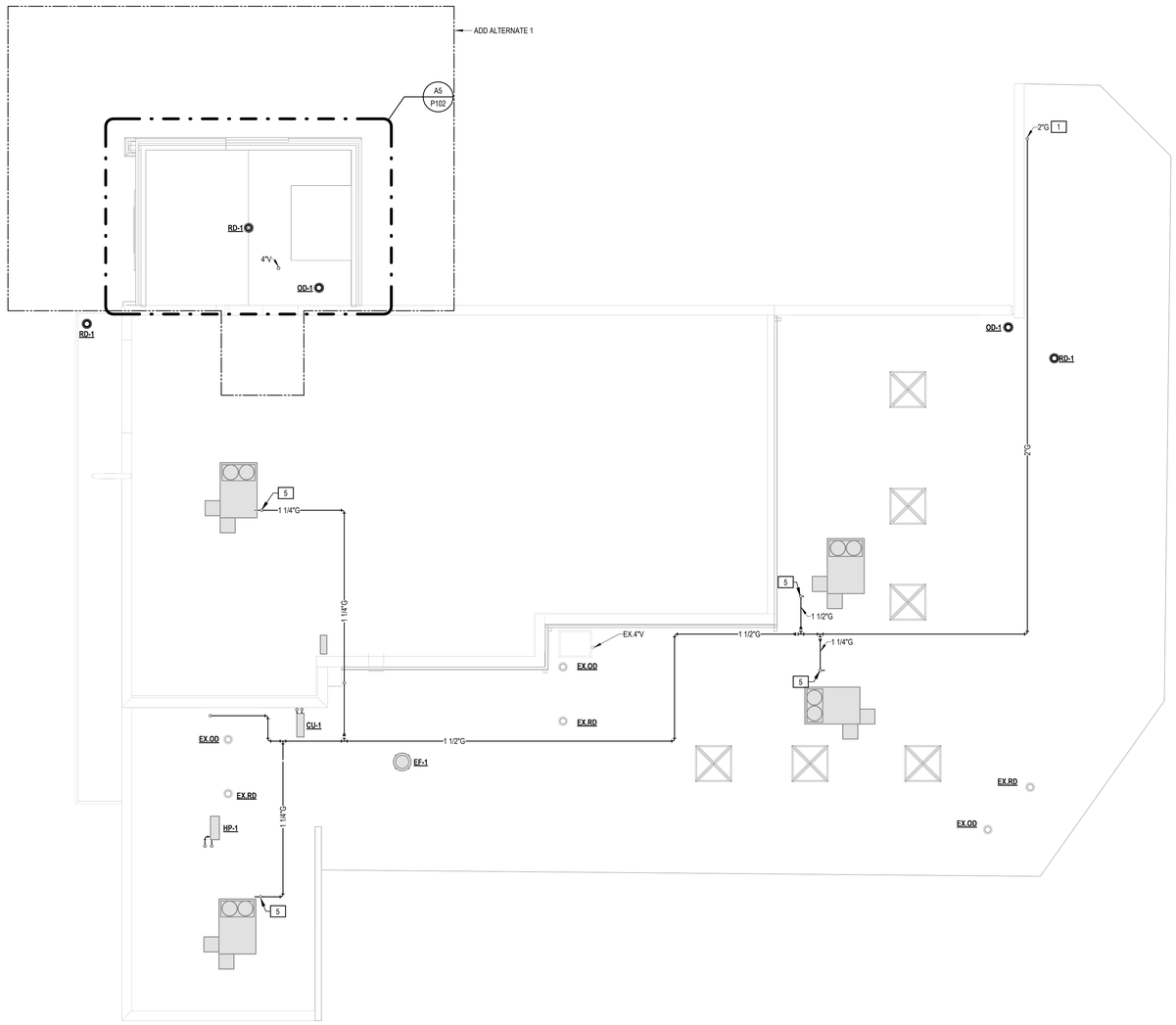
FIRST FLOOR PLUMBING PLAN
P101

7/24/2026 12:41:01 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
83 - 1ST FLOOR PLUMBING PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AE (AN AMTRUM BUT IT IS THE PROPERTY OF PROGRESSIVE AE, INC. SHALL NOT BE USED IN ANY MANNER CONTRARY TO LAW, STATUTORY AND COMMON LAW, WITHOUT THE EXPRESS WRITTEN CONSENT OF PROGRESSIVE AE, INC. ALL RIGHTS RESERVED INCLUDING THE COPYRIGHT THERETO



A5 SECOND FLOOR PLUMBING PLAN

1/8" = 1'-0"



ROOF PLUMBING PLAN

1/8" = 1'-0"

PLUMBING KEYNOTES

1. PROVIDE NEW NATURAL GAS PIPING FROM EXISTING GAS METER TO SERVE NEW PLUMBING AND MECHANICAL EQUIPMENT AS INDICATED ON PLANS.
2. CONNECT NEW SANITARY PIPING TO EXISTING BATHROOM GROUP WASTE SYSTEM. VERIFY FIELD CONDITIONS AND CONNECTION POINT PRIOR TO INSTALLATION.
3. PROVIDE NEW DOMESTIC WATER, VENT, AND WASTE PIPING CONNECTIONS TO NEW DRINKING FOUNTAIN AND BOTTLE FILLER.
4. PROVIDE NEW STORM DRAIN PIPING ROUTING AS REQUIRED FOR NEW CONSTRUCTION AND COORDINATE CONNECTIONS TO EXISTING STORM SYSTEM.
5. CONNECT GAS PIPING TO NEW ROOFTOP UNIT AND PROVIDE SHUTOFF VALVES, DRIP LEGS, UNIONS, AND ACCESSORIES. REFER TO DETAIL A5 & A6 ON SHEET P001.
6. CONNECT NEW DOMESTIC WATER PIPING TO EXISTING BATHROOM GROUP PIPING AS INDICATED ON PLANS. CONTRACTOR SHALL FIELD VERIFY EXISTING ROUTING AND CONFIRM EXISTING PIPE SIZES ARE ADEQUATE TO SERVE NEW CONNECTIONS PRIOR TO INSTALLATION.
7. PROVIDE THERMOSTATIC BALANCING VALVE AT NEW HOT WATER RECIRCULATION BRANCH. SET VALVE TO MAINTAIN DESIGN RETURN WATER TEMPERATURE. INSTALL IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
8. ROUTE STORM PIPING BELOW GRADE AND CONNECT TO EXTERIOR TRENCH DRAIN SYSTEM. REFER TO CIVIL PLANS FOR CONTINUATION OF SITE STORM PIPING AND FINAL CONNECTION. COORDINATE CONNECTION IN FIELD.
9. ROUTE DOMESTIC AND VENT PIPING IN SOFFIT AROUND SKYLIGHT SUPPORT.
10. CONNECT NEW VENT PIPING TO VENT RISER THROUGH ROOF. VERIFY CONDITION OF EXISTING PIPING AND WATER SEAL AT ROOF.
11. CONNECT GAS PIPING TO EXISTING WATER HEATER AND PROVIDE SHUTOFF VALVES, DRIP LEGS, UNIONS, AND ACCESSORIES

ADD ALTERNATE

ALT-1
2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE:

12. ROUTE SUMP PUMP DISCHARGE PIPING TO FLOOR SINK ON FIRST FLOOR AS INDICATED ON PLANS. PROVIDE INDIRECT WASTE CONNECTION IN ACCORDANCE WITH APPLICABLE CODE REQUIREMENTS.
13. ROUTE NEW SANITARY PIPING TO EXISTING BASEMENT LEVEL. VERIFY IN FIELD SCOPE OF SAWCUT AND WASTE PIPING CONNECTION OF FLOOR SINK TO MAIN SANITARY LINE.
14. ROUTE VENT UP IN WALL TO SECOND FLOOR CEILING. PROVIDE 4" ROOF TERMINATION AT ROOF.

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

SECOND FLOOR AND ROOF PLUMBING PLAN
P102

7/24/2026 12:44:04 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
83 - P102
SECOND FLOOR AND ROOF PLUMBING PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE. AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT. 1924272

DUCT CONSTRUCTION & MATERIAL SCHEDULE

DUCT SYSTEM	MATERIAL: G90 GALVANIZED SHEET METAL	MATERIAL: G90 GALVANIZED SHEET METAL W/ 1 IN LINING	MATERIAL: ALUMINUM	MATERIAL: TYPE 304 STAINLESS STEEL	MATERIAL: 16 GA CARBON STEEL	MATERIAL: DOUBLE-WALL LINED G90 GALVANIZED SHEET METAL W/ SOLID INNER WALL	MATERIAL: DOUBLE-WALL G90 GALVANIZED SHEET METAL W/ PERF. INNER WALL	MATERIAL: ZERO-CLEARANCE 2-HR RATED PREMANUFACTURED GREASE EXHAUST DUCT	PRESSURE CLASS (IN WG)	SEAL CLASS	MAX ALLOWED LEAKAGE RATE (%)	REMARKS
SUPPLY AIR WITHOUT TERMINAL UNITS	x								+2	A	5	
RETURN AIR	x								-2	A	5	
SUPPLY AIR DOWNSTREAM OF TERMINAL UNITS	x								+2	A	5	
SUPPLY AIR UPSTREAM OF TERMINAL UNITS	x								+6	A	5	
GENERAL EXHAUST	x								-2	A	5	
SHOWER RM (WET AREA) EXHAUST			x	x		x			-2	A	5	
KITCHEN TYPE I EXHAUST					x			x	-6	A	5	A
DISHWASHER TYPE II EXHAUST				x					-6	A	5	A
OUTSIDE AIR & EXHAUST AIR PLENUMS AT LOUVERS	x		x						+2/ -2	A	5	
SPIRAL SUPPLY							x		+2	A	5	
AIR TRANSFER DUCTS		x							+2	A	5	
PLENUM RETURNS TO RTUS		x							+2	A	5	

REMARKS:
A. ALL WELDED CONSTRUCTION.

DUCT INSULATION SCHEDULE

DUCT SYSTEM	MATERIAL & THICKNESS (IN): FIBERGLASS BLANKET	MATERIAL & THICKNESS (IN): FIBERGLASS BOARD	MATERIAL & THICKNESS (IN): FLEXIBLE ELASTOMERIC	MATERIAL & THICKNESS (IN): ASTM E2336 2-HOUR FIRE RATED BLANKET	JACKET: ALUMINUM	JACKET: CANVAS	MINIMAL THERMAL RESISTANCE VALUE (R-VALUE)	REMARKS
SUPPLY AIR EXCEPT AS NOTED BELOW	1.5						6	
RECTANGULAR SUPPLY AIR IN MECHANICAL ROOMS		1.5				x	6	
RETURN AIR								
RETURN AIR IN MECHANICAL ROOMS								
OUTSIDE AIR AND MIXED AIR	1.5	1.5					6	
DUCT EXPOSED TO OUTDOORS		2	2		x		8, 12	D
KITCHEN TYPE I EXHAUST (GREASE DUCT)				x				A
DISHWASHER TYPE II EXHAUST								
OUTSIDE AIR & EXHAUST AIR PLENUMS AT LOUVERS								
SPIRAL DUCT EXPOSED TO FINISHED SPACE							6	B
WET EXHAUST DUCTS EXPOSED TO FINISHED SPACE	1.5						6	
GENERAL EXHAUST DUCTS WITHIN 10 FT OF DISCHARGE	1.5	1.5					6	
AIR TRANSFER DUCTS								C
COMBUSTION AIR DUCTS	1.5	1.5					6	

REMARKS:
A. PROVIDE THICKNESS AS REQUIRED TO MEET 2 HOUR RATING.
B. REFER TO DOUBLE WALL DUCT SPECIFICATION
C. SHALL BE INTERNALLY LINED. REFER TO CONSTRUCTION SCHEDULE AND PLANS.
D. R-8 REQUIRED FOR CLIMATE ZONES 0 TO 4. R-12 REQUIRED FOR CLIMATE ZONES 5 TO 8.

ABBREVIATIONS - HVAC

Φ	FLAT OVAL DUCT	CWS	CHILLED WATER SUPPLY	HTP	HEAT PUMP	RAF	RETURN AIR FAN
				HTR	HEATER	RC	RE-HEAT COIL
AC	AIR COMPRESSER	DB	DRY BULB	HUM	HUMIDIFIER	RCP	RADIANT CEILING PANEL
AC	ARCHITECTURAL CONTRACTOR	DB	DIALYSIS WASTE & SUPPLY BOX	HW	HOT WATER	RG	RETURN AIR GRILLE
ACL	ACOUSTICALLY LINED	DDC	DIRECT DIGITAL CONTROLS	HWP	HYDRONIC WATER PUMP	RP	RADIANT PANEL
ACU	AIR CONDITIONING UNIT	DDTU	DUAL DUCT TERMINAL UNIT	HX	HEAT EXCHANGER	RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
ACV	AIR CONTROL VALVE	DIFF	DIFFUSER	HZ	HERTZ		
AD	ACCESS DOOR	DISC	DISCONNECT			RPM	REVOLUTIONS PER MINUTE
ADA	AMERICANS WITH DISABILITIES ACT	DPR	DAMPER	INS	INSULATE, INSULATION	RR	RETURN AIR REGISTER
AFS	AIR FLOW SWITCH	DT	DOUBLE THROW	IR	INFRARED	RR	REST ROOM
AFT	AIR FLOW TRANSMITTER					RTU	ROOFTOP UNIT
AHU	AIR HANDLING UNIT	EA	EXHAUST AIR	KVAR	KILOVOLT-AMPERES REACTIVE	RV	RELIEF VENT
AP	ACCESS PANEL	EDB	ENTERING DRY BULB				
APD	AIR PRESSURE DROP	EF	EXHAUST FAN	L	REFRIGERATION LIQUID	S	REFRIGERATION SUCTION
APPROX.	APPROXIMATE	EG	EXHAUST AIR GRILLE	LAB	LABORATORY	SA	SUPPLY AIR
AQ-STAT	AQUA STAT	EHC	ELECTRIC HEATING COIL	LAT	LEAVING AIR TEMPERATURE	SAF	SUPPLY AIR FAN
AS	AMP SWITCH	EIH	ELECTRIC INFARED HEATER	LEED	LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN	SAT	SATURATED
ATS	AUTOMATIC TRANSFER SWITCH	EM	EMERGENCY			SC	STEAM COIL
ATT	SOUND ATTENUATOR	ENT	ENTERING	LVR	LOUVER	SD	SUPPLY AIR DIFFUSER
AVS	ACID VENT STACK	ERC	ENERGY RECOVERY COIL	LWT	LEAVING WATER TEMPERATURE	SG	SUPPLY AIR GRILLE
AW	ACID WASTE	ESP	EXTERNAL STATIC PRESSURE			SG	SPECIFIC GRAVITY
		ET	EXPANSION TANK	MA	MIXED AIR	SK	SINK
B	BOILER	EWB	ENTERING WET BULB	MAV	MANUAL AIR VENT	SM	SURFACE MOUNTED
BAS	BUILDING AUTOMATION SYSTEM	EWT	ENTERING WATER TEMPERATURE	MAX	MAXIMUM	SMM	SNOW MELT MANIFOLD
BBD	BOILER BLOWDOWN	EX	EXISTING	MB	MOP BASIN	SMR	SNOW MELT RETURN
BC	BOOSTER COIL	EXH	EXHAUST	MBH	THOUSAND BRITISH THERMAL UNIT	SMS	SNOW MELT SUPPLY
BDD	BACKDRAFT DAMPER	EXP	EXPLOSION PROOF	MCA	MINIMUM CIRCUIT AMPS	SR	SUPPLY AIR REGISTER
BFP	BOILER FEEDWATER PUMP			MD	MOTORIZED DAMPER, MOTION DETECTOR	STL	STEEL
BHP	BREAK HORSEPOWER	F&T	FLOAT & THERMOSTATIC STEAM TRAP	MOP	MAXIMUM OVERCURRENT PROTECTION	STM	STEAM
BMS	BUILDING MANAGEMENT SYSTEM	FC	FLEXIBLE CONNECTION			STOR	STORAGE
BP	BACKFLOW PREVENTER	FCU	FAN COIL UNIT				
		FD	FIRE DAMPER	NC	NORMALLY CLOSED	TERM	TERMINAL
C	CONVECTOR	FDS	FUSED DISCONNECT SWITCH	NF	NONFUSED	TF	TRANSFER FAN
CAB	CABINET	FM	FORCEMAIN	NFDS	NONFUSED DISCONNECT SWITCH	TG	TRANSFER AIR GRILLE
CAP	CAPACITY	FOR	FUEL OIL RETURN	NG	NATURAL GAS	THERM	100 CUBIC FEET OF NATURAL GAS
CC	COOLING COIL	FOS	FUEL OIL SUPPLY	NO	NORMALLY OPEN	TOC	TOP OF CURB
CD	COLD DECK	FPM	FEET PER MINUTE			TR	TAMPER RESISTANT
CD	CONDENSATE DRAIN	FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR	OA	OUTSIDE AIR	TSE	TOP OF STEEL ELEVATION
CF	CEILING FAN			OHD	OVERHEAD DOOR	TU	TERMINAL UNIT
CF	CUBIC FOOT	FT	FIN TUBE	OPG	OPENING		
CFH	CUBIC FEET PER HOUR			ORD	OVERFLOW ROOF DRAIN	U/V	UNIT VENTILATOR
CFM	CUBIC FEET PER MINUTE	G	GAS	OV	OUTLET VELOCITY	UH	UNIT HEATER
CH	CABINET HEATER	GEN	GENERATOR				
CLR	CLEAR, CLEARANCE	GLR	GROUND LOOP RETURN	P	PUMP	V	VOLTS
CMP	CORRUGATED METAL PIPE	GLS	GROUND LOOP SUPPLY	P/T	PETE'S PLUG	VAV	VARIABLE AIR VOLUME
CMPR	COMPRESSOR	GPH	GALLONS PER HOUR	PC	PUMPED CONDENSATE	VCD	VOLUME CONTROL DAMPER
CNR	CONDENSER WATER RETURN	GPM	GALLONS PER MINUTE	PCR	PUMPED CONDENSATE RETURN	VFD	VARIABLE FREQUENCY DRIVE
CNS	CONDENSER WATER SUPPLY	GV	GATE VALVE	PD	PRESSURE DROP	VI	VIBRATION ISOLATOR
COMP	COMPARTMENT			PF	PUMP - FIRE PROTECTION	VOL	VOLUME
COND	CONDENSATE	HC	HEATING COIL	PH	PHASE		
CONV	CONVECTOR	HG	REFRIGERATION HOT GAS	PP	PUMP - PLUMBING	WB	WET BULB
COORD	COORDINATE	HP	HORSEPOWER	PR	PERIMETER RADIATION	WHTR	WATER HEATER
CP	CIRCULATING PUMP	HP STM	HIGH PRESSURE STEAM	PRV	PRESSURE REDUCING VALVE		
CT	COOLING TOWER	HPR	HEAT PUMP WATER RETURN	PRV	POWER ROOF VENTILATOR	XFER	TRANSFER
CTR	COOLING TOWER RETURN	HPS	HEAT PUMP WATER SUPPLY	PSIG	POUNDS PER SQUARE INCH GAUGE		
CTS	COOLING TOWER SUPPLY	HR	HEATING WATER RETURN, HOUR				
CU	COPPER	HS	HEATING WATER SUPPLY	R	RISER		
CV	CONTROL VALVE	HSKP	HOUSEKEEPING PAD	RA	RETURN AIR		
CWR	CHILLED WATER RETURN	HTG	HEATING				

HYDRONIC PIPING NOTES

1. THE INSTALLATION OF ALL PIPING SHALL BE CLOSELY COORDINATED WITH SHEET METAL, ELECTRICAL, AND STRUCTURAL CONDITIONS. NOT ALL REQUIRED OFFSETS AND FITTINGS ARE INDICATED ON DRAWINGS, BUT SHALL BE PROVIDED. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR CLEARANCES.
2. ALL PIPING SHALL BE INSTALLED TO FACILITATE COIL REMOVAL, FILTER REPLACEMENT AND OPENING OF ACCESS PANELS.
3. PIPE ANCHORS, EXPANSION LOOPS, AND GUIDES SHALL BE PROVIDED AS REQUIRED. REFER TO SPECIFICATIONS.
4. SLEEVE AND SEAL EXTERIOR WALL AND ROOF PENETRATIONS TO A WEATHER TIGHT CONDITION. SLEEVE AND SEAL INTERIOR FLOOR PENETRATIONS TO A WATER TIGHT CONDITION.
5. PROVIDE MINIMUM OF 3/4" PIPE FOR ALL PIPING UNLESS SHOWN OTHERWISE.
6. ELEVATIONS AS SHOWN ON THE DRAWINGS ARE TO THE BOTTOM OF ALL PRESSURE PIPING AND TO THE INVERT OF ALL GRAVITY PIPING UNLESS OTHERWISE NOTED.
7. UNLESS OTHERWISE NOTED, ALL PIPING IS OVERHEAD AND AS HIGH AS POSSIBLE TO THE UNDERSIDE OF THE STRUCTURE OR SLAB, WITH SPACE FOR INSULATION WHERE REQUIRED.
8. PIPING AND ASSOCIATED APPURTENANCES SHALL NOT INTERFERE WITH DOORS AND WINDOWS.
9. INSTALL PIPING WITHOUT FORCING OR SPRINGING.
10. ALL PIPING WORK SHALL BE COORDINATED WITH ALL TRADES INVOLVED. PROVIDE OFFSETS IN PIPING AROUND OBSTRUCTIONS ENCOUNTERED IN FIELD.
11. PROVIDE VIBRATION ISOLATORS FOR ALL PIPING SUPPORTS CONNECTED TO, AND WITHIN 50 FEET OF ISOLATED EQUIPMENT (EXCEPT AT BASE ELBOW SUPPORTS AND ANCHOR POINTS) THROUGHOUT MECHANICAL EQUIPMENT ROOMS.
12. AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH UNIT'S DRAIN PAN SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET WITH "P" TRAP. CONDENSATE WATER PIPING SHALL BE A MINIMUM OF 3/4". SEE THE DETAILS SHOWN IN THE DRAWINGS OR MANUFACTURER'S LITERATURE FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP. PITCH DOWN IN DIRECTION OF FLOW, MINIMUM 1 INCH PER 10 FEET.
13. WHERE SPACE PERMITS PROVIDE AUXILIARY DRAIN PANS UNDER COOLING EQUIPMENT LOCATED ABOVE CEILINGS. WHERE SPACE DOES NOT PERMIT THE USE OF AN AUXILIARY DRAIN PAN PROVIDE WATER LEVEL DETECTION DEVICE (FLOAT SWITCH)CONFORMING TO UL 508 THAT WILL SHUT OFF THE EQUIPMENT SERVED IN THE EVENT THAT THE PRIMARY DRAIN IS BLOCKED.

HYDRONIC PIPING SYMBOLOGY

- CD — CONDENSATE DRAIN
- PC — PUMPED CONDENSATE
- REF — REFRIGERANT PIPING (SINGLE DX)
- G — NATURAL GAS
- G(EPS) — NATURAL GAS, EMERGENCY POWER

MECHANICAL SYMBOLS

- SD# / ### — SUPPLY DIFFUSER, SD#, ### CFM ARROWS INDICATE DIRECTION OF THROW
- SD# / ### — SUPPLY DIFFUSER (4-WAY)
- RG# / ### — RETURN OR EXHAUST REGISTER TYPE 'RG#' ### CFM
- EG# / ### — EXHAUST REGISTER TYPE 'EG#' ### CFM
- ### / ### — SIDEWALL SUPPLY, RETURN, OR EXHAUST REGISTER TYPE ## , ### CFM
- SUPPLY DUCT UP
- SUPPLY DUCT DOWN
- RETURN DUCT UP
- RETURN DUCT DOWN
- EXHAUST DUCT UP
- EXHAUST DUCT DOWN
- AIRFLOW / SA — SUPPLY AIR BRANCH CONNECTION WITH VOLUME DAMPER
- AIRFLOW / EXHAUST AIR — RETURN AIR/EXHAUST AIR BRANCH CONNECTION WITH VOLUME DAMPER
- HORIZONTAL FIRE DAMPER
- VERTICAL FIRE DAMPER
- S — SMOKE HORIZONTAL FIRE DAMPER
- S — SMOKE VERTICAL FIRE DAMPER
- FS — COMBINATION FIRE/SMOKE HORIZONTAL FIRE DAMPER
- FS — COMBINATION FIRE/SMOKE VERTICAL FIRE DAMPER
- ATT-# — SOUND ATTENUATOR
- 4P-### — PUMP(SCHEMATIC)
- ###-# — MECHANICAL EQUIPMENT (EXAMPLE ACV-##) SEE SCHEDULE FOR ADDITIONAL
- FT-## — FINNED TUBE RADIATION (SEE DETAIL AND SCHEDULE)
- CUH-# — CABINET UNIT HEATER, TYPE 'CUH-#'
- C-# — CONVECTOR, TYPE 'C-#'
- VOLUME DAMPER
- M — MOTORIZED CONTROL DAMPER

DUCTWORK LEGEND

- SA — SUPPLY AIR
- RA — RETURN AIR
- EA — EXHAUST AIR
- OA — OUTSIDE AIR
- REL — RELIEF AIR
- MA — MIXED AIR

PHASING

- EXISTING - TO REMAIN
- EXISTING - FOR DEMOLITION
- POINT OF DISCONNECTION BETWEEN EXISTING AND DEMOLITION
- POINT OF CONNECTION BETWEEN PROPOSED AND EXISTING

MECHANICAL GENERAL NOTES

1. COMPLY WITH ALL APPLICABLE LOCAL, STATE AND/OR REGULATORY AGENCIES, CODES AND REGULATIONS FOR NEW WORK.
2. DO NOT INSTALL EQUIPMENT, PIPING OR DUCTWORK OVER ANY ELECTRICAL EQUIPMENT OR COMMUNICATION ROOMS.
3. DO NOT RUN ANY PIPING OR DUCTWORK INTO THE ELECTRICAL ROOM UNLESS DEDICATED TO SERVE THAT ROOM.
4. INSTALL MECHANICAL EQUIPMENT TO FACILITATE SERVICING, MAINTENANCE, AND REPAIR OR REPLACEMENT OF EQUIPMENT COMPONENTS. AS MUCH AS PRACTICAL, CONNECT EQUIPMENT FOR EASE OF DISCONNECTING, WITH A MINIMUM OF INTERFERENCE WITH OTHER INSTALLATIONS.
5. LOCATE THERMOSTAT/TEMPERATURE SENSORS 48" ABOVE FINISHED FLOOR OR AS NOTED ON THE PLANS.
6. WORK IDENTIFIED WITH MECHANICAL AND ELECTRICAL NOTES AND KEY NOTES SHALL BE PERFORMED BY QUALIFIED MECHANICAL AND ELECTRICAL CONTRACTORS RESPECTIVELY UNDER DIRECTION OF THE CONSTRUCTION MANAGER. COORDINATE WITH OWNER'S REPRESENTATIVE OR CONSTRUCTION MANAGER.
7. INSTALL SMOKE DETECTOR IN DUCTWORK AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S PRINTED INSTRUCTIONS.
8. VERIFY ALL CONDITIONS IN FIELD BEFORE START OF CONSTRUCTION. NOTIFY ARCHITECT/ENGINEER OF DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS.
9. COORDINATE WORK WITH OTHER TRADES AND WITH THE CONSTRUCTION MANAGER.
10. COORDINATE ANY REQUIRED SHUTDOWN OF SERVICES OR EQUIPMENT WITH OWNER'S REPRESENTATIVE OR CONSTRUCTION MANAGER, MINIMIZE INTERRUPTION OF EXISTING SERVICES.
11. PROVIDE ALL MISCELLANEOUS STEEL AND ITEMS REQUIRED FOR THE PROPER INSTALLATION OF ALL PIPE, SHEET METAL AND EQUIPMENT.
12. COORDINATE FLOOR, WALL & ROOF PENETRATIONS ETC. WITH ARCHITECTURAL TRADES. PROVIDE TEMPORARY WATER TIGHT SEAL FOR ALL EXTERIOR WALL AND ROOF PENETRATION AS NECESSARY.
13. FIRESTOP SHALL BE PROVIDED IN HOLES AND PENETRATIONS IN RATED ASSEMBLIES.

DUCTWORK NOTES

1. THE INSTALLATION OF ALL DUCTWORK SHALL BE CLOSELY COORDINATED WITH NEW PLUMBING, ELECTRICAL, AND STRUCTURAL CONDITIONS. NOT ALL REQUIRED OFFSETS AND FITTINGS ARE INDICATED ON DRAWINGS, BUT SHALL BE PROVIDED. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR CLEARANCES. ALTERNATE DUCT ROUTING SHALL BE APPROVED BY ARCHITECT/ENGINEER BEFORE PROCEEDING IN ORDER TO ENSURE THAT THE AVAILABLE STATIC PRESSURE REMAINS ADEQUATE. DUCTWORK LOCATION SHALL TAKE PRECEDENCE OVER HVAC AND FIRE PROTECTION PIPING AND ELECTRICAL CONDUIT AND CABLE TRAY.
2. REFER TO DUCT TAKEOFF DETAILS. SPIN-IN TYPE WITH SCOOPS SHALL NOT BE ACCEPTED. A MINIMUM OF 2 FEET SHALL BE PROVIDED BETWEEN RUNOUT TAKEOFFS FROM TRUNK DUCTS.
3. THERMOSTAT AND SENSORS LOCATIONS WITHIN DUCTWORK SHALL BE VERIFIED WITH ARCHITECT/ ENGINEER BEFORE ROUGH -IN.
4. RUNOUT BALANCING DAMPERS SHALL BE MOUNTED AS CLOSE TO MAIN DUCT AS POSSIBLE.
5. DUCTWORK LAYOUT HAS BEEN DESIGNED TO ABSORB NOISE. ALL FITTINGS SHALL BE PROVIDED AS INDICATED.
6. TERMINAL UNITS SHALL BE MOUNTED TO NOT IMPAIR ACCESS TO FILTERS, COILS AND CONTROLS.
7. WATERTIGHT CONCRETE CURBS SHALL BE PROVIDED AROUND ELEVATED FLOOR SLAB PENETRATIONS.
8. DUCTWORK AND ASSOCIATED COMPONENTS SHALL CLEAR DOORS AND WINDOWS.
9. UNLESS OTHERWISE NOTED, ALL DUCTWORK ABOVE CEILING OR EXPOSED IS OVERHEAD AND AS HIGH AS POSSIBLE TO THE UNDERSIDE OF THE STRUCTURE, WITH SPACE FOR INSULATION WHERE REQUIRED.
10. LOCATE MECHANICAL EQUIPMENT SUCH THAT THERE IS UNOBSTRUCTED ACCESS TO UNIT ACCESS PANELS, CONTROLS AND VALVING.
11. PROVIDE FLEXIBLE CONNECTIONS IN ALL DUCTWORK SYSTEMS CONNECTED TO MECHANICAL EQUIPMENT THAT REQUIRE VIBRATION ISOLATION. FLEXIBLE CONNECTIONS SHALL BE PROVIDED AT THE POINT OF CONNECTION TO THE EQUIPMENT UNLESS OTHERWISE NOTED.
12. DUCTWORK SIZES ARE INSIDE CLEAR DIMENSIONS.
13. ALL ELBOWS IN DUCTWORK SHALL BE RADIUS ELBOWS UNLESS OTHERWISE NOTED. RADIUS ELBOWS SHALL HAVE CENTERLINE RADIUS OF CURVATURE 1.5 TIMES THE DUCT DIAMETER OR WIDTH IN THE PLANE OF TURN. WHERE SQUARE ELBOWS ARE SHOWN, INSTALL TURNING VANES.
14. DUCTS CONNECTED TO EQUIPMENT SHALL EQUAL EQUIPMENT CONNECTION SIZE UNLESS NOTED OTHERWISE.
15. MAXIMUM LENGTH ON FLEXIBLE DUCT SHALL BE 5'-0", UNLESS OTHERWISE NOTED ON DETAILS OR SPECIFICATION.
16. REFER TO ARCHITECTED CEILING PLANS FOR EXACT DIFFUSER LOCATIONS IN AREAS WITH A CEILING.

MECHANICAL DESIGN CRITERIA

APPLICABLE CODES:
- MICHIGAN BUILDING CODE 2021
- MICHIGAN MECHANICAL CODE 2021
- MICHIGAN PLUMBING CODE 2021
- MICHIGAN COMMERCIAL ENERGY CODE 2021
- 2015 INTERNATIONAL FUEL GAS CODE

DESIGN CONDITIONS:
- LOCATION: LANSING, MI
- CLIMATE ZONE: 5A
- BASED ON 2021 ASHRAE CLIMATIC DESIGN CONDITIONS FOR GRAND RAPIDS AIRPORT (GRR), 1% COOLING, 99% HEATING
- HEATING DESIGN DAY: 6.8°F db
- COOLING DESIGN DAY: 86.7°F db, 71.7°F wb
- INDOOR CONDITIONS:
  - OCCUPIED SPACES
    - COOLING: 75°F, 50%RH
    - HEATING: 70°F
  - UNOCCUPIED SPACES
    - COOLING: 80°F, 40% TO 60%RH
    - HEATING: 60°F

NOTES:
- ALL SPACES ARE TO BE HEATED FOR FREEZE PROTECTION. NO WINTERIZATION OF PLUMBING SYSTEMS IS PLANNED.
- MECHANICAL VENTILATION PER IMC CHAPTER 4.

MECHANICAL SHEET INDEX

NUMBER	DESCRIPTION
M001	GENERAL MECHANICAL INFORMATION
MD101	FIRST FLOOR MECHANICAL DEMOLITION PLAN
MD102	SECOND FLOOR AND ROOF MECHANICAL DEMOLITION PLAN
M101	FIRST FLOOR HVAC PLAN
M102	SECOND FLOOR AND ROOF HVAC PLAN
M501	MECHANICAL DETAILS

PROGRESSIVE COMPANIES
PROGRESSIVE AE, INC.
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

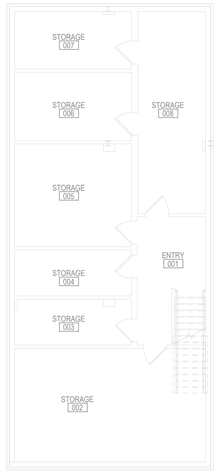
ISSUANCE
07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

GENERAL MECHANICAL INFORMATION
M001

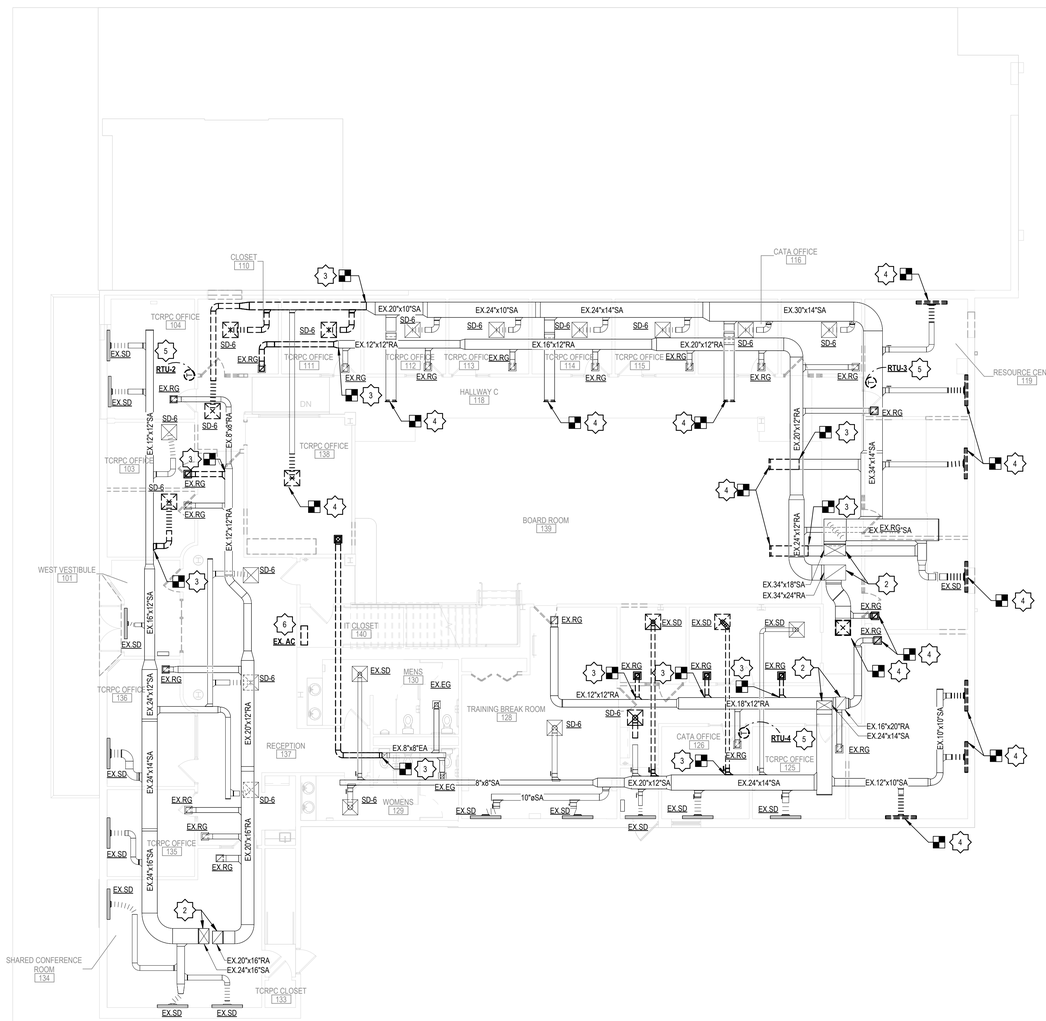
7/24/2026 12:23:39 PM Autodesk Docs://75820023 - CATA Renovation of 511 S Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
BIM_360_D_20240627
CENTRAL_MECHANICAL_INFORMATION
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE, AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT. ©2026

7/24/2026 12:23:51 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Bravo 511 S Washington - MEDH.rvt
REVIT FLOOR MECHANICAL DEMOLITION PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE, AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT. ©2026



BASEMENT FLOOR MECHANICAL DEMOLITION PLAN

1/8" = 1'-0"



FIRST FLOOR MECHANICAL DEMOLITION PLAN

1/8" = 1'-0"

MECHANICAL DEMOLITION KEYNOTES

1. DISCONNECT AND REMOVE EXISTING ROOFTOP UNITS, ASSOCIATED CURBS, CONTROLS, ACCESSORIES, AND UTILITIES AS REQUIRED FOR NEW CONSTRUCTION.
2. EXISTING ROOF PENETRATIONS ASSOCIATED WITH DEMOLISHED ROOFTOP UNITS MAY BE REUSED FOR NEW WORK. CONTRACTOR SHALL FIELD VERIFY SIZE, LOCATION, AND CONDITION PRIOR TO INSTALLATION OF NEW EQUIPMENT. pROVIDE EQUIPMENT CURB ADAPTER OR MODIFY ROOF OPENINGS WHERE EXISTING CONDITIONS ARE NOT COMPATIBLE.
3. REMOVE EXISTING DUCTWORK AS INDICATED ON PLANS BACK TO POINT OF DISCONNECTION.
4. REMOVE EXISTING GRILLES, REGISTERS, AND DIFFUSERS.
5. DISCONNECT AND REMOVE EXISTING THERMOSTAT, LOW VOLTAGE CONTROL WIRING, AND ASSOCIATED CONTROL DEVICES AS REQUIRED FOR NEW CONSTRUCTION.
6. DISCONNECT AND REMOVE EXISTING SPLIT SYSTEM UNIT AND ALL ASSOCIATED ACCESSORIES.
7. DISCONNECT AND REMOVE EXISTING OUTDOOR CONDENSING UNIT PIPING, AND ALL ASSOCIATED ACCESSORIES.
8. DISCONNECT AND REMOVE EXISTING THERMOSTATS, SENSORS, LOW-VOLTAGE CONTROL WIRING, AND ASSOCIATED CONTROL DEVICES SERVING EQUIPMENT.

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

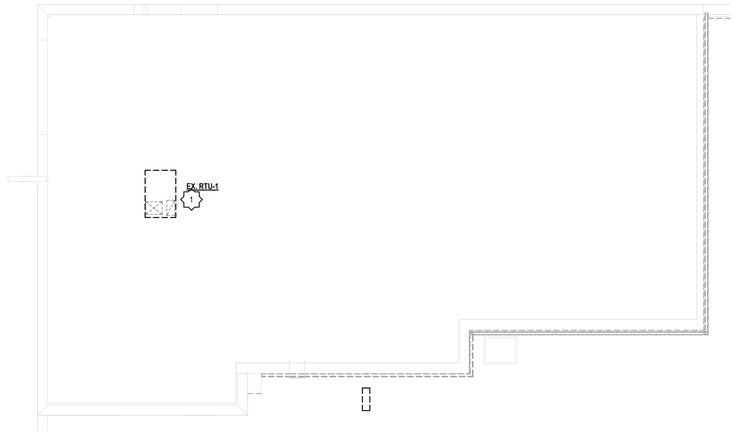
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

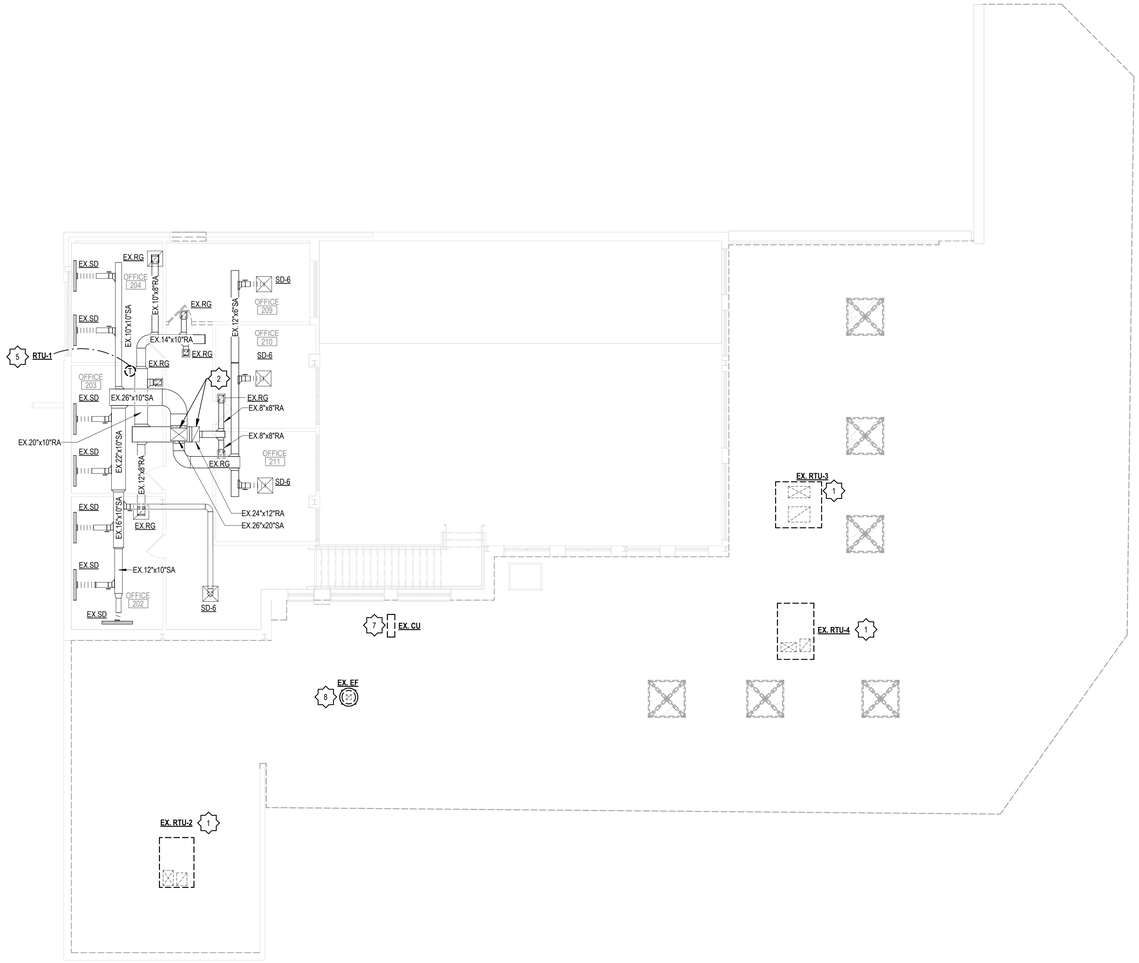
PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

FIRST FLOOR MECHANICAL DEMOLITION PLAN

MD101



ROOF MECHANICAL DEMOLITION PLAN
1/8" = 1'-0"



SECOND FLOOR MECHANICAL DEMOLITION PLAN
1/8" = 1'-0"

MECHANICAL DEMOLITION KEYNOTES

1. DISCONNECT AND REMOVE EXISTING ROOFTOP UNITS, ASSOCIATED CURBS, CONTROLS, ACCESSORIES, AND UTILITIES AS REQUIRED FOR NEW CONSTRUCTION.
2. EXISTING ROOF PENETRATIONS ASSOCIATED WITH DEMOLISHED ROOFTOP UNITS MAY BE REUSED FOR NEW WORK. CONTRACTOR SHALL FIELD VERIFY SIZE, LOCATION, AND CONDITION PRIOR TO INSTALLATION OF NEW EQUIPMENT. pROVIDE EQUIPMENT CURB ADAPTER OR MODIFY ROOF OPENINGS WHERE EXISTING CONDITIONS ARE NOT COMPATIBLE.
3. REMOVE EXISTING DUCTWORK AS INDICATED ON PLANS BACK TO POINT OF DISCONNECTION.
4. REMOVE EXISTING GRILLES, REGISTERS, AND DIFFUSERS.
5. DISCONNECT AND REMOVE EXISTING THERMOSTAT, LOW VOLTAGE CONTROL WIRING, AND ASSOCIATED CONTROL DEVICES AS REQUIRED FOR NEW CONSTRUCTION.
6. DISCONNECT AND REMOVE EXISTING SPLIT SYSTEM UNIT AND ALL ASSOCIATED ACCESSORIES.
7. DISCONNECT AND REMOVE EXISTING OUTDOOR CONDENSING UNIT PIPING, AND ALL ASSOCIATED ACCESSORIES.
8. DISCONNECT AND REMOVE EXISTING THERMOSTATS, SENSORS, LOW-VOLTAGE CONTROL WIRING, AND ASSOCIATED CONTROL DEVICES SERVING EQUIPMENT.

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

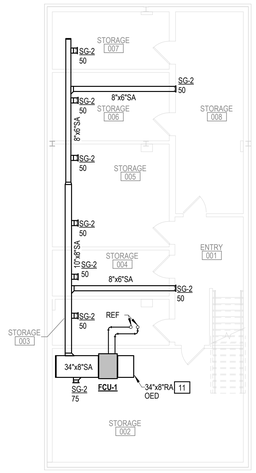
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

SECOND FLOOR AND ROOF MECHANICAL DEMOLITION PLAN

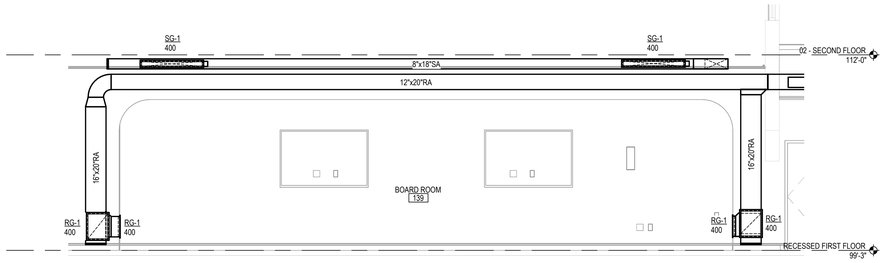
MD102

7/24/2026 12:23:54 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
SD - ROOF
SD - SECOND FLOOR AND ROOF MECHANICAL DEMOLITION PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE A.E. INC. AS AN INSTRUMENT OF SERVICE, AND PROGRESSIVE A.E. INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



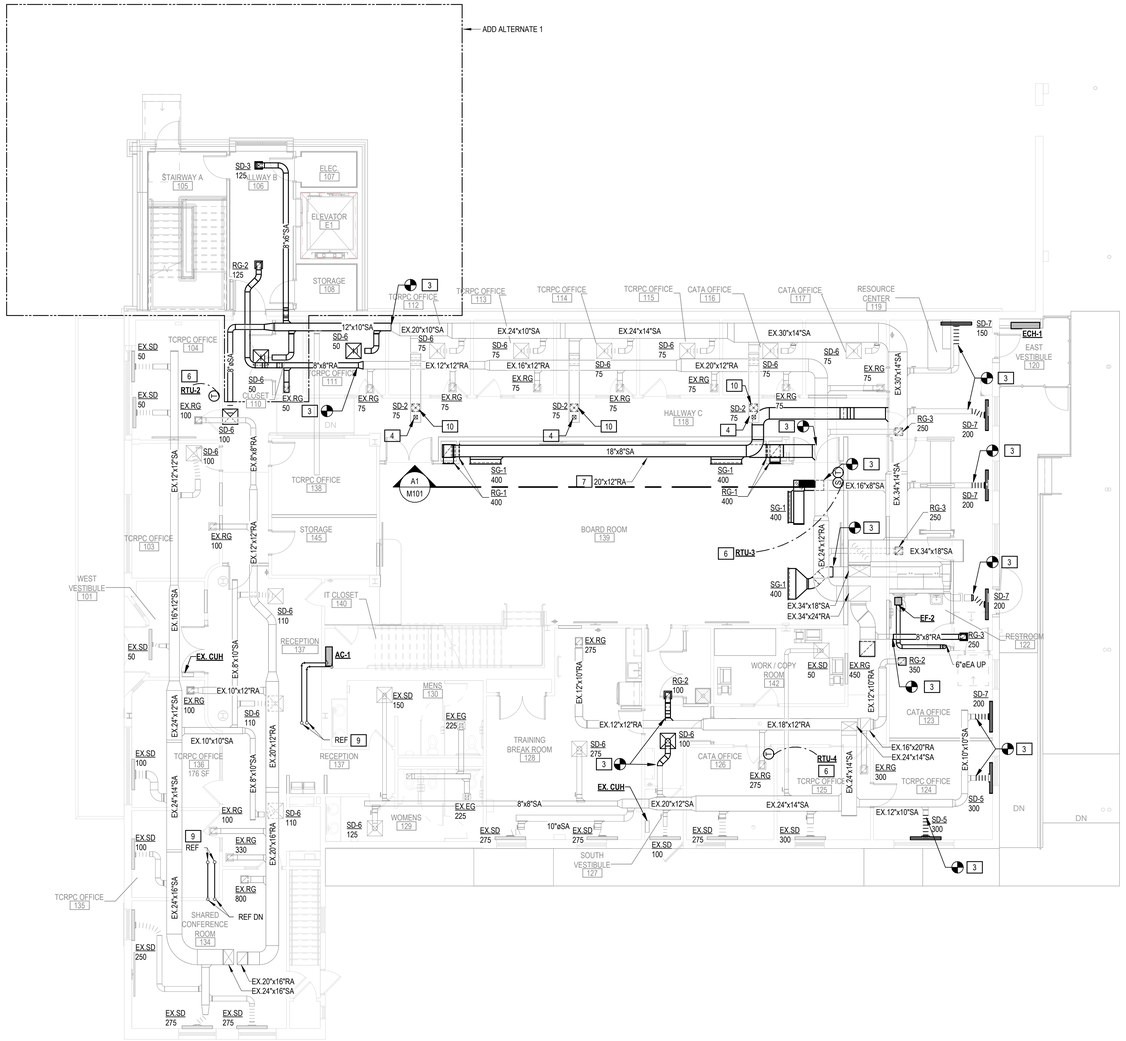
BASEMENT HVAC PLAN

1/8" = 1'-0"



A1 BOARDROOM MECHANICAL SECTION

1/4" = 1'-0"



FIRST FLOOR HVAC PLAN

1/8" = 1'-0"

HVAC KEYNOTES

1. PROVIDE NEW ROOFTOP UNITS AND CURB ADAPTERS AS INDICATED ON PLANS. VERIFY EXISTING CURB DIMENSIONS AND CONDITIONS PRIOR TO INSTALLATION.
2. MODIFY AND EXTEND EXISTING DUCTWORK AS REQUIRED TO SERVE NEW AIR DEVICES AND EQUIPMENT INDICATED ON PLANS.
3. CONNECT NEW DUCTWORK TO EXISTING.
4. PROVIDE FLOOR DIFFUSERS TO SERVE MEZZANINE SPACE.
5. EXISTING DIFFUSERS, GRILLES, AND REGISTERS TO REMAIN SHALL BE REMOVED AS REQUIRED FOR CONSTRUCTION, CLEANED, AND REINSTALLED. REBALANCE ALL NEW AND EXISTING AIR DEVICES SERVING MODIFIED AREAS TO AIRFLOWS INDICATED ON PLANS. REPLACE DAMAGED OR DEFICIENT DEVICES IN KIND.
6. PROVIDE NEW THERMOSTATS. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECTURAL PLANS PRIOR TO INSTALLATION.
7. ROUTE RETURN DUCTWORK STACKED BELOW SUPPLY DUCTWORK TO SERVE BOARD ROOM 137 AS INDICATED ON PLANS.
8. TERMINATE EXHAUST DUCT WITH ROOF-MOUNTED GOOSENECK HOOD. EXTEND MINIMUM 12" ABOVE ROOF. PROVIDE BACKDRAFT DAMPER AND BIRD SCREEN. MAINTAIN MINIMUM 10 FT CLEARANCE FROM MECHANICAL INTAKES.
9. REFRIGERANT PIPING TO ROUTE DOWN THROUGH ROOF VIA PREFABRICATED ROOF CURB EQUAL TO PATE MODEL PS. PENETRATION TO BE FULLY FLASHED AND SEALED. REFER TO MANUFACTURER`S INSTALLATION MANUAL FOR LINE SIZING AND ROUTING.
10. CEILING DIFFUSER MOUNTED ON CEILING TO SERVE CORRIDOR.
11. PROVIDE OPEN-ENDED RETURN DUCT AT FAN COIL UNIT. RETURN AIR SHALL TRANSFER THROUGH DOOR-MOUNTED TRANSFER GRILLES TO THE FAN COIL UNIT RETURN-AIR PLENUM. COORDINATE GRILLE LOCATIONS AND FREE AREA WITH ARCHITECTURAL DOOR DETAILS.

ADD ALTERNATE

ALT-1
2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

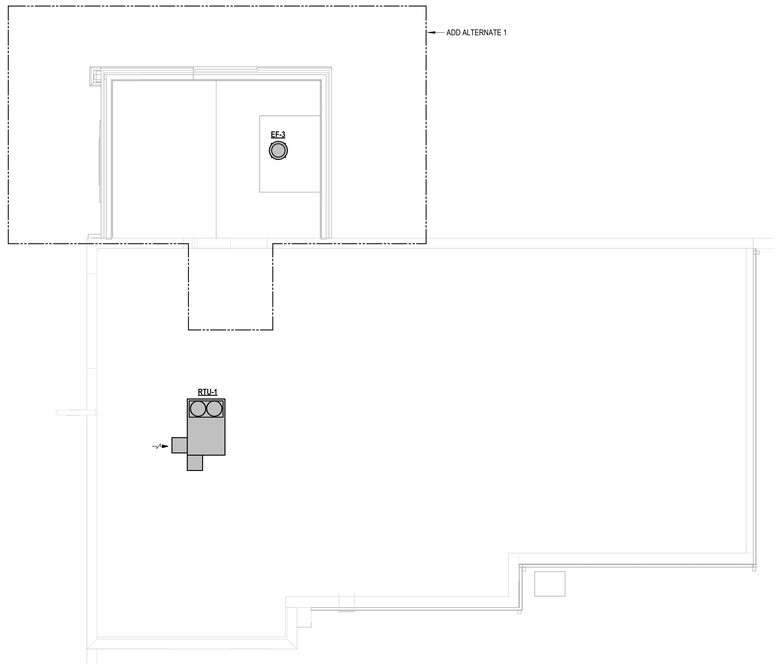
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

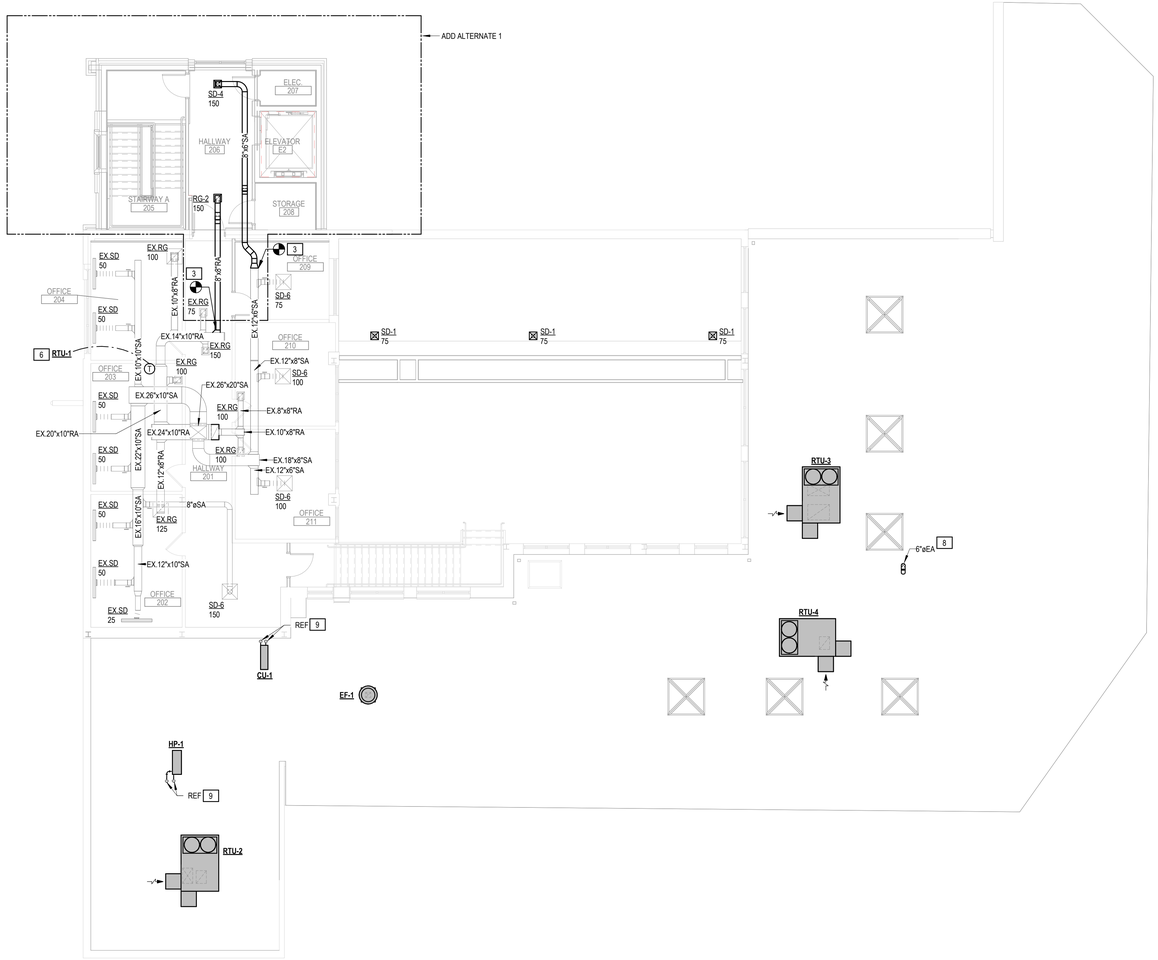
FIRST FLOOR HVAC PLAN
M101

7/24/2026 12:23:43 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
BS - MEP
FIRST FLOOR HVAC PLAN

THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE. AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT HERETO



ROOF HVAC PLAN
1/8" = 1'-0"



SECOND FLOOR HVAC PLAN
1/8" = 1'-0"

HVAC KEYNOTES

1. PROVIDE NEW ROOFTOP UNITS AND CURB ADAPTERS AS INDICATED ON PLANS. VERIFY EXISTING CURB DIMENSIONS AND CONDITIONS PRIOR TO INSTALLATION.
2. MODIFY AND EXTEND EXISTING DUCTWORK AS REQUIRED TO SERVE NEW AIR DEVICES AND EQUIPMENT INDICATED ON PLANS.
3. CONNECT NEW DUCTWORK TO EXISTING.
4. PROVIDE FLOOR DIFFUSERS TO SERVE MEZZANINE SPACE.
5. EXISTING DIFFUSERS, GRILLES, AND REGISTERS TO REMAIN SHALL BE REMOVED AS REQUIRED FOR CONSTRUCTION, CLEANED, AND REINSTALLED. REBALANCE ALL NEW AND EXISTING AIR DEVICES SERVING MODIFIED AREAS TO AIRFLOWS INDICATED ON PLANS. REPLACE DAMAGED OR DEFICIENT DEVICES IN KIND.
6. PROVIDE NEW THERMOSTATS. COORDINATE FINAL THERMOSTAT LOCATIONS WITH ARCHITECTURAL PLANS PRIOR TO INSTALLATION.
7. ROUTE RETURN DUCTWORK STACKED BELOW SUPPLY DUCTWORK TO SERVE BOARD ROOM 137 AS INDICATED ON PLANS.
8. TERMINATE EXHAUST DUCT WITH ROOF-MOUNTED GOOSENECK HOOD. EXTEND MINIMUM 12" ABOVE ROOF. PROVIDE BACKDRAFT DAMPER AND BIRD SCREEN. MAINTAIN MINIMUM 10 FT CLEARANCE FROM MECHANICAL INTAKES.
9. REFRIGERANT PIPING TO ROUTE DOWN THROUGH ROOF VIA PREFABRICATED ROOF CURB EQUAL TO PATE MODEL PS. PENETRATION TO BE FULLY FLASHED AND SEALED. REFER TO MANUFACTURER`S INSTALLATION MANUAL FOR LINE SIZING AND ROUTING.
10. CEILING DIFFUSER MOUNTED ON CEILING TO SERVE CORRIDOR.
11. PROVIDE OPEN-ENDED RETURN DUCT AT FAN COIL UNIT. RETURN AIR SHALL TRANSFER THROUGH DOOR-MOUNTED TRANSFER GRILLES TO THE FAN COIL UNIT RETURN-AIR PLENUM. COORDINATE GRILLE LOCATIONS AND FREE AREA WITH ARCHITECTURAL DOOR DETAILS.

ADD ALTERNATE

ALT-1
2 STORY ADDITION SCOPE OF WORK TO BE PROVIDED AS ADD ALTERNATE

PROGRESSIVE AE, INC.
PROGRESSIVE COMPANIES
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
75820023 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G.RUNIONS
PROFESSIONAL
ISAAC KUIPER
DRAWN BY
B. GARCIA
CHECKED BY
ISAAC KUIPER

SECOND FLOOR AND ROOF HVAC PLAN
M102

7/24/2026 12:23:46 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
SECOND FLOOR AND ROOF HVAC PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE, INC. AS AN INSTRUMENT OF SERVICE, AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO

DIFFUSER, REGISTER, & GRILLE SCHEDULE

MARK	MANUFACTURER	MODEL	NECK SIZE L"	NECK SIZE W"	FACE SIZE L"	FACE SIZE W"	MOUNTING	PATTERN	MATERIAL	DAMPER	COLOR	REMARKS
RG-1	PRICE	500	16"	20"	18"	22"	SIDEWALL	SINGLE DEFLECTION	ALUMINUM		CUSTOM	1-3
RG-2	PRICE	80	8"	8"	12"	12"	LAY-IN	EGGCRATE	ALUMINUM		WHITE	1-3
RG-3	PRICE	85	10"	10"	12"	12"	LAY-IN	EGGCRATE	ALUMINUM		WHITE	1-3
SD-1	PRICE	SDS	6"	6"	12"	12"	LAY-IN	4-WAY	ALUMINUM		WHITE	1-3
SD-2	PRICE	LBPH	6"	6"	12"	12"	LAY-IN	4-WAY	ALUMINUM		WHITE	1-3
SD-3	PRICE	SDS	10"	10"	12"	12"	LAY-IN	4-WAY	ALUMINUM		WHITE	1-3
SD-4	PRICE	SDS	8"	8"	12"	12"	LAY-IN	4-WAY	ALUMINUM		WHITE	1-3
SD-5	PRICE	MLR			4"	48"	SURFACE	SLOT	ALUMINUM		WHITE	1-3
SD-6	PRICE	SDS			24"	24"	LAY-IN	4-WAY	ALUMINUM		WHITE	1-3
SD-7	PRICE	MLR			4"	48"	SURFACE	SLOT	ALUMINUM		WHITE	1-3
SG-1	PRICE	LBP	4"	48"	6"	50"	SIDEWALL	DOUBLE DEFLECTION	ALUMINUM	Yes	CUSTOM	1-3
SG-2	PRICE	610	6"	8"	8"	10"	SIDEWALL	DOUBLE DEFLECTION	ALUMINUM	Yes	WHITE	1-3

NOTES:
1. EQUIPMENT SHALL COMPLY WITH BUILD AMERICA BUY AMERICA REQUIREMENTS IN ACCORDANCE WITH 49 U.S.C. 5323(j) AND 49 CFR PART 661.
2. COORDINATE MOUNTING TYPE WITH ARCHITECTURAL CEILING PLANS.
3. PROVIDE REMOTE CABLE ACTUATOR FOR BALANCING DAMPERS LOCATED ABOVE HARD-LID CEILING.

ROOF TOP UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	OA CFM	SUPPLY AIR BLOWER: CFM	ESP (IN. WC)	TSP (IN. WC)	FAN RPM	MOTOR HP	QUAN. OF FANS	DX COOLING COIL: EDB	EWB	LDB	LWB	TOTAL MBH	SENS. MBH	# OF COMPR.	HEATING MODULE: OUTPUT BTUH	INPUT BTUH	EDB	TEMP. RISE	# OF STAGES	ELECTRICAL: VOLTS	PHASE	HZ	MCA	MOP	DISCONNECT	DISC. BY	STARTER	REMARKS
RTU-1	JOHNSON CONTROLS	KJI049C00B4BBAAE1A1	175	1600	1	0.98	1161	1.5	1	80 °F	67 °F	60 °F	58 °F	50.2	35.5	1	64,800	80,000	70 °F	37 °F	3	460 V	3	60 Hz	12 A	15 A	Yes	ELEC.	Yes	1-8
RTU-2	JOHNSON CONTROLS	KJI061C00B4BBAAE1A1	350	1900	1	1.39	1230	1.5	1	80 °F	67 °F	59 °F	57 °F	64.5	45.4	1	64,800	80,000	70 °F	33 °F	3	460 V	3	60 Hz	14 A	20 A	Yes	ELEC.	Yes	1-8
RTU-3	JOHNSON CONTROLS	KJ120C00R4DBAAE1A1	925	3250	1.25	1.85	1384	3.0	1	80 °F	66 °F	55 °F	54 °F	121.1	82.2	2	162,000	200,000	57 °F	46 °F	3	460 V	3	60 Hz	28 A	30 A	Yes	ELEC.	Yes	1-11
RTU-4	JOHNSON CONTROLS	KJ090C00R4DBAAE1A1	525	3250	1.25	1.79	11304	3.0	1	80 °F	67 °F	59 °F	57 °F	96.6	70.8	2	97,200	120,000	70 °F	32 °F	3	460 V	3	60 Hz	25 A	30 A	Yes	ELEC.	Yes	1-12

NOTES:
1. EQUIPMENT SHALL COMPLY WITH BUILD AMERICA BUY AMERICA REQUIREMENTS IN ACCORDANCE WITH 49 U.S.C. 5323(j) AND 49 CFR PART 661.
2. PROVIDE FACTORY-INSTALLED LOW-LEAK DRY-BULB ECONOMIZER WITH OUTDOOR AIR HOOD, BAROMETRIC RELIEF, AND ECONOMIZER FAULT DETECTION AND DIAGNOSTICS.
3. PROVIDE FACTORY-INSTALLED HOT-GAS REHEAT.
4. PROVIDE FACTORY-INSTALLED REFRIGERANT DETECTION SYSTEM FOR R-454B REFRIGERANT.
5. PROVIDE FACTORY-INSTALLED HACR CIRCUIT BREAKER/DISCONNECT AND SINGLE-POINT POWER CONNECTION.
6. PROVIDE FIELD-INSTALLED SINGLE-ENTHALPY ECONOMIZER KIT AND LOW-AMBIENT KIT FOR EACH UNIT.
7. PROVIDE STANDARD 2-INCH THROWAWAY FILTERS.
8. RTU-3 AND RTU-4 SHALL INCLUDE INTELLISPEED FAN CONTROL WITH VFD OPERATION BASED ON COOLING STAGES.
9. PROVIDE FACTORY-INSTALLED POWER EXHAUST.
10. RTU-3 AND RTU-4 SHALL INCLUDE INTELLISPEED FAN CONTROL WITH VFD OPERATION BASED ON COOLING STAGES.
11. PROVIDE WALL-MOUNTED CO_2 SENSOR, DEMAND CONTROL VENTILATION CONTROLS, AND OUTDOOR-AIR DAMPER MODULATION.

FAN SCHEDULE

MARK	LOCATION	SERVICE	MANUFACTURER	MODEL	TYPE	AIRFLOW (CFM)	ESP	SONE	FAN RPM	BACKDRAFT DAMPER REQUIRED	ELECTRICAL: TYPE	HP	V	PH	HZ	FLA	REMARKS
EF-1	ROOF	RESTROOM EXHAUST	GREENHECK	G-095-VG	CENTRIFUGAL	700	0.25	7	1377	Yes	INTEGRAL	0.17	115	1	60	2.8	1,2,3,4
EF-2	RESTROOM 120	RESTROOM EXHAUST	GREENHECK	SP-LP0810W	CEILING EXHAUST FAN	100	0.25	1.5	894	Yes	INTEGRAL	0.01	115	1	60	0.29	1,2
EF-3	ROOF	ELEVATOR HOISTWAY	GREENHECK	CUE-90-VG	CENTRIFUGAL	300	0.45	6.2	1366	Yes	INTEGRAL	0.1	115	1	60	3.8	1,2,3,4

NOTES:
1. EQUIPMENT SHALL COMPLY WITH BUILD AMERICA BUY AMERICA REQUIREMENTS IN ACCORDANCE WITH 49 U.S.C. 5323(j) AND 49 CFR PART 661.
2. MANUFACTURER TO PROVIDE ELECTRICAL DISCONNECT SWITCH.
3. FAN CONTROLLED BY REVERSE ACTING TEMPERATURE THERMOSTAT AT TOP OF HOISTWAY; ON AT ≥85°F, OFF AT ≤80°F.
4. PROVIDE 14" CURB HEIGHT.

ELECTRIC CABINET HEATER SCHEDULE

MARK	LOCATION	MANUFACTURER	MODEL	UNIT DIMENSIONS W	UNIT DIMENSIONS H	HEATING CFM	TOTAL HEAT(BTU/HR)	ELECTRICAL: AMPS	ELECTRICAL: VOLTS	ELECTRICAL: PH	ELECTRICAL: HZ	REMARKS
ECH-1	EAST VESTIBULE 118	INDEECO	922IC-45-08	45"	27"	500	27304	30	0	1	60	

NOTES:
1. EQUIPMENT SHALL COMPLY WITH BUILD AMERICA BUY AMERICA REQUIREMENTS IN ACCORDANCE WITH 49 U.S.C. 5323(j) AND 49 CFR PART 661.

AIR CONDITIONING UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	SERVICE	LOCATION	COOLING CAPACITY (BTUH)	AIRFLOW (CFM)	EER	SEER	ASSOCIATED ACCU TAG	ELECTRICAL: V	PH	HZ	MCA	UNIT WEIGHT (lbs)	REMARKS
AC-1	MITSUBISHI ELECTRIC	PEAD-AA12NL	IT CLOSET	IT CLOSET	12,000 Btu/h	375	14.8	21.1	CU-1	208	1	60	16	28	1-4

NOTES:
1. PROVIDE FACTORY-COMPATIBLE WI-FI INTERFACE ADAPTER, MODEL PAC-USWHS002-WF-2
2. FACTORY-COMPATIBLE CONDENSATE PUMP WITH RESERVOIR AND SENSOR, MODEL X87-721.
3. FACTORY PROVIDED ELECTRICAL DISCONNECT SWITCH.
4. PROVIDE COMPLETE CONDENSATE DRAIN PIPING, TRAP WHERE REQUIRED, INSULATION, SUPPORTS, AND TERMINATION AT APPROVED LOCATION.

AIR COOLED CONDENSING UNIT SCHEDULE

MARK	MANUFACTURER	MODEL	LOCATION	SERVICE	CAPACITY TONS	SEER2 COOLING EFFICIENCY	FAN(S) QTY	FAN(S) POWER (W)	ELECTRICAL: V	PH	HZ	MCA	MOCP	REFRIGERANT	REMARKS
CU-1	MITSUBISHI ELECTRIC	PUY-AK12NL	ROOF	AC-1	1	21.1	1	51	208	1	60	16	27	R454B	

NOTES:
1. INSTALL UNITS LEVELED ON MINIMUM 12" TALL EQUIPMENT RAILS, EQUAL TO PATE MODEL ES2.
2. FACTORY PROVIDED ELECTRICAL DISCONNECT SWITCH.
3. PROVIDE FACTORY FRONT WIND BAFFLE ACCESSORY WB-PA4.
4. PROVIDE FACTORY ADVANCED SIDE WIND BAFFLE ACCESSORY WB-SD4.
5. PROVIDE FACTORY REAR WIND BAFFLE ACCESSORY WB-RE4.

FAN COIL UNIT SCHEDULE

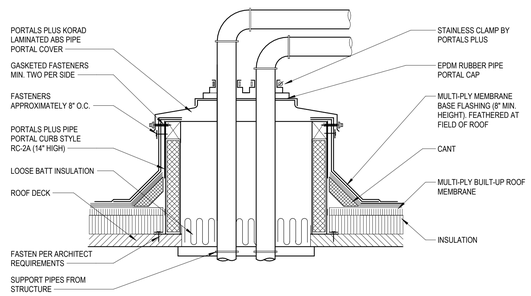
MARK	MANUFACTURER	MODEL	AIRFLO W (CFM)	COOLING CAPACITY (BTUH)	ELECTRICAL HEAT (KW)	ELECTRICAL: V	PH	MCA	DIMENSIONS (IN): W	L	H	UNIT WEIGHT (LBS)	PAIRED UNIT	REMARKS
FCU-1	MITSUBISHI ELECTRIC	PEAD-AA12NL	494	12,400		208	1	3	29"	39"	10"	58	HP-1	1-3

NOTES:
1. PROVIDE AS A COMPLETE FACTORY-MATCHED SYSTEM WITH ASSOCIATED OUTDOOR UNIT, INCLUDING CONTROLS, REFRIGERANT PIPING, WIRING, AND ACCESSORIES.
2. PROVIDE AUXILIARY DRAIN PAN, CONDENSATE OVERFLOW SWITCH, AND CONDENSATE PUMP.
3. PROVIDE FACTORY-COMPATIBLE WI-FI INTERFACE AND WALL CONTROLLER.

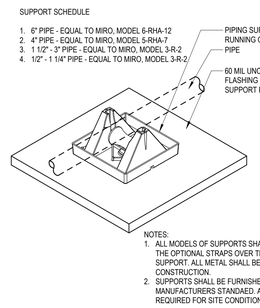
HEAT PUMP SCHEDULE

MARK	MANUFACTURER	MODEL	LOCATION	SERVICE	CAPACITY TONS	SEER2 COOLING EFFICIENCY	FAN(S) QTY	FAN(S) W	ELECTRICAL: V	PH	HZ	MCA	MOCP	REFRIGERANT	REMARKS
HP-1	MITSUBISHI ELECTRIC	PUY-AK12NL	ROOF	FCU-1	1	20	1	51	208	1	60	16	27	R454B	1-5

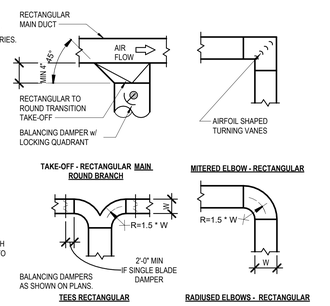
NOTES:
1. INSTALL UNITS LEVELED ON MINIMUM 12" TALL EQUIPMENT RAILS, EQUAL TO PATE MODEL ES2.
2. FACTORY PROVIDED ELECTRICAL DISCONNECT SWITCH.
3. PROVIDE FACTORY FRONT WIND BAFFLE ACCESSORY WB-PA4.
4. PROVIDE FACTORY ADVANCED SIDE WIND BAFFLE ACCESSORY WB-SD4.
5. PROVIDE FACTORY REAR WIND BAFFLE ACCESSORY WB-RE4.



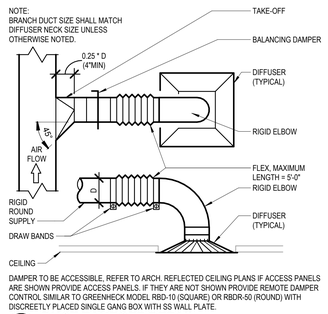
D6 PIPE THROUGH ROOF DETAIL
NOT TO SCALE



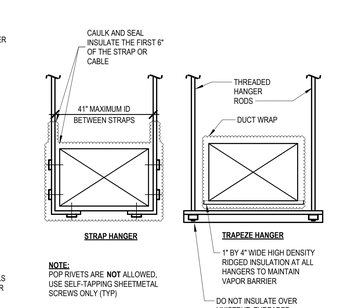
D5 PIPE ON ROOF DETAIL
NOT TO SCALE



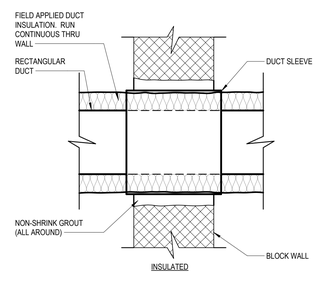
D4 RECTANGULAR DUCT FITTINGS DETAIL
NOT TO SCALE



D3 DUCT TAKEOFF DETAIL
NOT TO SCALE



D2 DUCT SUPPORT DETAIL
NOT TO SCALE



D1 RECTANGULAR DUCT WALL PENETRATION
NOT TO SCALE

E7 RTU CURB DETAIL
NOT TO SCALE

E5 RTU INSTALLATION DETAIL
NOT TO SCALE

E4 SPIRAL DUCT FITTINGS DETAIL
NOT TO SCALE

E3 PIPE WALL PENETRATION DETAIL
NOT TO SCALE

E2 PIPE FLOOR PENETRATION DETAIL
NOT TO SCALE

E1 ROOF MOUNTED EXHAUST FAN DETAIL
NOT TO SCALE

PROGRESSIVE COMPANIES
PROGRESSIVE AE, INC.
Charlotte, NC | Detroit, MI | Grand Rapids, MI
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
7582002 3 - CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE
07/24/2026 BID SET / PERMIT SET
07/27/2026 RELEASED FOR BID

PROJECT NUMBER 75820023
PROJECT MANAGER G.RUNIONS
PROFESSIONAL I. KUIPER
DRAWN BY B. GARCIA
CHECKED BY I. KUIPER

MECHANICAL DETAILS
M501

THE DOCUMENT AND IDEAS PREPARED BY PROGRESSIVE AE, INC. ARE AN INSTRUMENTS OF SERVICE, AND PROGRESSIVE AE, INC. SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO

1/24/2026 1:23:47 PM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - MECH.rvt
M501 MECHANICAL DETAILS

ELECTRICAL ABBREVIATIONS

A	AMPERES
ACU	AIR CONDITIONING UNIT
AFG	ABOVE FINISH GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AL	ALUMINUM
AP	ACCESS PANEL
APPROX	APPROXIMATE
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILARY
AWG	AMERICAN WIRE GAUGE
B	BOILER
BAS	BUILDING AUTOMATION SYSTEM
BF	BARRIER FREE
BFG	BELOW FINISHED GRADE
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DEVICE
BSMT	BASEMENT
C	CONDUIT
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED-CIRCUIT TELEVISION
CF	CEILING FAN
CH	CABINET HEATER
CL	CENTERLINE
CLR	CLEAR, CLEARANCE
CMPR	COMPRESSOR
CONV	CONVECTOR
CP	CIRCULATING PUMP
CR	CARD READER
CT	COOLING TOWER
CU	COPPER
DEPT	DEPARTMENT
DET	DETAIL
DISC	DISCONNECT
DIST	DISTRIBUTION
DW	DISHWASHER
DWH	DOMESTIC WATER HEATER
EF	EXHAUST FAN
ELEC	ELECTRIC, ELECTRICAL
ELEV	ELEVATOR
EM	EMERGENCY
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
F	FAHRENHEIT
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FC	FLEXIBLE CONNECTION
FDS	FUSED DISCONNECT SWITCH
FIXT	FIXTURE
FL	FLUORESCENT
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FMC	FLEXIBLE METAL CONDUIT
FURN	FURNISH, FURNISHED
GALV	GALVANIZED
GEN	GENERATOR
GFI	GROUND FAULT CIRCUIT INTERRUPTOR
GND	GROUND
HP	HORSEPOWER
HTG	HEATING
HTR	HEATER
HV	HIGH VOLTAGE
IBC	INTERNATIONAL BUILDING CODE
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
JBOX	JUNCTION BOX
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
KWH	KILOWATT-HOURS
LEED	LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN
LTG	LIGHTING
LV	LOW VOLTAGE
MC	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MFDS	MAIN FUSED DISCONNECT SWITCH
MH	MANHOLE
MLO	MAIN LUGS ONLY
MOP	MAXIMUM OVERCURRENT PROTECTION
MSBD	MAIN SWITCH BOARD
MT	MOUNT
MTR	MOTOR, MOTORIZED
MTS	MANUAL TRANSFER SWITCH
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
NL	NIGHT-LIGHT
OH	OVERHEAD
OHD	OVERHEAD DOOR
P	PUMP
PH	PHASE
PNL	PANEL
PP	POWER POLE
PRI	PRIMARY
PVC	POLYVINYL CHLORIDE
PWR	POWER
RECEPT	RECEPTACLE
RTU	ROOFTOP UNIT
TEL	TELEPHONE
TR	TAMPER RESISTANT
TV	TELEVISION
UE	UNDERGROUND ELECTRICAL
UG	UNDERGROUND
UH	UNIT HEATER
V	VOLTS
VA	VOLT-AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATTS
WH	WATER HEATER
XFER	TRANSFER
XFMR	TRANSFORMER
Ø	PHASE

DATA SYMBOL LEGEND

SYMBOL	DESCRIPTION	HEIGHT TO MIDDLE OF DEVICE (U.N.O.)
#	DATA/PHONE OUTLET, # INDICATES QUANTITY OF ANTICIPATED JACKS	18"
#	ABOVE COUNTERTOP DATA/PHONE OUTLET, MOUNT 4" ABOVE BACKSPLASH. # INDICATES QUANTITY OF ANTICIPATED JACKS	46"
#	MULTIOUTLET WIREMOLD ASSEMBLY, MOUNT 4" ABOVE BACKSPLASH OR PROVIDE DATA OUTLETS AS SHOWN ON DRAWING. # INDICATES QUANTITY OF ANTICIPATED JACKS	46"
#	FLOOR DATA/PHONE OUTLET. # INDICATES QUANTITY OF ANTICIPATED JACKS	
#	CEILING DATA/PHONE OUTLET. # INDICATES QUANTITY OF ANTICIPATED JACKS	
WAP CLG	CEILING WIRELESS ACCESS POINT	
WAP	WIRELESS ACCESS POINT	46"
TV	TELEVISION OUTLET	18"
	CLOCK	84"
IC	INTERCOM OUTLET LOCATION	46"
IC AV	INTERCOM - AUDIO/VISUAL	46"
S	SPEAKER (WALL OR CEILING MT.)	84"
E	SOUND MASKING EMITTER (WALL OR CEILING MT.)	84"
V	VOLUME CONTROL	46"
M	MICROPHONE OUTLET	18"
P	PROJECTOR CONTROL OUTLET	18"
H	HUMIDISTAT	46"
T	THERMOSTAT	46"
M	OUTLET IN FLOOR (MICROPHONE SHOWN)	

NOTE: SYMBOLS REPRESENT EQUIPMENT SPECIFIED BYOTHERS, THE SCOPE OF WORK REPRESENTED IN THESE DRAWINGS INCLUDES DEVICE BACKBOX AND CONDUIT FROM BACKBOX TO ABOVE ACCESSIBLE CEILING TERMINATED WITH INSULATED BUSHING (UNLESS NOTED OTHERWISE).

FIRE ALARM SYMBOL LEGEND

SYMBOL	DESCRIPTION	HEIGHT TO MIDDLE OF DEVICE (U.N.O.)
P	WALL PULLSTATION DEVICE	46"
V	WALL AUDIO/VISUAL DEVICE (CANDELAS NOTED)	90"
V	WALL VISUAL DEVICE (CANDELAS NOTED)	90"
F	WALL AUDIO STATION	90"
V	CEILING AUDIO/VISUAL DEVICE (CANDELAS NOTED)	
V	CEILING VISUAL DEVICE (CANDELAS NOTED)	
F	CEILING AUDIO STATION	
SD	WALL SMOKE DETECTOR	WITHIN 12" OF CEILING
SD	WALL AUDIO/VISUAL SMOKE DETECTOR	WITHIN 12" OF CEILING
CD	WALL COMBO SMOKE/CO DETECTOR	WITHIN 12" OF CEILING
HD	WALL HEAT DETECTOR	90"
SD	CEILING SMOKE DETECTOR	
SD	CEILING AUDIO/VISUAL SMOKE DETECTOR	
CD	CEILING COMBO SMOKE/CO DETECTOR	
HD	CEILING HEAT DETECTOR	
DR	DUCT SMOKE DETECTOR (RETURN SIDE)	
DS	DUCT SMOKE DETECTOR (SUPPLY SIDE)	
FS	SPRINKLER FLOW SWITCH	
TS	SPRINKLER VALVE TAMPER SWITCH	
MH	WALL MAGNETIC HOLD OPEN	80"
RT	REMOTE TEST SWITCH	46"
FD	FIRE FIGHTER TELEPHONE	46"
FACP	FIRE ALARM CONTROL PANEL	80"
FAAP	FIRE ALARM ANNUNCIATOR PANEL	46"
NAC	FIRE ALARM NAC PANEL	46"

LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION	HEIGHT TO MIDDLE OF DEVICE (U.N.O.)
$	SINGLE POLE SWITCH	46"
$3	3-WAY SWITCH	46"
$4	4-WAY SWITCH	46"
$D	DIMMER SWITCH	46"
$OS	OCCUPANCY SENSOR SWITCH	46"
$MC	MOMENTARY CONTACT SWITCH	46"
$T	TIMER SWITCH	46"
$OSD	COMBINATION: OCCUPANCY SENSOR / 0-10V DIMMER SWITCH	46"
$MCD	COMBINATION: MOMENTARY CONTACT SWITCH / 0-10V DIMMER SWITCH	46"
$CF	COMBINATION: LIGHT SWITCH / CEILING FAN CONTROLLER	46"
$LV#	LIGHTING CONTROL SYSTEM PUSH BUTTON STATION	46"
$OS2	DUAL RELAY OCCUPANCY SENSOR SWITCH	46"
$K	KEYED SWITCH	46"
GTD	GENERATOR TRANSFER DEVICE	
OS	CEILING OCCUPANCY SENSOR	
LS	CEILING LIGHT LEVEL SENSOR	
PC	PHOTOCELL	
	POLE MOUNTED LIGHT (TYPE DENOTED)	PER SCHED
	WALL MOUNTED LIGHT (TYPE DENOTED)	AS NOTED
	RECESSED LIGHT (TYPE DENOTED)	
	SURFACE LIGHT (TYPE DENOTED)	
P1 P2	SUSPENDED OR PENDANT LIGHT (TYPE DENOTED)	
	TRACK AND TRACK LIGHT (TYPES DENOTED)	AS NOTED
	EMERGENCY DOUBLE HEAD WALL LIGHT (TYPE DENOTED)	96"
	EXIT SIGN (TYPE DENOTED)	
	LIGHT FIXTURE ON (EM) LIFE SAFETY OR CRITICAL BRANCH	AS NOTED

WIRING SYMBOL LEGEND

SYMBOL	DESCRIPTION
	CONDUIT CONCEALED IN WALL OR OVERHEAD
	CONDUIT CONCEALED BELOW FLOOR
	CONDUIT EXPOSED
	CONDUIT TRANSITION UP
	CONDUIT TRANSITION DOWN
	CONDUIT STUBBED OUT
	UNDERFLOOR RACEWAY SYSTEM
	CABLE TRAY (TYPE DENOTED)
	CONDUIT SLEEVE (SIZE DENOTED)
	BRANCH CIRCUIT HOME RUN
	LOW VOLTAGE POWER WIRING
—UGE—	UNDERGROUND ELECTRICAL
—OHE—	OVERHEAD ELECTRIC
	UTILITY SERVICE POWER POLE (SITE)
—G—	GROUND CONDUCTOR
	LIGHTNING PROTECTION AIR TERMINAL
	LIGHTNING PROTECTION CONDUCTOR SPLICE
	GROUND ROD (PLAN VIEW)
	GROUND CONNECTION TO STEEL OR STRUCTURE
	GROUND CONNECTION - EXOTHERMIC WELD

POWER SYMBOL LEGEND

SYMBOL	DESCRIPTION	HEIGHT TO MIDDLE OF DEVICE (U.N.O.)
	SINGLE RECEPT ("EM" = EMERGENCY, "HG" = HOSPITAL GRADE, "TR" = TAMPER RESISTANT)	18"
	GFCI RATED SINGLE RECEPT	18"
	ISOLATED GROUND SINGLE RECEPT	18"
	SWITCHED SINGLE RECEPT	18"
	DUPLEX RECEPT ("EM" = EMERGENCY, "HG" = HOSPITAL GRADE, "U" = CONNECTED TO UPS "TR" = TAMPER RESISTANT)	18"
	GFCI RATED DUPLEX RECEPT ("WP" = WEATHER RESISTANT)	18"
	ISOLATED GROUND DUPLEX RECEPT	18"
	SWITCHED DUPLEX RECEPT (SPLIT-WIRE)	18"
	USB/DUPLEX RECEPT	18"
	ABOVE COUNTERTOP DUPLEX RECEPT, MOUNT 4" ABOVE BACKSPLASH OR 44"	
	ABOVE COUNTERTOP GFCI RATED DUPLEX RECEPT, MOUNT 4" ABOVE BACKSPLASH OR 44"	
	FOURPLEX RECEPT ("EM" = EMERGENCY, "HG" = HOSPITAL GRADE, "U" = CONNECTED TO UPS)	18"
	GFCI RATED FOURPLEX RECEPT	18"
	ISOLATED GROUND FOURPLEX RECEPT	18"
	SWITCHED FOURPLEX RECEPT (SPLIT-WIRE)	18"
	ABOVE COUNTERTOP FOURPLEX RECEPT, MOUNT 4" ABOVE BACKSPLASH OR 44"	
	SPECIAL RECEPT OR CONNECTION, PROVIDE DIRECT POWER CONNECTION OR MATCHING RECEPTACLE AS REQUIRED, COORDINATE W/ EQUIPMENT MANUFACTURER	18"
	MULTIOUTLET WIREMOLD ASSEMBLY, MOUNT 4" ABOVE BACKSPLASH OR PROVIDE POWER RECEPTS AS SHOWN ON DRAWING	46"
	FLOOR RECEPT (DUPLEX SHOWN)	
	CEILING RECEPT (DUPLEX SHOWN)	
	JUNCTION BOX (FLOOR, WALL, CEILING SHOWN RESPECTIVELY)	AS NOTED
	PUSH BUTTON STATION	46"
	FLOOR MOUNT FURNITURE CONNECTION -POWER AND DATA	
	WALL MOUNT FURNITURE CONNECTION -POWER AND DATA	18"
M	MOTOR HORSEPOWER RATED SWITCH	46"
F	FUSED SWITCH	46"
	SAFETY DISCONNECT SWITCH (NON-FUSED)	72"
	SAFETY DISCONNECT SWITCH (FUSED)	72"
	COMBO MOTOR STARTER/DISCONNECT SWITCH (FUSED)	72"
VFD	VARIABLE FREQUENCY DRIVE	
	SINGLE PHASE MOTOR (SEE SCHEDULE)	
	THREE PHASE MOTOR (SEE SCHEDULE)	
	CIRCUIT BREAKER PANEL	72"
	POWER OR DISTRIBUTION PANEL	72"
	SPECIAL CABINET (TYPE DENOTED)	72"
T	TRANSFORMER (TYPE DENOTED)	

SECURITY SYMBOL LEGEND

SYMBOL	DESCRIPTION	HEIGHT TO MIDDLE OF DEVICE (U.N.O.)
DC	DOOR CONTACT	84"
CR	CARD READER	46"
KP	KEYPAD	46"
ES	ELECTRIC STRIKE	46"
EL	ELECTRIC LATCH	46"
ET	ELECTRIC TRANSFER	46"
ML	MAGNETIC LOCK	84"
RE	REQUEST TO EXIT	84"
MS	MOTION SENSOR	84"
GB	GLASS BREAK	
	WALL CCTV CAMERA	90"
HTR PTZ	WALL CCTV CAMERA - DOME, HEATER, PAN-TILT-ZOOM	90"
	CEILING CCTV CAMERA	
HTR PTZ	CEILING CCTV CAMERA - DOME, HEATER, PAN-TILT-ZOOM	

NOTE: SYMBOLS REPRESENT EQUIPMENT SPECIFIED BY OTHERS, THE SCOPE OF WORK REPRESENTED IN THESE DRAWINGS INCLUDES DEVICE BACKBOX AND 3/4" CONDUIT FROM BACKBOX TO ABOVE ACCESSIBLE CEILING TERMINATED WITH INSULATED BUSHING (UNLESS NOTED OTHERWISE)

GENERAL ELECTRICAL NOTES

1. ALL WORK TO COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS ADOPTED BY THE AHJ FOR THE PROJECT LOCATION, INCLUDING (NOT LIMITED TO) ELECTRICAL CODES, BUILDING CODES, ENERGY CODES, ETC.
2. COORDINATE INSTALLATION WITH ARCHITECTURAL PLANS, ELEVATIONS, AND REFLECTED CEILING PLANS FOR DEVICE AND FIXTURE PLACEMENT, AS WELL AS FIRE RATED PARTITIONS, EXPANSION JOINTS, ETC.
3. COORDINATE INSTALLATION OF MECHANICAL EQUIPMENT POWER CONNECTIONS WITH MECHANICAL/PLUMBING PLANS, SCHEDULES AND PRODUCT DATA SUBMITTALS.
4. COORDINATE INSTALLATION WITH VENDOR/ CONTRACTOR SHOP DRAWINGS WHERE APPROPRIATE.
5. FIELD COORDINATE INSTALLATION WITH THE INSTALLATION OF OTHER TRADES TO AVOID CLASHES AND CONFLICTS.
6. WHERE MOUNTING HEIGHTS ARE SHOWN, THEY ARE TO BE CONSIDERED TO BE TO THE CENTER OF THE DEVICE, UNLESS NOTED OTHERWISE.
7. ALL CONDUCTORS OPERATING AT 50 VOLTS OR GREATER SHALL BE IN RACEWAY OR PART OF A LISTED CABLE ASSEMBLY SUITABLE FOR THE INSTALLED PURPOSE AND LOCATION, AND ALLOWED BY PROJECT SPECIFICATIONS.
8. ALL CABLES AND CONDUCTORS OPERATING AT LESS THAN 50 VOLTS SHALL BE IN RACEWAY WHERE INSTALLED WITHIN WALLS OR INACCESSIBLE SPACES. CABLES ABOVE ACCESSIBLE CEILINGS MAY BE ROUTED IN CABLE SUPPORT HOOKS/RINGS.
9. FOR 20 AMPERE, 120 VOLT BRANCH CIRCUITS, USE #10 AWG CONDUCTORS FOR BRANCH CIRCUITS LONGER THAN 75 FEET AND #8 AWG CONDUCTORS FOR BRANCH CIRCUITS LONGER THAN 150 FEET, UNO. THIS SHALL BE REQUIRED FOR THE ENTIRE LENGTH OF THE CIRCUIT.
10. FOR 20 AMPERE, 277 VOLT BRANCH CIRCUITS, USE #10 AWG CONDUCTORS FOR BRANCH CIRCUITS LONGER THAN 150 FEET, UNO. THIS SHALL BE REQUIRED FOR THE ENTIRE LENGTH OF THE CIRCUIT.
11. WHERE CONFLICTS EXIST IN DRAWINGS OR BETWEEN DRAWINGS AND SPECIFICATIONS, ISSUE REQUEST FOR INTERPRETATION TO DESIGN TEAM FOR CLARIFICATION PRIOR TO INSTALLATION.
12. TV OUTLETS, VOLUME CONTROLS, TELEPHONE OUTLETS, DATA OUTLETS, AND FIRE ALARM DEVICES SHALL CONSIST OF A BACK BOX WITH CONDUIT STUBBED ABOVE THE ACCESSIBLE CEILING. VERIFY SIZE OF BACK BOX REQUIRED WITH DEVICE TO BE INSTALLED.
13. FURNISH AND INSTALL CONDUIT FROM BACK BOXES FOR THE FOLLOWING DEVICES INTO THE ACCESSIBLE CEILING SPACE IN THE CORRIDOR, UNLESS NOTED OTHERWISE:

3/4"C	TV OUTLETS
3/4"C	VOLUME CONTROLS
3/4"C	TELEPHONE OUTLETS
3/4"C	INFORMATION OUTLETS
3/4"C	FIRE ALARM DEVICES

PROGRESSIVE AE
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

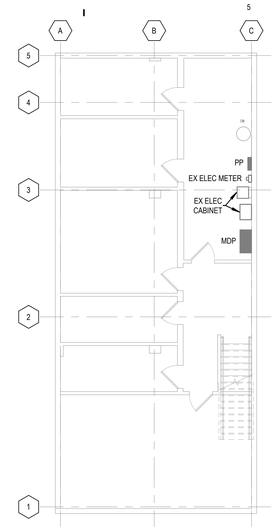
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

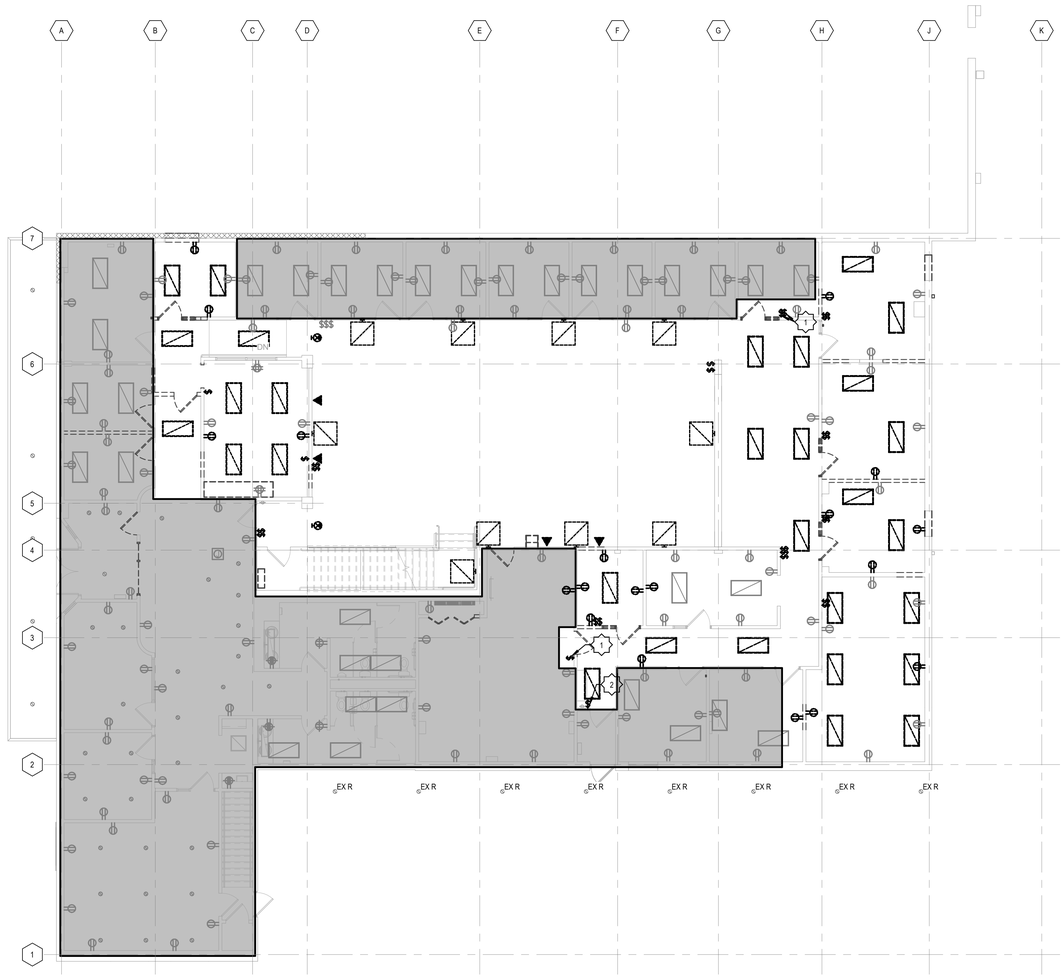
ELECTRICAL NOTES AND ABBREVIATIONS
E001

7/27/2026 2:26:59 AM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington ELEC.rvt
ELECTRICAL NOTES AND ABBREVIATIONS
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE A/E INC., AS A INSTRUMENT OF SERVICE. THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF PROGRESSIVE A/E INC. AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF PROGRESSIVE A/E INC. ALL OTHER RIGHTS RESERVED. INCLUDING THE COPYRIGHT THERETO.



BASEMENT DEMOLITION PLAN

1/8" = 1'-0"



FIRST FLOOR DEMOLITION PLAN

1/8" = 1'-0"

DEMOLITION GENERAL NOTES

A. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PHASES OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH GENERAL CONSTRUCTION.

B. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES AND LIGHTING FIXTURES IN DEMOLITION AREAS UNLESS NOTED OTHERWISE.

C. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES IN WALLS TO BE DEMOLISHED. WALLS TO BE DEMOLISHED ARE SHOWN DASHED. DISCONNECT AND REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO LAST REMAINING DEVICE. FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF CIRCUIT(S) TO ANY EXISTING DEVICES TO REMAIN. COORDINATE AND VERIFY REQUIREMENTS WITH NEW WORK IN AREA.

D. FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF ANY FEEDERS OR BRANCH CIRCUITS ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY ELECTRICAL EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.

E. FURNISH AND INSTALL CONDUIT AND/OR COMMUNICATIONS/DATA WIRING AS NECESSARY FOR CONTINUITY OF ANY WIRING ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY COMMUNICATIONS/DATA EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.

F. DISCONNECT AND REMOVE LIGHT SWITCHES IN DEMOLITION AREAS AS NECESSARY TO ACCOMMODATE NEW DOOR CONFIGURATIONS.

G. DISCONNECT AND REMOVE ANY EXISTING ELECTRICAL DEVICES AND BACK BOXES AS NECESSARY WHERE NEW WALL CONSTRUCTION WILL INTERSECT AN EXISTING WALL. FURNISH AND INSTALL CONDUIT AND WIRE AS REQUIRED FOR CONTINUITY OF CIRCUIT(S).

H. FURNISH AND INSTALL BLANK COVER PLATES OVER ALL EXISTING UNUSED OPENINGS.

DEMOLITION KEYNOTES

1. RELOCATE LIGHT SWITCHES TO NEW LOCATION SHOWN ON LIGHTING PLANS.
2. REMOVE EXISTING SWITCH(S). EXISTING CONDUIT AND BACK BOX SHALL BE REUSED BY NEW LIGHTING CONTROLS.
3. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL. NEW EQUIPMENT SHALL BE RECONNECTED TO ORIGINAL CIRCUIT.

PROGRESSIVE AE
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY

CATA RENOVATION

511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

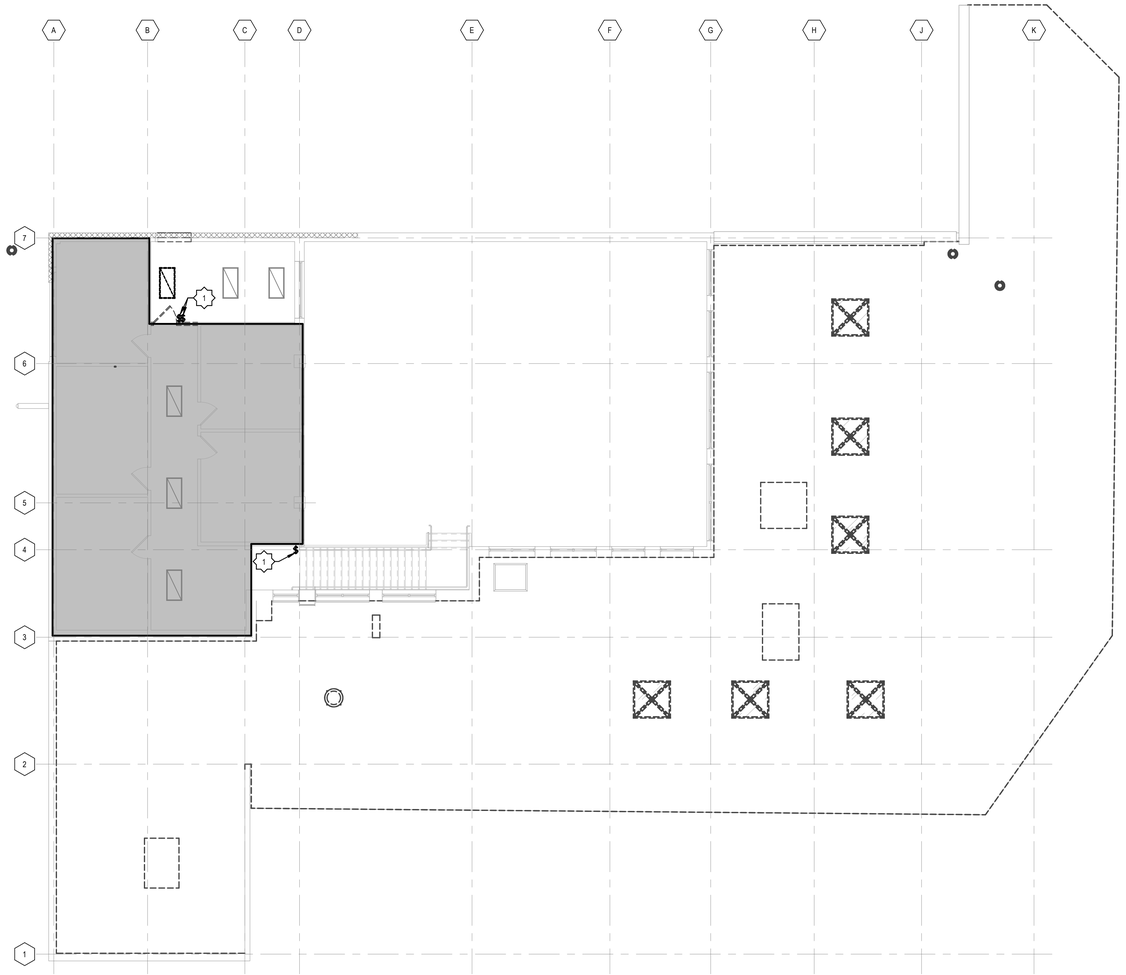
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

FIRST FLOOR DEMOLITION PLAN

ED101

7/27/2026 2:25:53 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revit 511 S Washington - ELEC.rvt
511 S. Washington - ELEC
FIRST FLOOR DEMOLITION PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. AND SHALL NOT BE USED IN WHOLE OR OTHERWISE WITHOUT THE EXPRESS WRITTEN CONSENT OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. INCLUDING THE COPYRIGHT THEREIN.



SECOND FLOOR DEMOLITION PLAN
1/8" = 1'-0"

DEMOLITION GENERAL NOTES

A. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PHASES OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH GENERAL CONSTRUCTION.

B. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES AND LIGHTING FIXTURES IN DEMOLITION AREAS UNLESS NOTED OTHERWISE.

C. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES IN WALLS TO BE DEMOLISHED. WALLS TO BE DEMOLISHED ARE SHOWN DASHED. DISCONNECT AND REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO LAST REMAINING DEVICE. FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF CIRCUIT(S) TO ANY EXISTING DEVICES TO REMAIN. COORDINATE AND VERIFY REQUIREMENTS WITH NEW WORK IN AREA.

D. FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF ANY FEEDERS OR BRANCH CIRCUITS ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY ELECTRICAL EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.

E. FURNISH AND INSTALL CONDUIT AND/OR COMMUNICATIONS/DATA WIRING AS NECESSARY FOR CONTINUITY OF ANY WIRING ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY COMMUNICATIONS/DATA EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.

F. DISCONNECT AND REMOVE LIGHT SWITCHES IN DEMOLITION AREAS AS NECESSARY TO ACCOMMODATE NEW DOOR CONFIGURATIONS.

G. DISCONNECT AND REMOVE ANY EXISTING ELECTRICAL DEVICES AND BACK BOXES AS NECESSARY WHERE NEW WALL CONSTRUCTION WILL INTERSECT AN EXISTING WALL. FURNISH AND INSTALL CONDUIT AND WIRE AS REQUIRED FOR CONTINUITY OF CIRCUIT(S).

H. FURNISH AND INSTALL BLANK COVER PLATES OVER ALL EXISTING UNUSED OPENINGS.

DEMOLITION KEYNOTES

1. RELOCATE LIGHT SWITCHES TO NEW LOCATION SHOWN ON LIGHTING PLANS.
2. REMOVE EXISTING SWITCH(S). EXISTING CONDUIT AND BACK BOX SHALL BE REUSED BY NEW LIGHTING CONTROLS.
3. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL. NEW EQUIPMENT SHALL BE RECONNECTED TO ORIGINAL CIRCUIT.

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

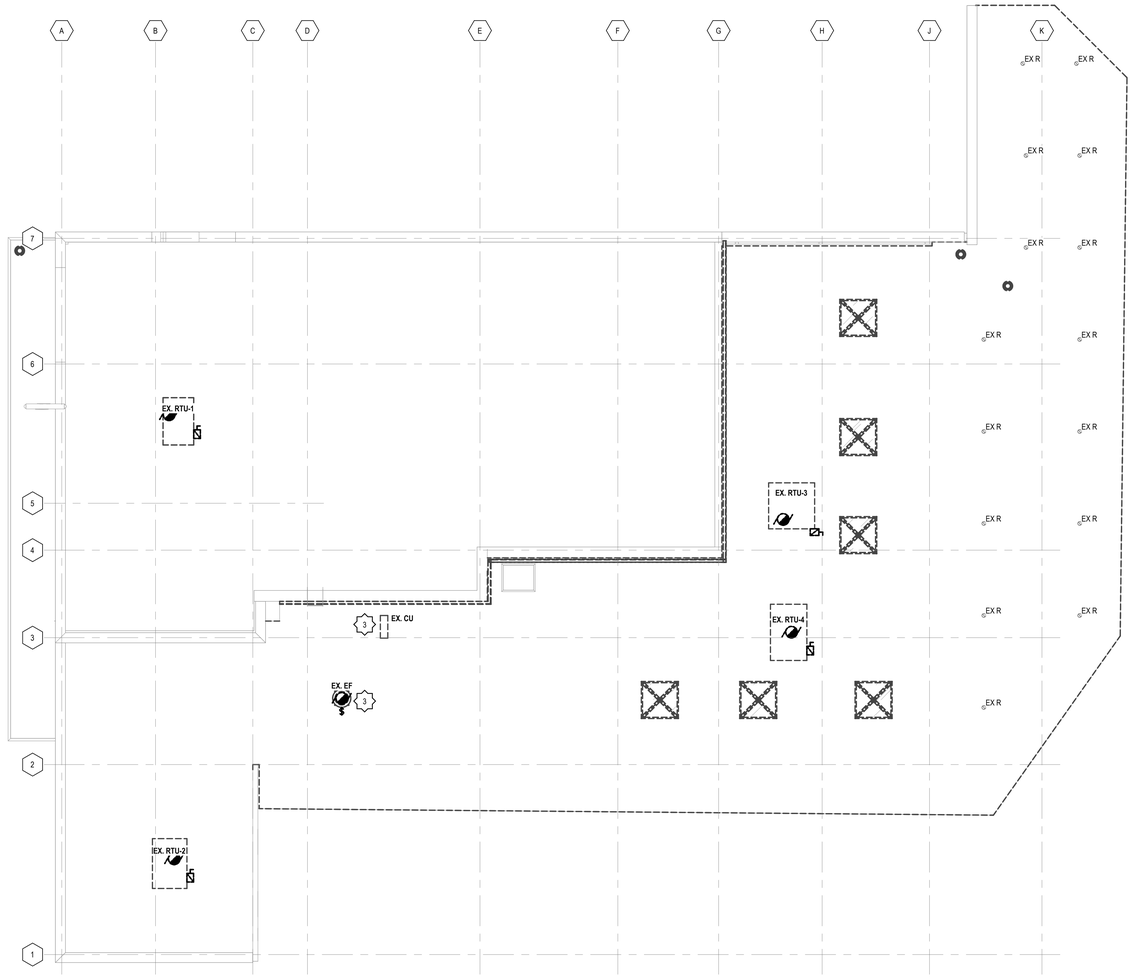
07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

SECOND FLOOR DEMOLITION PLAN
ED102

7/27/2026 2:55:55 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revit 511 S Washington - ELEC.rvt
ED102 SECOND FLOOR DEMOLITION PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. PROGRESSIVE AE INC. RETAINS ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.

24.2.102



ROOF DEMOLITION PLAN
1/8" = 1'-0"

DEMOLITION GENERAL NOTES

A. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR PHASES OF DEMOLITION AND CONSTRUCTION. COORDINATE WITH GENERAL CONSTRUCTION.

B. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES AND LIGHTING FIXTURES IN DEMOLITION AREAS UNLESS NOTED OTHERWISE.

C. DISCONNECT AND REMOVE ALL ELECTRICAL DEVICES IN WALLS TO BE DEMOLISHED. WALLS TO BE DEMOLISHED ARE SHOWN DASHED. DISCONNECT AND REMOVE ASSOCIATED CONDUIT AND WIRE BACK TO LAST REMAINING DEVICE. FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF CIRCUIT(S) TO ANY EXISTING DEVICES TO REMAIN. COORDINATE AND VERIFY REQUIREMENTS WITH NEW WORK IN AREA.

D. FURNISH AND INSTALL CONDUIT AND WIRE AS NECESSARY FOR CONTINUITY OF ANY FEEDERS OR BRANCH CIRCUITS ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY ELECTRICAL EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.

E. FURNISH AND INSTALL CONDUIT AND/OR COMMUNICATIONS/DATA WIRING AS NECESSARY FOR CONTINUITY OF ANY WIRING ORIGINATING OUTSIDE THE DEMOLITION AREA THAT SERVES ANY COMMUNICATIONS/DATA EQUIPMENT OR DEVICES TO REMAIN AFTER DEMOLITION. MODIFY OR REPLACE AS REQUIRED.

F. DISCONNECT AND REMOVE LIGHT SWITCHES IN DEMOLITION AREAS AS NECESSARY TO ACCOMMODATE NEW DOOR CONFIGURATIONS.

G. DISCONNECT AND REMOVE ANY EXISTING ELECTRICAL DEVICES AND BACK BOXES AS NECESSARY WHERE NEW WALL CONSTRUCTION WILL INTERSECT AN EXISTING WALL. FURNISH AND INSTALL CONDUIT AND WIRE AS REQUIRED FOR CONTINUITY OF CIRCUIT(S).

H. FURNISH AND INSTALL BLANK COVER PLATES OVER ALL EXISTING UNUSED OPENINGS.

DEMOLITION KEYNOTES

1. RELOCATE LIGHT SWITCHES TO NEW LOCATION SHOWN ON LIGHTING PLANS.
2. REMOVE EXISTING SWITCH(S). EXISTING CONDUIT AND BACK BOX SHALL BE REUSED BY NEW LIGHTING CONTROLS.
3. DISCONNECT EXISTING EQUIPMENT FOR REMOVAL. NEW EQUIPMENT SHALL BE RECONNECTED TO ORIGINAL CIRCUIT.

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

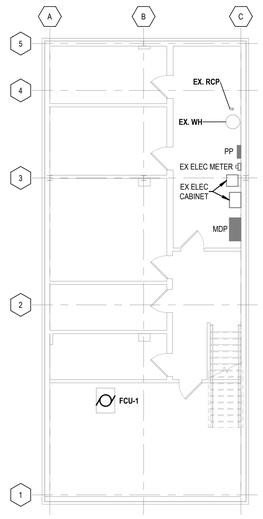
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

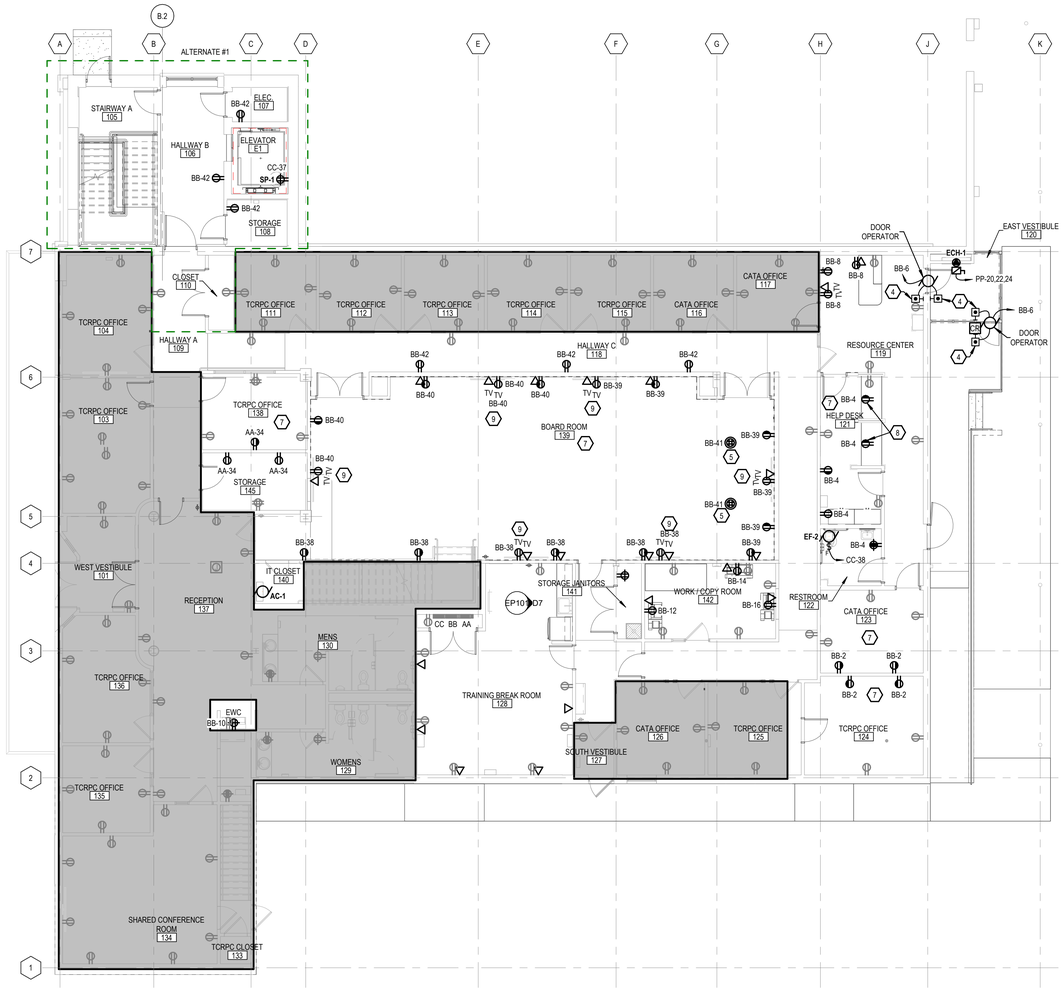
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

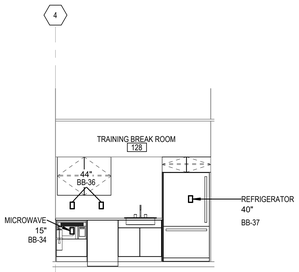
ROOF DEMOLITION PLAN
ED103

7/27/2026 2:25:57 AM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington ELEC.rvt
ROOF DEMOLITION PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF PROFESSIONAL SERVICE. IT IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF PROGRESSIVE AE INC. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



BASEMENT POWER PLAN
1/8" = 1'-0"





D7 TRAINING BREAKROOM 128 EAST ELEVATION
1/4" = 1'-0"

FIRST FLOOR POWER PLAN
1/8" = 1'-0"

POWER GENERAL NOTES

A. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.

B. VERIFY LOCATIONS AND ROUGH-IN REQUIREMENTS OF ALL OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN.

C. CONDUIT AND WIRE SHALL NOT BE INSTALLED BELOW FLOOR SLAB UNLESS INDICATED ON PLAN BY DASHED CONDUIT.

D. CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES.

E. CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULE). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.

POWER KEYNOTES

1. RECONNECT RECEPTACLE AT UNIT TO EXISTING CIRCUIT.
2. ELEVATOR MAIN DISCONNECTING MEANS. DISCONNECT TO BE LOCKABLE IN THE OPEN POSITION.
3. ELEVATOR CAR LIGHTS, CART TOP RECEPTACLE, AUXILIARY LIGHTING POWER SOURCE AND VENTILATION DISCONNECTING MEANS. DISCONNECT TO BE LOCKABLE IN THE OPEN POSITION.
4. JAMB MOUNTED AND WALL MOUNTED ADA ACTUATOR.
5. MOUNT RECEPTACLE IN FACE OF CEILING TILE.
6. RECONNECT NEW EQUIPMENT TO ORIGINAL CIRCUIT.
7. TOP HALF OF NEW RECEPTACLES IN THIS ROOM SHALL BE CONNECTED TO OCCUPANCY SENSOR FOR CODE REQUIRED PLUG CONTROL.
8. MOUNT RECEPTACLE IN FACE OF KNEE WALL UNDER COUNTER.
9. COORDINATE MOUNTING HEIGHT OF CONNECTIONS FOR TELEVISIONS WITH ARCHITECTURAL ELEVATIONS

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

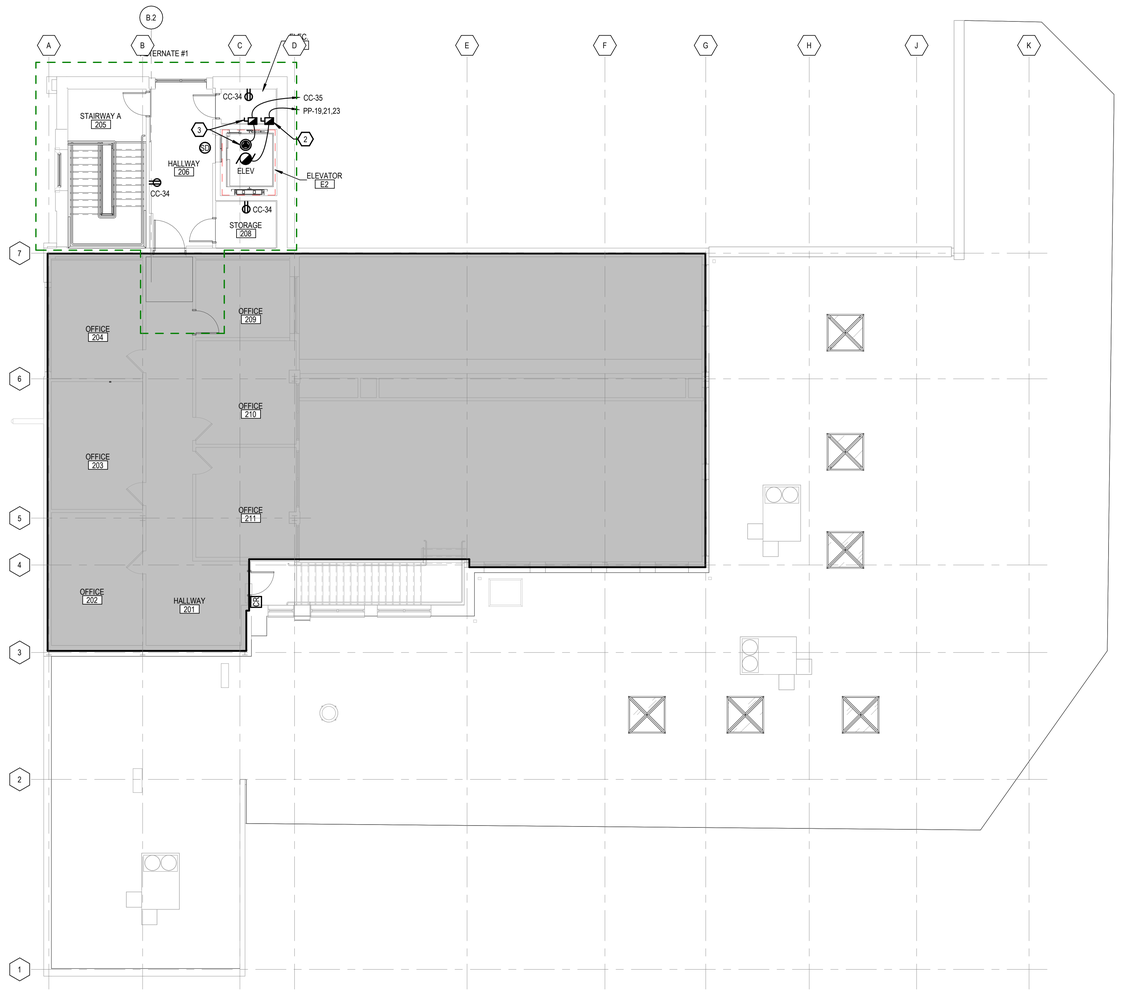
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

FIRST FLOOR POWER PLAN
EP101

7/27/2026 2:26:05 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revo 511 S Washington - ELEC.rvt
FIRST FLOOR POWER PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. OTHER RESERVED RIGHTS INCLUDE THE COPYRIGHT THERETO.



SECOND FLOOR POWER PLAN

1/8" = 1'-0"

POWER GENERAL NOTES

A. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.

B. VERIFY LOCATIONS AND ROUGH-IN REQUIREMENTS OF ALL OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN.

C. CONDUIT AND WIRE SHALL NOT BE INSTALLED BELOW FLOOR SLAB UNLESS INDICATED ON PLAN BY DASHED CONDUIT.

D. CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES.

E. CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULE). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.

POWER KEYNOTES

1. RECONNECT RECEPTACLE AT UNIT TO EXISTING CIRCUIT.
2. ELEVATOR MAIN DISCONNECTING MEANS. DISCONNECT TO BE LOCKABLE IN THE OPEN POSITION.
3. ELEVATOR CAR LIGHTS, CART TOP RECEPTACLE, AUXILIARY LIGHTING POWER SOURCE AND VENTILATION DISCONNECTING MEANS. DISCONNECT TO BE LOCKABLE IN THE OPEN POSITION.
4. JAMB MOUNTED AND WALL MOUNTED ADA ACTUATOR.
5. MOUNT RECEPTACLE IN FACE OF CEILING TILE.
6. RECONNECT NEW EQUIPMENT TO ORIGINAL CIRCUIT.
7. TOP HALF OF NEW RECEPTACLES IN THIS ROOM SHALL BE CONNECTED TO OCCUPANCY SENSOR FOR CODE REQUIRED PLUG CONTROL.
8. MOUNT RECEPTACLE IN FACE OF KNEE WALL UNDER COUNTER.
9. COORDINATE MOUNTING HEIGHT OF CONNECTIONS FOR TELEVISIONS WITH ARCHITECTURAL ELEVATIONS

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

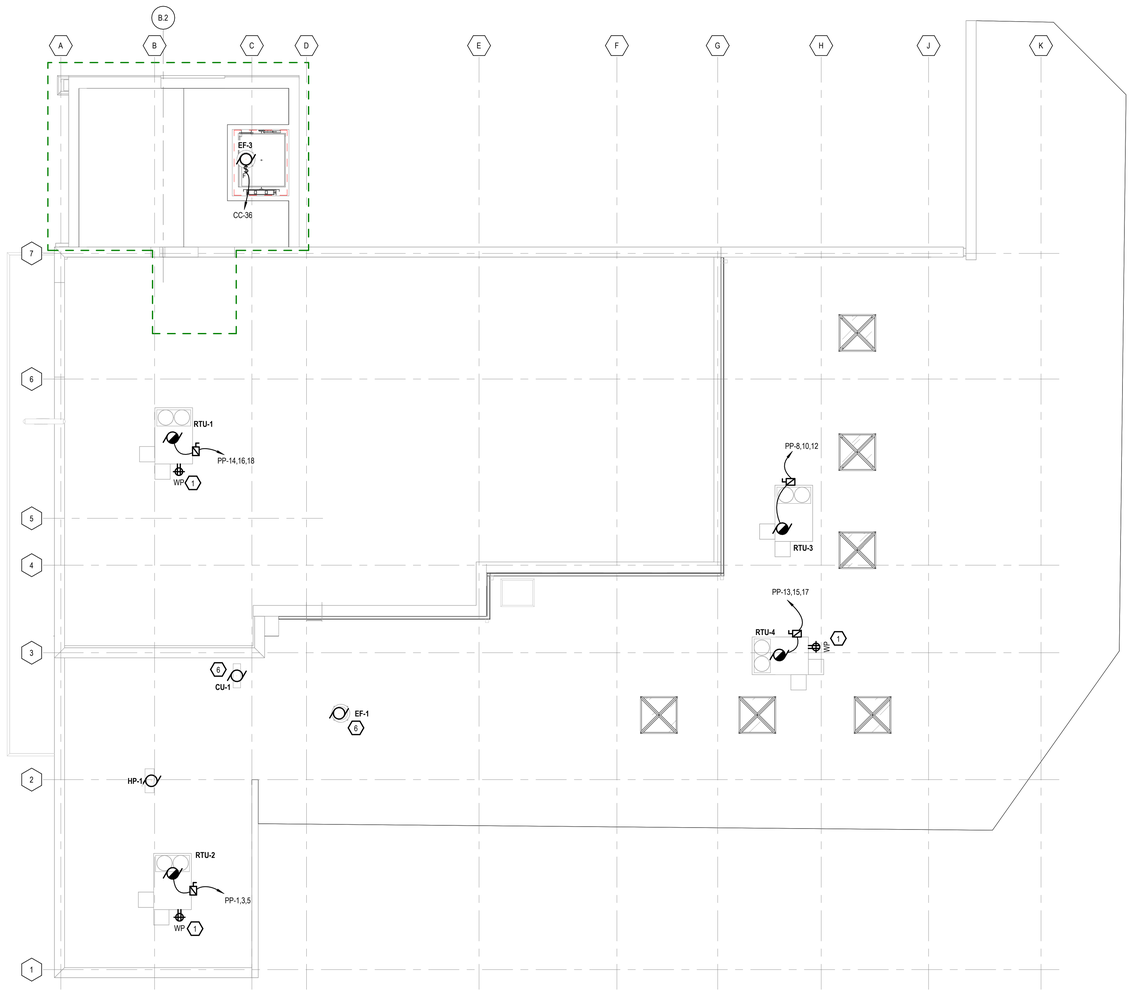
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

SECOND FLOOR POWER PLAN
EP102

7/27/2026 2:26:07 AM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington_ELEC.rvt
SECOND FLOOR POWER PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC.



ROOF POWER PLAN
1/8" = 1'-0"

POWER GENERAL NOTES

A. WHERE CONNECTED TO A 20A. BRANCH CIRCUIT SUPPLYING AN INDIVIDUAL RECEPTACLE (SIMPLEX OR DUPLEX), THE RECEPTACLE SHALL BE RATED AT 20A.

B. VERIFY LOCATIONS AND ROUGH-IN REQUIREMENTS OF ALL OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN.

C. CONDUIT AND WIRE SHALL NOT BE INSTALLED BELOW FLOOR SLAB UNLESS INDICATED ON PLAN BY DASHED CONDUIT.

D. CIRCUIT WIRING IS NOT SHOWN EXCEPT FOR SWITCHING INTENT OF FIXTURES AND CONTROL OF DEVICES.

E. CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULE). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.

POWER KEYNOTES

1. RECONNECT RECEPTACLE AT UNIT TO EXISTING CIRCUIT.
2. ELEVATOR MAIN DISCONNECTING MEANS. DISCONNECT TO BE LOCKABLE IN THE OPEN POSITION.
3. ELEVATOR CAR LIGHTS, CART TOP RECEPTACLE, AUXILIARY LIGHTING POWER SOURCE AND VENTILATION DISCONNECTING MEANS. DISCONNECT TO BE LOCKABLE IN THE OPEN POSITION.
4. JAMB MOUNTED AND WALL MOUNTED ADA ACTUATOR.
5. MOUNT RECEPTACLE IN FACE OF CEILING TILE.
6. RECONNECT NEW EQUIPMENT TO ORIGINAL CIRCUIT.
7. TOP HALF OF NEW RECEPTACLES IN THIS ROOM SHALL BE CONNECTED TO OCCUPANCY SENSOR FOR CODE REQUIRED PLUG CONTROL.
8. MOUNT RECEPTACLE IN FACE OF KNEE WALL UNDER COUNTER.
9. COORDINATE MOUNTING HEIGHT OF CONNECTIONS FOR TELEVISIONS WITH ARCHITECTURAL ELEVATIONS

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

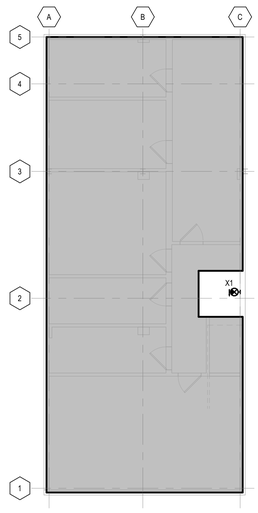
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

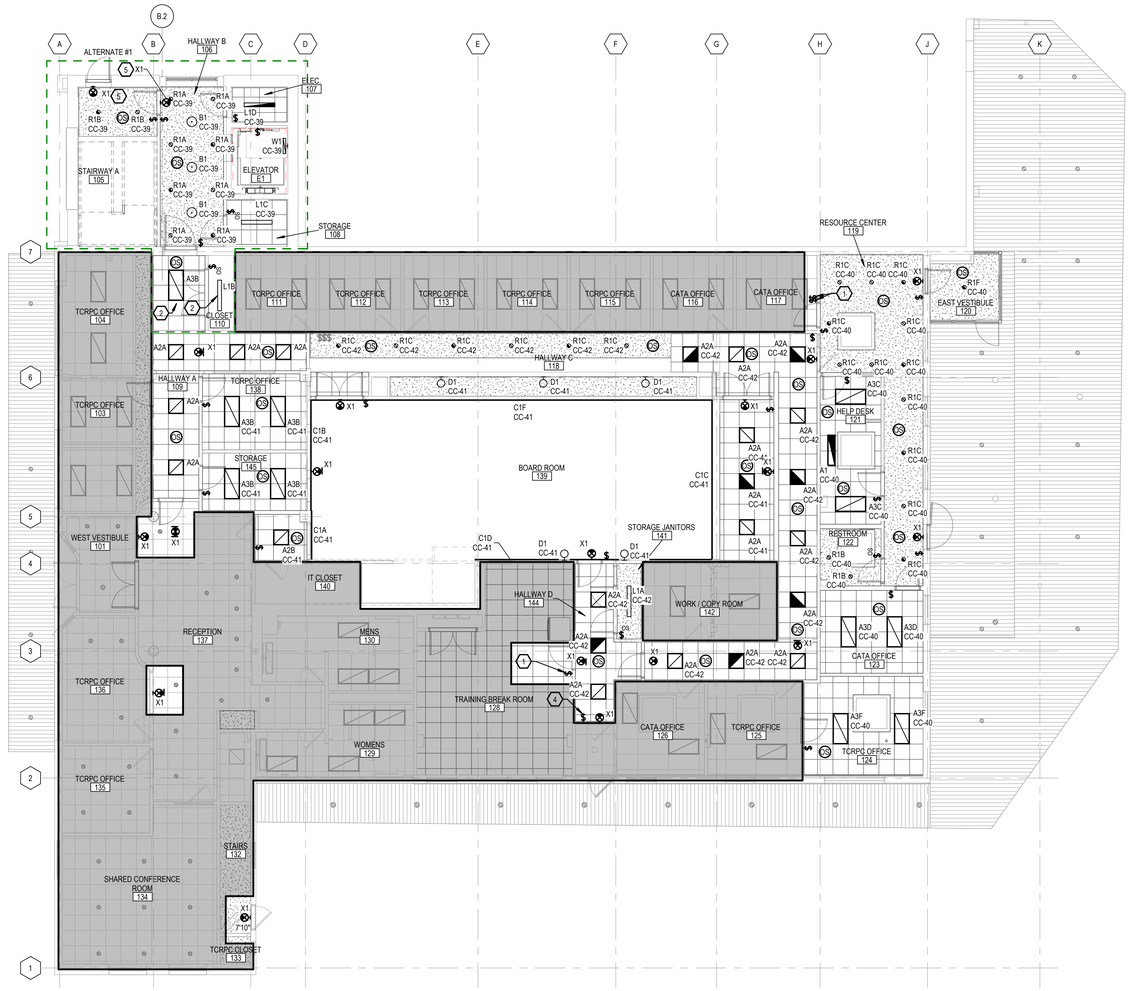
ROOF POWER PLAN
EP103

12/7/2026 2:26:09 AM Autodesk Docs://75820023 CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington ELEC.rvt
ROOF POWER PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF PROFESSIONAL SERVICE. IT IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY PURPOSE OR PROJECT OTHER THAN THE SPECIFIC PROJECT FOR WHICH IT WAS PREPARED AND DEVELOPED WITHOUT THE WRITTEN CONSENT OF PROGRESSIVE AE INC. AND SHALL NOT BE LOANED, COPIED OR REPRODUCED, IN WHOLE OR IN PART, FOR ANY REASON WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF PROGRESSIVE AE INC. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



BASEMENT LIGHTING PLAN

1/8" = 1'-0"



FIRST FLOOR LIGHTING PLAN

1/8" = 1'-0"

LIGHTING GENERAL NOTES

A. ALL MOUNTING HEIGHTS FOR LIGHTING FIXTURES ARE TO THE BOTTOM OF THE FIXTURES UNLESS INDICATED OTHERWISE.

B. SEE ARCHITECTURAL EXTERIOR ELEVATIONS FOR MOUNTING HEIGHTS OF EXTERIOR LIGHTING FIXTURES.

C. CONDUIT AND WIRE SHALL NOT BE INSTALLED BELOW FLOOR SLAB UNLESS INDICATED ON PLAN BY DASHED CONDUIT.

D. CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULE). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.

E. ALL EMERGENCY AND EXIT LIGHTING WITH INTEGRAL BATTERIES TO BE FED FROM AN UNSWITCHED LEG OF THE BRANCH CIRCUIT FEEDING LIGHTING IN THE SAME SPACE. BATTERY TO HAVE CAPACITY FOR 90 MINUTES OF BACK-UP POWER.

LIGHTING KEYNOTES

1. NEW LOCATION OF EXISTING LIGHT SWITCHES INDICATED IN DEMOLITION PLANS.
2. CONNECT TO EXISTING LIGHTING CIRCUIT IN THE AREA.
3. CONNECT NEW SWITCH TO EXISTING HALLWAY CIRCUIT.
4. PROVIDE NEW SWITCH IN EXISTING LOCATION.
5. MOUNT EXIT SIGN AT 7'-10" AFF TO CENTER OF FIXTURE.

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

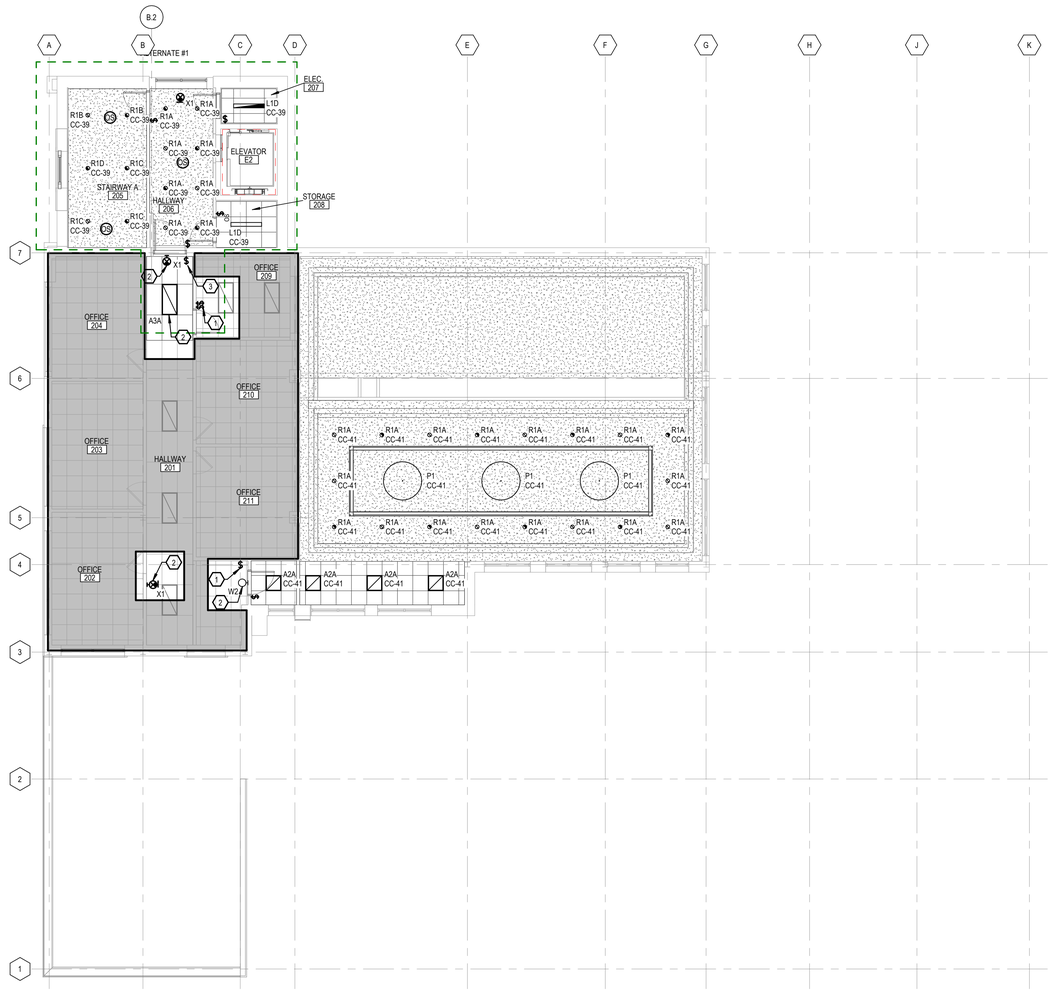
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

FIRST FLOOR LIGHTING PLAN
EL101

7/27/2026 2:26:14 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Revit 2019 S Washington - ELEC.rvt
FIRST FLOOR LIGHTING PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. ALL RIGHTS RESERVED. UNPUBLISHED WORK. ©PROGRESSIVE AE INC. 2026. ALL RIGHTS RESERVED. INCLUDING THE COPYRIGHT THERETO.



SECOND FLOOR LIGHTING PLAN

1/8" = 1'-0"

LIGHTING GENERAL NOTES

A. ALL MOUNTING HEIGHTS FOR LIGHTING FIXTURES ARE TO THE BOTTOM OF THE FIXTURES UNLESS INDICATED OTHERWISE.

B. SEE ARCHITECTURAL EXTERIOR ELEVATIONS FOR MOUNTING HEIGHTS OF EXTERIOR LIGHTING FIXTURES.

C. CONDUIT AND WIRE SHALL NOT BE INSTALLED BELOW FLOOR SLAB UNLESS INDICATED ON PLAN BY DASHED CONDUIT.

D. CIRCUIT NUMBERS AT DEVICES CORRESPOND TO PANELBOARD BREAKERS (SEE PANELBOARD SCHEDULE). BRANCH CIRCUITS SHALL BE SIZED ACCORDING TO THE CIRCUIT BREAKER RATING, UNLESS INDICATED OTHERWISE ON THE ELECTRICAL EQUIPMENT SCHEDULE.

E. ALL EMERGENCY AND EXIT LIGHTING WITH INTEGRAL BATTERIES TO BE FED FROM AN UNSWITCHED LEG OF THE BRANCH CIRCUIT FEEDING LIGHTING IN THE SAME SPACE. BATTERY TO HAVE CAPACITY FOR 90 MINUTES OF BACK-UP POWER.

LIGHTING KEYNOTES

1. NEW LOCATION OF EXISTING LIGHT SWITCHES INDICATED IN DEMOLITION PLANS.
2. CONNECT TO EXISTING LIGHTING CIRCUIT IN THE AREA.
3. CONNECT NEW SWITCH TO EXISTING HALLWAY CIRCUIT.
4. PROVIDE NEW SWITCH IN EXISTING LOCATION.
5. MOUNT EXIT SIGN AT 7'-10" AFF TO CENTER OF FIXTURE.

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

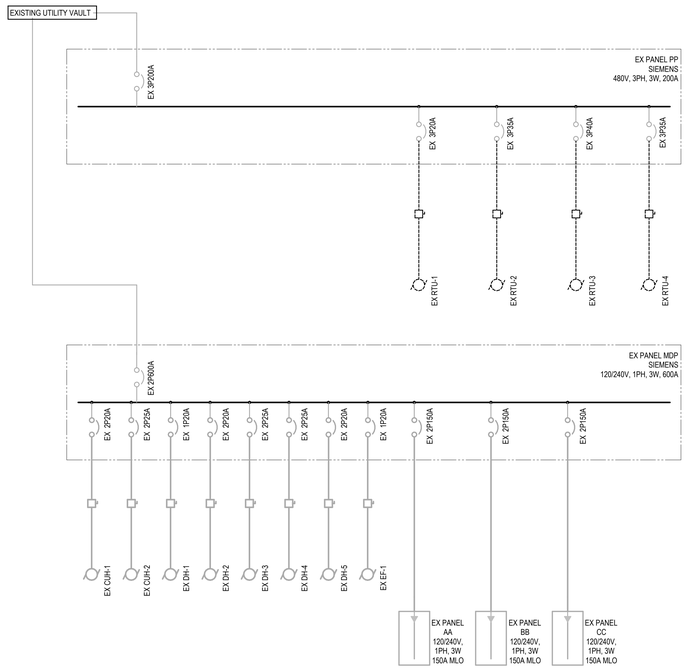
ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

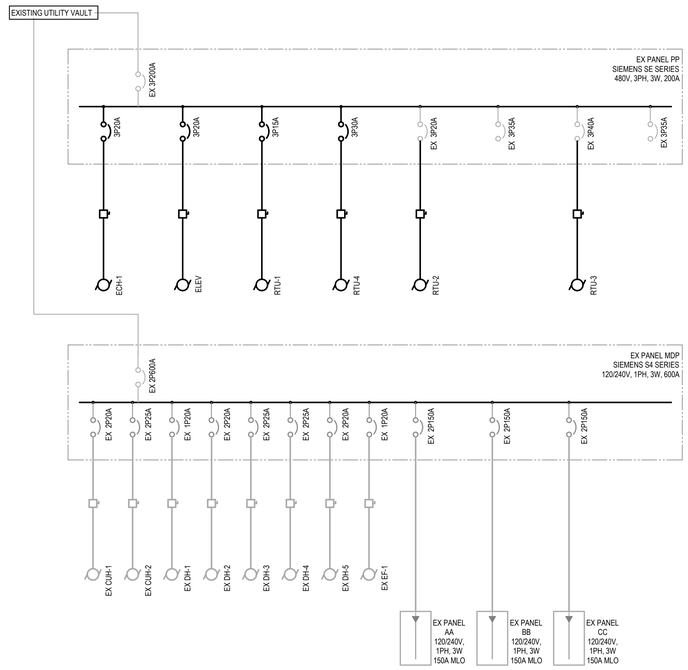
PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

SECOND FLOOR LIGHTING PLAN
EL102

7/27/2026 2:26:19 AM Autodesk Docs://75820023 - CATA Renovation of 571 S. Washington/75820023 CATA Revit 571 S Washington - ELEC.rvt
M. KLEIN
SECOND FLOOR LIGHTING PLAN
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE, AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC., WHETHER THE PROJECT FOR WHICH IT IS MADE IS EXECUTED OR NOT. THE USE OF THIS DOCUMENT FOR ANY PURPOSE OTHER THAN THE SPECIFIC PROJECT FOR WHICH IT WAS PREPARED IS PROHIBITED. ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.



1 ELECTRICAL ONE-LINE DIAGRAM - DEMO
NOT TO SCALE



2 ELECTRICAL ONE-LINE DIAGRAM - NEW
NOT TO SCALE

ONE-LINE GENERAL NOTES

A. CONDUCTOR LENGTHS INDICATED ON THE SINGLE LINE DIAGRAM ARE FOR FAULT CURRENT CALCULATIONS ONLY. ACTUAL LENGTH SHALL BE DETERMINED BY FIELD CONDITIONS AND ACTUAL ROUTES OF FEEDERS.

B. CONTRACTOR TO FIELD VERIFY EXISTING LOADS.

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

ELECTRICAL ONE-LINE DIAGRAMS
E501

7/27/2026 2:25:23 AM Autodesk Docs://75820023 - CATA Renovation of 571 S. Washington/75820023 CATA Revit 571 S Washington - ELEC.rvt
96 - SOUL
ELECTRICAL ONE-LINE DIAGRAMS
THIS DOCUMENT AND IDEAS EMBODIED IN IT PROGRESSIVE AE INC., AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. AND OTHERS WHERE NOTED. ALL RIGHTS RESERVED, INCLUDING THE COPYRIGHT THEREIN.

LIGHTING CONTROL SCHEDULE

CONTROL MODULE	CONTROLLER LOCATION	LIGHTING ZONE	CIRCUIT NUMBER	FIXTURE TYPE	TOTAL LOAD	SEQUENCE OF OPERATION	LOCAL CONTROL	OCCUPANCY/ VACANCY SENSOR	PHOTOCELL	TIME CLOCK	EMERGENCY LUMINAIRE	EMERGENCY CIRCUIT
105 STAIRS A												
0-10V	PLENUM		CC-39	R1B	11 W	S2	LC105,LC205	Yes	No	No	No	
0-10V	PLENUM		CC-39	R1B	11 W	S2	LC105,LC205	Yes	No	No	Yes	INVERTER
106 HALLWAY B												
0-10V	PLENUM		CC-39	B1	66 W	S2	LC106	Yes	No	No	No	
0-10V	PLENUM		CC-39	R1A	24 W	S2	LC106	Yes	No	No	No	
0-10V	PLENUM		CC-39	R1A	24 W	S2	LC106	Yes	No	No	Yes	INVERTER
107 ELEC												
SWITCHED	PLENUM		CC-39	L1D	47 W	S3	S107	No	No	No	Yes	INVERTER
108 STORAGE												
0-10V	PLENUM		CC-39	L1C	32 W	S1	LC108	Yes	No	No	No	
109 HALLWAY A												
0-10V	PLENUM			A2A	115 W	S2	EXISTING	Yes	No	No	No	
0-10V	PLENUM			A3B	43 W	S2	EXISTING	Yes	No	No	No	
110 CLOSET												
0-10V	PLENUM			L1B	26 W	S1	LC110	Yes	No	No	No	
118 HALLWAY C												
0-10V	PLENUM		CC-42	A2A	115 W	S2	LC118	Yes	No	No	No	
0-10V	PLENUM		CC-42	A2A	115 W	S2	LC118	Yes	No	No	Yes	INVERTER
0-10V	PLENUM		CC-42	R1C	54 W	S2	LC118	Yes	No	No	No	
0-10V	PLENUM		CC-42	R1C	54 W	S2	LC118	Yes	No	No	Yes	INVERTER
119 RESOURCE CENTER												
0-10V	PLENUM		CC-40	R1C	126 W	S2	LC119	Yes	No	No	No	
0-10V	PLENUM		CC-40	R1C	90 W	S2	LC119	Yes	No	No	Yes	INVERTER
120 EAST VESTIBULE												
0-10V	PLENUM		CC-40	R1F	33 W	S2		Yes	No	No	Yes	INVERTER
121 HELP DESK												
0-10V	PLENUM		CC-40	A1	28 W	S2	LC121	Yes	No	No	Yes	INVERTER
0-10V	PLENUM		CC-40	A3C	96 W	S2	LC121	Yes	No	No	No	
122 RESTROOM												
0-10V	PLENUM		CC-40	R1B	22 W	S2	LC122	Yes	No	No	No	
123 OFFICE												
0-10V	PLENUM		CC-40	A3D	122 W	S1	LC123	Yes	No	No	No	
124 OFFICE												
0-10V	PLENUM		CC-40	A3F	136 W	S1	LC124	Yes	No	No	No	
138 OFFICE												
0-10V	PLENUM		CC-41	A3B	86 W	S1	LC138	Yes	No	No	No	
139 BOARD ROOM												
0-10V	PLENUM	Z1	CC-41	C1A	12 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z1	CC-41	C1B	28 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z1	CC-41	C1C	40 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z1	CC-41	C1D	60 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z1	CC-41	C1F	104 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z2	CC-41	D1	50 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z3	CC-41	P1	165 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z4	CC-41	R1A	60 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z4	CC-41	R1A	48 W	S1	LC139A-D	Yes	No	No	Yes	INVERTER
0-10V	PLENUM	Z5	CC-41	A2A	138 W	S1	LC139A-D	Yes	No	No	No	
0-10V	PLENUM	Z5	CC-41	A2A	23 W	S1	LC139A-D	Yes	No	No	Yes	INVERTER
0-10V	PLENUM	Z5	CC-41	A2B	28 W	S1	LC139A-D	Yes	No	No	No	
141 STORAGE JANITORS												
0-10V	PLENUM		CC-42	L1A	19 W	S1	LC141	Yes	No	No	No	
144 HALLWAY D												
0-10V	PLENUM		CC-42	A2A	46 W	S2	LC144	Yes	No	No	No	
0-10V	PLENUM		CC-42	A2A	23 W	S2	LC144	Yes	No	No	Yes	INVERTER
145 STORAGE												
	PLENUM		CC-41	A3B	86 W	S1	LC145	Yes	No	No	No	
201 HALLWAY												
0-10V	PLENUM			A3A	30 W	S2	EXISTING	No	No	No	No	
0-10V				W2	3 W	S2	NONE	No	No	No	No	
205 STAIRS A												
0-10V	PLENUM		CC-39	R1B	11 W	S2	LC105,LC205	Yes	No	No	No	
0-10V	PLENUM		CC-39	R1B	11 W	S2	LC105,LC205	Yes	No	No	Yes	INVERTER
0-10V	PLENUM		CC-39	R1C	18 W	S2	LC105,LC205	Yes	No	No	No	
0-10V	PLENUM		CC-39	R1C	36 W	S2	LC105,LC205	Yes	No	No	Yes	INVERTER
0-10V	PLENUM		CC-39	R1D	27 W	S2	LC105,LC205	Yes	No	No	Yes	INVERTER
206 HALLWAY												
0-10V	PLENUM		CC-39	R1A	24 W	S2	LC206	Yes	No	No	No	
0-10V	PLENUM		CC-39	R1A	24 W	S2	LC206	Yes	No	No	Yes	INVERTER
207 ELEC												
SWITCHED	PLENUM		CC-39	L1D	47 W	S3	S207	No	No	No	Yes	INVERTER
208 STORAGE												
0-10V	PLENUM		CC-39	L1D	47 W	S1	LC208	Yes	No	No	No	
E1 ELEVATOR												
0-10V			CC-39	W1	15 W	S3	S1	No	No	No	No	

SEQUENCE OF OPERATIONS

OPERATION	DESCRIPTION
S1	MANUAL ON. AUTO OFF AFTER 30 MINUTE TIMEOUT.
S2	AUTO ON. AUTO OFF AFTER 30 MINUTE TIMEOUT.
S3	MANUAL ON. MANUAL OFF.

LIGHTING LOW-VOLTAGE SWITCH SCHEDULE

SWITCH ID	LIGHTING ZONE	CONTROL DESCRITION
105 STAIRS A		
LC105		SINGLE ZONE - ON/OFF
106 HALLWAY B		
LC106		SINGLE ZONE - ON/OFF
LC106		SINGLE ZONE - ON/OFF
108 STORAGE		
LC108		SINGLE ZONE - ON/OFF
110 CLOSET		
LC110		SINGLE ZONE - ON/OFF
118 HALLWAY C		
LC118		SINGLE ZONE - ON/OFF
119 RESOURCE CENTER		
LC119		SINGLE ZONE - ON/OFF
LC119		SINGLE ZONE - ON/OFF
LC119		SINGLE ZONE - ON/OFF
121 HELPDESK		
LC121		SINGLE ZONE - ON/OFF/RAISE/LOWER
LC121		SINGLE ZONE - ON/OFF/RAISE/LOWER
122 RESTROOM		
LC122		SINGLE ZONE - ON/OFF
123 OFFICE		
LC123		SINGLE ZONE - ON/OFF/RAISE/LOWER
124 OFFICE		
LC124		SINGLE ZONE - ON/OFF/RAISE/LOWER
138 OFFICE		
LC138		SINGLE ZONE - ON/OFF/RAISE/LOWER
139 BOARD ROOM		
LC139B	Z1, Z2, Z3, Z4, Z5	MULTI ZONE - ON/OFF/RAISE/LOWER
LC139A	Z1, Z2, Z3, Z4, Z5	MULTI ZONE - ON/OFF/RAISE/LOWER
LC139C	Z1, Z2, Z3, Z4, Z5	MULTI ZONE - ON/OFF/RAISE/LOWER
LC139D	Z1, Z2, Z3, Z4, Z5	MULTI ZONE - ON/OFF/RAISE/LOWER
141 STORAGE JANITORS		
LC141		SINGLE ZONE - ON/OFF
144 HALLWAY D		
LC144		SINGLE ZONE - ON/OFF
145 STORAGE		
LC145		SINGLE ZONE - ON/OFF
205 STAIR A		
LC205		SINGLE ZONE - ON/OFF
206 HALLWAY		
LC206		SINGLE ZONE - ON/OFF
LC206		SINGLE ZONE - ON/OFF
208 STORAGE		
LC208		SINGLE ZONE - ON/OFF

MECHANICAL EQUIPMENT CONNECTION SCHEDULE

TAG	DESCRIPTION	POWER	VOLTAGE	PHASE	FEEDER	DISCONNECTING MEANS	DISC FURNISH/INSTALL	NOTES
AC-1	AIR CONDITIONIHG UNIT	240 VA	240 V	1	2#12 + #12 G, 3/4"C	NFS	DIV. 26 / DIV. 26	FED FROM CU-1
CU-1	CONDENSING UNIT	3360 VA	240 V	1	2#12 + #12 G, 3/4"C	NFS	DIV. 26 / DIV. 26	
ECH-1	ELECTRIC CABINET HEATER	9145 VA	480 V	3	3#12 + #12 G, 3/4"C	FURNISHED W/ UNIT	DIV. 23 / DIV. 23	11 A
EF-1	EXHAUST FAN	336 VA	120 V	1	2#12 + #12 G, 3/4"C	NFS	DIV. 23 / DIV. 23	
EF-2	EXHAUST FAN	35 VA	120 V	1	2#12 + #12 G, 3/4"C	FS	DIV. 26 / DIV. 26	0.29 FLA / 0.4 MCA / 15 MOCP
EF-3	EXHAUST FAN	120 VA	120 V	1	2#12 + #12 G, 3/4"C	FS	DIV. 26 / DIV. 26	1/25 HP
FCU-1	FAN COIL UNIT	240 VA	240 V	1	2#12 + #12 G, 3/4"C	NFS	DIV. 26 / DIV. 26	FED FROM HP-1
HP-1	HEAT PUMP	3360 VA	240 V	1	2#12 + #12 G, 3/4"C	NFS	DIV. 26 / DIV. 26	
RTU-1	ROOFTOP UNIT	9976 VA	480 V	3	3#12 + #12 G, 3/4"C	FURNISHED W/ UNIT	DIV. 23 / DIV. 23	12 MCA / 15 MOCP
RTU-2	ROOFTOP UNIT	11639 VA	480 V	3	3#12 + #12 G, 3/4"C	FURNISHED W/ UNIT	DIV. 23 / DIV. 23	14 MCA / 20 MOCP
RTU-3	ROOFTOP UNIT	24941 VA	480 V	3	3#10 + #10 G, 3/4"C	FURNISHED W/ UNIT	DIV. 23 / DIV. 23	30 MCA/ 40 MOCP
RTU-4	ROOFTOP UNIT	20784 VA	480 V	3	3#10 + #10 G, 3/4"C	FURNISHED W/ UNIT	DIV. 23 / DIV. 23	25 MCA / 30 MOCP
SP-1	SUMP PUMP	1560 VA	120 V	1	2#12 + #12 G, 3/4"C	PLUG	DIV. 26 / DIV. 26	15.5 A / 1/2 HP

STARTER TYPES:

FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
2-SPD	TWO SPEED
VFD	VARIABLE FREQUENCY DRIVE
RVS	REDUCED VOLTAGE

COMBINATION DISCONNECT TYPES:

FS	FUSED SWITCH
NFS	NON-FUSED SWITCH
MCP	MOTOR CIRCUIT PROTECTOR
CB	CIRCUIT BREAKER

CONTROL DEVICES:

HOA	HAND-OFF-AUTO SWITCH
RP	RED (RUN) PILOT LIGHT
GP	GREEN (POWER) PILOT LIGHT
0/I	ON-OFF SELECTOR SWITCH
S/S	STOP-START PUSHBUTTONS

NOTES:

1. INPUT AND OUTPUT CONDUCTORS TO AND FROM VFD'S SHALL BE INSTALLED IN SEPARATE RACEWAYS, INDEPENDENT FROM ANY OTHER CONDUCTORS, AND SHALL NOT PASS THRU ANY COMMON WIREWAY OR RACEWAY.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	MOUNTING	VOLT	WATT	MANUFACTURER	CATALOG NUMBER	NOTE
A1	1X4 RECESSED TROFFER	RECESSED	120 V	28 W	FOCAL POINT	FLUL14PS2500L30K	
A2A	2X2 RECESSED TROFFER	RECESSED	120 V	23 W	FOCAL POINT	FLUL22PS2000L30K	
A2B	2X2 RECESSED TROFFER	RECESSED	120 V	28 W	FOCAL POINT	FLUL22PS2500L30K	
A3A	2X4 RECESSED TROFFER	RECESSED	120 V	30 W	FOCAL POINT	FLUL24PS3000L30K	
A3B	2X4 RECESSED TROFFER	RECESSED	120 V	43 W	FOCAL POINT	FLUL24PS4000L30K	
A3C	2X4 RECESSED TROFFER	RECESSED	120 V	48 W	FOCAL POINT	FLUL24PS4500L30K	
A3D	2X4 RECESSED TROFFER	RECESSED	120 V	61 W	FOCAL POINT	FLUL24PS5000L30K	
A3F	2X4 RECESSED TROFFER	RECESSED	120 V	68 W	FOCAL POINT	FLUL24PS6000L30K	
B1	ROUND SURFACE FIXTURE	PENDANT	120 V	22 W	BROWNLEE	2080 16 WH R22 WH 30K	
C1A	LINEAR UP LIGHT WALL GRAZE	SURFACE	120 V	12 W	LUMINII	KM-BABA-6FT-4IN-VC72VHO-30K-GR	1
C1B	LINEAR UP LIGHT WALL GRAZE	SURFACE	120 V	28 W	LUMINII	KM-BABA-14FT-4IN-VC72VHO-30K-GR	1
C1C	LINEAR UP LIGHT WALL GRAZE	SURFACE	120 V	40 W	LUMINII	KM-BABA-20FT-8IN-VC72VHO-30K-GR	1
C1D	LINEAR UP LIGHT WALL GRAZE	SURFACE	120 V	60 W	LUMINII	KM-BABA-30FT-10IN-VC72VHO-30K-GR	1
C1F	LINEAR UP LIGHT WALL GRAZE	SURFACE	120 V	104 W	LUMINII	KM-BABA-52FT-3IN-VC72VHO-30K-GR	1
D1	WALL SCONCE	WALL MT	120 V	10 W	ULTRA LIGHTS	9260-18 BA 04	
L1A	LINEAR STRIP FIXTURE	SURFACE	120 V	19 W	LITHONIA	CLX L48 3000LM SEF FDL MVOLT 30K 80CRI	
L1B	LINEAR STRIP FIXTURE	SURFACE	120 V	26 W	LITHONIA	CLX L48 4000LM SEF FDL MVOLT 30K 80CRI	
L1C	LINEAR STRIP FIXTURE	SURFACE	120 V	32 W	LITHONIA	CLX L48 5000LM SEF FDL MVOLT 30K 80CRI	
L1D	LINEAR STRIP FIXTURE	SURFACE	120 V	47 W	LITHONIA	CLX L48 7000LM SEF FDL MVOLT 30K 80CRI	
P1	RING PENDANT	PENDANT	120 V	55 W	OCL ARCHITECTURAL LIGHTING	RV4 P1EU 60 MW SWP LED1 30K	
R1A	4" ROUND LED DOWNLIGHT	RECESSED	120 V	6 W	LITHONIA	LDN4 35_05 LO4AR LSS	
R1B	4" ROUND LED DOWNLIGHT	RECESSED	120 V	11 W	LITHONIA	LDN4 35_10 LO4AR LSS	
R1C	4" ROUND LED DOWNLIGHT	RECESSED	120 V	18 W	LITHONIA	LDN4 35_15 LO4AR LSS	
R1D	4" ROUND LED DOWNLIGHT	RECESSED	120 V	27 W	LITHONIA	LDN4 35_25 LO4AR LSS	
R1F	4" ROUND LED DOWNLIGHT	RECESSED	120 V	33 W	LITHONIA	LDN4 35_30 LO4AR LSS	
W1	WALL MOUNTED LINEAR FIXTURE	WALL MT	120 V	15 W	LITHONIA	ZLTN-L24-1500LM-FST-MVOLT	
W2	NO EXIT INDICATOR	WALL MT	120 V	3 W	LITHONIA	LQM-P-W-1-R-MVOLT-SW12	
X1	EXIT SIGN	UNIVERSAL	120 V	3 W	LITHONIA	LQM-S-W-3-G-120/277-ELN-SD	2

GENERAL NOTES:

A. ALL FIXTURES SHALL BE BUILD AMERICA, BUY AMERICA (BABA) COMPLIANT.

SCHEDULE NOTES:

1. APPROXIMATE LENGTH OF THE TOTAL SECTION LENGTH LISTED. FIXTURE SHALL BE BROKEN INTO SECTIONS AS REQUIRED BY THE MAX ALLOWABLE LENGTH OF THE FIXTURE INDICATED BY THE MANUFACTURER. REFER TO A111 DETAIL B7 FOR MOUNTING REQUIREMENTS.
2. IF WALL MOUNTED, FIXTURES TO BE MOUNTED AT 7'-6" AFF TO CENTER OF FIXTURE UNLESS NOTED OTHERWISE ON PLAN.

PROGRESSIVE AE INC.
PROGRESSIVE COMPANIES
weareprogressive.com
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

ELECTRICAL SCHEDULES
E601

7/27/2026 2:26:22 AM Autodesk Docs://75820023 - CATA Renovation of 571 S Washington/75820023 CATA Revo 571 S Washington - ELEC.rvt
ELECTRICAL SCHEDULES
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE A.E. INC. AS AN INSTRUMENT OF SERVICE AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE A.E. INC. PROGRESSIVE A.E. RESERVES ALL OTHER RIGHTS, INCLUDING THE COPYRIGHT THERETO.

PANELBOARD: PP

LOCATION: STORAGE 008
MOUNTING: SURFACE NEMA 1
FED FROM:
FEEDER: SEE ONE-LINE DIAGRAM

PANEL TYPE:
VOLTAGE: 480Y/277V / 3 ø / 4W
BUS AMPS: 200 AMPS
MAIN DEVICE: 200 A MAIN CB
A.I.C. RATING: 14,000 AMPS SYMMETRICAL
SPECIAL:

LOAD DESCRIPTION	LOAD TYPE	BREAKER MOD	P	TRIP	CKT	A		B		C		CKT	TRIP	P	BREAKER MOD	LOAD TYPE	LOAD DESCRIPTION
					1	3880	0					2					
RTU-2	MTR	EX	3	20 A	3			3880	0			4	35 A	3	EX	--	SPARE
					5					3880	0	6					
SPARE	--	EX	3	35 A	7	0	8314					8					
					9			0	8314			10	40 A	3	EX	MTR	RTU-3
					11					0	8314	12					
					13	6928	3325					14					
RTU-4	MTR		3	30 A	15			6928	3325			16	15 A	3		MTR	RTU-1
					17					6928	3325	18					
					19	3048	3048					20					
ELEV	MTR		3	20 A	21			3048	3048			22	20 A	3		MTR; RCPT	ECH-1
					23					3048	3048	24					
					25							26					
					27							28					
					29							30					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
EXISTING LOADS	0 VA	0.00%	0 VA		
RECEPTACLE	9145 VA	100.00%	9145 VA	**CONNECTED LOAD:**	85630 VA
LIGHTING	0 VA	0.00%	0 VA	**EST. DEMAND LOAD:**	91865 VA
MOTORS	76485 VA	108.15%	82720 VA		
OTHER	0 VA	0.00%	0 VA	**CONNECTED CURRENT:**	103 A
KITCHEN	0 VA	0.00%	0 VA	**EST. DEMAND CURRENT:**	110 A

BREAKER MODIFIER LEGEND:
(G) - GROUND FAULT CIRCUIT INTERRUPTER. (A) - ARC FAULT CIRCUIT INTERRUPTER. (L) - LOCK-OUT PROVISIIONS. (S) - SHUNT-TRIP.
(F) - FIRE ALARM CIRCUIT - PROVIDE LOCK-ON DEVICE AND PERMANENT RED MARKING AND LABELING AS "FIRE ALARM CIRCUIT". (EX) - EXISTING BREAKER

NOTES:
EC TO CONFIRM EXISTING SPARE CIRCUIT BREAKERS. EC TO USE EXISTING SPARE BREAKERS FOR NEW CIRCUITS BEFORE PURCHASING NEW BREAKERS.

PANELBOARD: MDP

LOCATION: STORAGE 008
MOUNTING: SURFACE NEMA 1
FED FROM:
FEEDER: SEE ONE-LINE DIAGRAM

PANEL TYPE:
VOLTAGE: 120/240V / 1 ø / 3W
BUS AMPS: 600 AMPS
MAIN DEVICE: 600 A MAIN CB
A.I.C. RATING: 10,000 AMPS SYMMETRICAL
SPECIAL:

LOAD DESCRIPTION	LOAD TYPE	BREAKER MOD	P	TRIP	CKT	A		B		CKT	TRIP	P	BREAKER MOD	LOAD TYPE	LOAD DESCRIPTION
EX EF-1	--	EX	1	20 A	1	696	900			2	20 A	1	EX	--	EX LTS
EX DH-1	--	EX	1	20 A	3			1300	1400	4	20 A	1	EX	--	EX RCPT
EX LOAD	--	EX	1	20 A	5	1200	1400			6	20 A	1	EX	--	EX SUMP PUMP
EX CHU-1	--	EX	2	20 A	7			1500	1600	8	20 A	2	EX	--	EX DH-5
					9	1500	1600			10					
SPACE	--		1	--	11			--	--	12	--	1		--	SPACE
EX DH-2	--	EX	2	20 A	13	1600	1900			14	25 A	2	EX	--	EX DH-4
					15			1600	1900	16					
SPACE	--		1	--	17	--	--			18	--	1		--	SPACE
EX CHU-2	--	EX	2	25 A	19			2500	1900	20	25 A	2	EX	--	EX DH-3
					21	2500	1900			22					
SPACE	--		1	--	23			--	--	24	--	1		--	SPACE
SPACE	--		1	--	25	--	--			26	--	1		--	SPACE
SPACE	--		1	--	27			--	--	28	--	1		--	SPACE
SPACE	--		1	--	29	--	--			30	--	1		--	SPACE
SPACE	--		1	--	31			--	12380	32	150 A	2	EX	OTHR; MTR; RCPT	EXISTING PANEL BB
SPACE	--		1	--	33	--	14500			34					
SPACE	--		1	--	35			--	--	36	--	1		--	SPACE
EXISTING PANEL AA	LTS; MTR; RCPT	EX	2	150 A	37	14729	18780			38	150 A	2	EX	RCPT	EXISTING PANEL CC
					39			13988	17420	40					
SPACE	--		1	--	41	--	--			42	--	1		--	SPACE

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
EXISTING LOADS	78896 VA	100.00%	78896 VA		
RECEPTACLE	35800 VA	63.97%	22900 VA	**CONNECTED LOAD:**	120693 VA
LIGHTING	2482 VA	125.00%	3103 VA	**EST. DEMAND LOAD:**	109253 VA
MOTORS	3515 VA	123.90%	4355 VA		
OTHER	0 VA	0.00%	0 VA	**CONNECTED CURRENT:**	503 A
KITCHEN	0 VA	0.00%	0 VA	**EST. DEMAND CURRENT:**	455 A

BREAKER MODIFIER LEGEND:
(G) - GROUND FAULT CIRCUIT INTERRUPTER. (A) - ARC FAULT CIRCUIT INTERRUPTER. (L) - LOCK-OUT PROVISIIONS. (S) - SHUNT-TRIP.
(F) - FIRE ALARM CIRCUIT - PROVIDE LOCK-ON DEVICE AND PERMANENT RED MARKING AND LABELING AS "FIRE ALARM CIRCUIT". (EX) - EXISTING BREAKER

NOTES:
EC TO CONFIRM EXISTING SPARE CIRCUIT BREAKERS. EC TO USE EXISTING SPARE BREAKERS FOR NEW CIRCUITS BEFORE PURCHASING NEW BREAKERS.

PANELBOARD: CC

LOCATION:
MOUNTING: SURFACE NEMA 1
FED FROM: MDP
FEEDER: SEE ONE-LINE DIAGRAM

PANEL TYPE:
VOLTAGE: 120/240V / 1 ø / 3W
BUS AMPS: 250
MAIN DEVICE: 150 A MLO
A.I.C. RATING: 10,000 AMPS SYMMETRICAL
SPECIAL:

LOAD DESCRIPTION	LOAD TYPE	BREAKER MOD	P	TRIP	CKT	A		B		CKT	TRIP	P	BREAKER MOD	LOAD TYPE	LOAD DESCRIPTION
EX 2ND FLR LTS	--	EX	1	20 A	1	1200	720			2	20 A	1	EX	--	EX RM 204 RCPTS
EX 2ND FLR LTS	--	EX	1	20 A	3			1200	720	4	20 A	1	EX	--	EX RM 203 RCPTS
SPARE	--	EX	1	20 A	5	0	720			6	20 A	1	EX	--	EX RM 202 RCPTS
SPARE	--	EX	1	20 A	7			0	720	8	20 A	1	EX	--	EX RM 205 RCPTS
SPARE	--	EX	1	20 A	9	0	720			10	20 A	1	EX	--	EX RM 206 RCPTS
SPARE	--	EX	1	20 A	11			0	720	12	20 A	1	EX	--	EX BRK RM & FRIDGE RCPTS
EX FRONT SIGN	--	EX	1	20 A	13	800	720			14	20 A	1	EX	--	EX BREAK RM COUNTER
EX FRONT CANOPY	--	EX	1	20 A	15			1200	800	16	20 A	1	EX	--	EX GARBAGE DISPOSAL
EX SOUTH CANOPY	--	EX	1	20 A	17	1200	180			18	20 A	1	EX	--	EX UPSTAIRS WATER HEATER
EX EAST CANOPY	--	EX	1	20 A	19			1200	1500	20	20 A	1	EX	--	EX UPSTAIRS OFFICE...
EX EAST CANOPY	--	EX	1	20 A	21	1200	1800			22	20 A	1	EX	--	EX RANGE
EX LIGHTING CONTACTOR	--	EX	1	20 A	23			400	1800	24	20 A	1	EX	--	EX RANGE
AC--1 / CU-1	MTR	EX	2	20 A	25	1680	0			26	20 A	1	EX	--	EX LOAD
					27			1680	0	28	20 A	1	EX	--	EX LOAD
EX LOAD	--	EX	1	20 A	29	0	0			30	20 A	1	EX	--	EX LOAD
EX LOAD	--	EX	1	20 A	31			600	0	32	20 A	1	EX	--	EX LOAD
EX LOAD	--	EX	1	20 A	33	0	540			34	20 A	1	EX	RCPT	206 / 207 / 208 - RCPTS
ELEV CAB LTS	MTR; RCPT	EX	1	20 A	35			200	120	36	15 A	1	EX	LTS; MTR	EF-3
SP-1	RCPT		1	20 A	37	1860	35			38	15 A	1		LTS; MTR	EF-2
ADDITION LIGHTING	LTS		1	20 A	39			475	653	40	20 A	1		LTS	LIGHTING ROOM 119, 123, 12...
LIGHTING BOARD ROOM	LTS		1	20 A	41	928	426			42	20 A	1		LTS	LIGHTING HALLWAY C 118

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
EXISTING LOADS	20120 VA	100.00%	20120 VA		
RECEPTACLE	2600 VA	100.00%	2600 VA	**CONNECTED LOAD:**	28717 VA
LIGHTING	2482 VA	125.00%	3103 VA	**EST. DEMAND LOAD:**	30177 VA
MOTORS	3515 VA	123.90%	4355 VA		
OTHER	0 VA	0.00%	0 VA	**CONNECTED CURRENT:**	120 A
KITCHEN	0 VA	0.00%	0 VA	**EST. DEMAND CURRENT:**	126 A

BREAKER MODIFIER LEGEND:
(G) - GROUND FAULT CIRCUIT INTERRUPTER. (A) - ARC FAULT CIRCUIT INTERRUPTER. (L) - LOCK-OUT PROVISIIONS. (S) - SHUNT-TRIP.
(F) - FIRE ALARM CIRCUIT - PROVIDE LOCK-ON DEVICE AND PERMANENT RED MARKING AND LABELING AS "FIRE ALARM CIRCUIT". (EX) - EXISTING BREAKER.

NOTES:
EC TO CONFIRM EXISTING SPARE CIRCUIT BREAKERS. EC TO USE EXISTING SPARE BREAKERS FOR NEW CIRCUITS BEFORE PURCHASING NEW BREAKERS.

PANELBOARD: BB

LOCATION:
MOUNTING: SURFACE NEMA 1
FED FROM: MDP
FEEDER: SEE ONE-LINE DIAGRAM

PANEL TYPE:
VOLTAGE: 120/240V / 1 ø / 3W
BUS AMPS: 250
MAIN DEVICE: 150 A MLO
A.I.C. RATING: 10,000 AMPS SYMMETRICAL
SPECIAL:

LOAD DESCRIPTION	LOAD TYPE	BREAKER MOD	P	TRIP	CKT	A		B		CKT	TRIP	P	BREAKER MOD	LOAD TYPE	LOAD DESCRIPTION
EX RM 124, 127 RCPTS	RCPT	EX	1	20 A	1	540	720			2	20 A	1	EX	RCPT	121 / 123 / 124 - RCPTS
RECEPTACLE ROOM 111, 112	RCPT	EX	1	20 A	3			1080	900	4	20 A	1	EX	RCPT	122 - RCPT
RECEPTACLE ROOM 118, 113..	RCPT	EX	1	20 A	5	1080	0			6	20 A	1	EX	OTHR; MTR	120 - DOOR OPERATORS
EX RM 120 RCPTS	RCPT	EX	1	20 A	7			900	540	8	20 A	1	EX	RCPT	118 / 119 - RCPTS
EX RM 119 RCPTS	RCPT	EX	1	20 A	9	900	200			10	20 A	1	EX	RCPT	137 - EWC
EX RM 118 RCPTS	RCPT	EX	1	20 A	11			900	1000	12	20 A	1	EX	RCPT	142 - COPIER
RECEPTACLE ROOM 117	RCPT	EX	1	20 A	13	720	1000			14	20 A	1	EX	RCPT	142 - COPIER
EX RM 101 & 102 RCPTS	RCPT	EX	1	20 A	15			1080	1000	16	20 A	1	EX	RCPT	142 - COPIER
EX RM 103 RCPTS	RCPT	EX	1	20 A	17	360	1200			18	20 A	1	EX	--	EX LOAD
EX RM 104 RCPTS	RCPT	EX	1	20 A	19			720	0	20	20 A	1	EX	--	EX LOAD
EX RM 104 & 105 RCPTS	RCPT	EX	1	20 A	21	720	0			22	20 A	1	EX	--	EX LOAD
EX RM 108 RCPTS	RCPT	EX	1	20 A	23			900	0	24	20 A	1	EX	--	EX LOAD
SPARE	--	EX	1	20 A	25	0	0			26	20 A	1	EX	--	EX LOAD
EX RM 106 RCPTS	RCPT	EX	1	20 A	27			900	0	28	20 A	1	EX	--	EX LOAD
EX OFFICE FURNITURE	--	EX	1	20 A	29	1200	0			30	20 A	1	EX	--	EX LOAD
EX OFFICE FURNITURE	--	EX	1	20 A	31			1200	0	32	20 A	1	EX	--	EX LOAD
EX PLASMA TV	--	EX	1	20 A	33	300	180			34	20 A	1		RCPT	128 - MICROWAVE
EX LOAD	--	EX	1	20 A	35			600	800	36	20 A	1		RCPT	128 - KITCHENETTE RCPTS
128 - REFRIGERATOR	RCPT	G	1	20 A	37	300	1080			38	20 A	1		RCPT	139 - RCPTS
139 - RCPTS	RCPT		1	20 A	39			1080	900	40	20 A	1		RCPT	139 - RCPTS
139 - CEILING RCPT	RCPT		1	20 A	41	800	1080			42	20 A	1		RCPT	106 / 107 / 108 / 110 / 118 -...

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
EXISTING LOADS	4500 VA	100.00%	4500 VA		
RECEPTACLE	22380 VA	72.34%	16190 VA	**CONNECTED LOAD:**	26880 VA
LIGHTING	0 VA	0.00%	0 VA	**EST. DEMAND LOAD:**	20690 VA
MOTORS	0 VA	0.00%	0 VA		
OTHER	0 VA	0.00%	0 VA	**CONNECTED CURRENT:**	112 A
KITCHEN	0 VA	0.00%	0 VA	**EST. DEMAND CURRENT:**	86 A

BREAKER MODIFIER LEGEND:
(G) - GROUND FAULT CIRCUIT INTERRUPTER. (A) - ARC FAULT CIRCUIT INTERRUPTER. (L) - LOCK-OUT PROVISIIONS. (S) - SHUNT-TRIP.
(F) - FIRE ALARM CIRCUIT - PROVIDE LOCK-ON DEVICE AND PERMANENT RED MARKING AND LABELING AS "FIRE ALARM CIRCUIT". (EX) - EXISTING BREAKER.

NOTES:
EC TO CONFIRM EXISTING SPARE CIRCUIT BREAKERS. EC TO USE EXISTING SPARE BREAKERS FOR NEW CIRCUITS BEFORE PURCHASING NEW BREAKERS.

PANELBOARD: AA

LOCATION:
MOUNTING: SURFACE NEMA 1
FED FROM: MDP
FEEDER: SEE ONE-LINE DIAGRAM

PANEL TYPE:
VOLTAGE: 120/240V / 1 ø / 3W
BUS AMPS: 250
MAIN DEVICE: 150 A MLO
A.I.C. RATING: 10,000 AMPS SYMMETRICAL
SPECIAL:

LOAD DESCRIPTION	LOAD TYPE	BREAKER MOD	P	TRIP	CKT	A		B		CKT	TRIP	P	BREAKER MOD	LOAD TYPE	LOAD DESCRIPTION
EX RM 132, 133 & 136 LTS	--	EX	1	20 A	1	1200	360			2	20 A	1	EX	RCPT	EX WORK ROOM RCPT
EX RM 129, 130 & 131 LTS	--	EX	1	20 A	3			1200	720	4	20 A	1	EX	RCPT	EX WORK ROOM RCPT
EX RM 124 & 126 LTS	--	EX	1	20 A	5	1200	540			6	20 A	1	EX	RCPT	EX WORK ROOM RCPT
EX RM 121, 122, 123 & 125 LTS	--	EX	1	20 A	7			1200	720	8	20 A	1	EX	RCPT	EX BATHROOM RCPT
EX RM 117, 118, 119 & 120 LTS	--	EX	1	20 A	9	1200	720			10	20 A	1	EX	--	EX TELEPHONE RM RCPTS
SPARE	--	EX	1	20 A	11			0	740	12	20 A	1	EX	RCPT	EX RECEPTION RCPTS
SPARE	--	EX	1	20 A	13	0	360			14	20 A	1	EX	RCPT	EX WET BAR RCPTS
SPARE	--	EX	1	20 A	15			0	1080	16	20 A	1	EX	RCPT	EX RM 132 RCPTS
EX RM 105, 106, 107 & 108 LTS	--	EX	1	20 A	17	1200	720			18	20 A	1	EX	RCPT	EX BOARD RM 133 RCPTS
EX WORK RM LTS	--	EX	1	20 A	19			1200	1080	20	20 A	1	EX	RCPT	EX RM 133 RCPTS
EX BATHROOM LTS	--	EX	1	20 A	21	1200	720			22	20 A	1	EX	RCPT	EX RM 131 RCPTS
EX RECEPTION LTS	--	EX	1	20 A	23			1200	1080	24	20 A	1	EX	RCPT	EX RM 129 RCPTS
EX BOARD ROOM 133 LTS	--	EX	1	20 A	25	1200	1080			26	20 A	1	EX	RCPT	EX RM 124 RCPTS
EX RM 127 & 128 LTS	--	EX	1	20 A	27			1200	540	28	20 A	1	EX	RCPT	EX COPY ROOM RCPTS
EX WATER HEATER	--	EX	1	20 A	29	180	360			30	20 A	1	EX	RCPT	EX COPY ROOM RCPTS
EX PANEL RCPT	--	EX	1	20 A	31			180	180	32	20 A	1	EX	RCPT	EX COPY ROOM RCPTS
EX FILE RM COPIER	--	EX	1	20 A	33	1200	540			34	20 A	1	EX	RCPT	138/145 - NEW RCPT
EX PHONE UPS	--	EX	1	20 A	35			300	--	36	--	1		--	SPACE
SPACE	--		1	--	37	--	--			38	--	1		--	SPACE
SPACE	--		1	--	39			--	4800	40	50 A	2	EX	--	EX LOAD
SPACE	--		1	--	41	--	4800			42					

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
EXISTING LOADS	25380 VA	100.00%	25380 VA		
RECEPTACLE	10820 VA	96.21%	10410 VA	**CONNECTED LOAD:**	36200 VA
LIGHTING	0 VA	0.00%	0 VA	**EST. DEMAND LOAD:**	35790 VA
MOTORS	0 VA	0.00%	0 VA		
OTHER	0 VA	0.00%	0 VA	**CONNECTED CURRENT:**	151 A
KITCHEN	0 VA	0.00%	0 VA	**EST. DEMAND CURRENT:**	149 A

BREAKER MODIFIER LEGEND:
(G) - GROUND FAULT CIRCUIT INTERRUPTER. (A) - ARC FAULT CIRCUIT INTERRUPTER. (L) - LOCK-OUT PROVISIIONS. (S) - SHUNT-TRIP.
(F) - FIRE ALARM CIRCUIT - PROVIDE LOCK-ON DEVICE AND PERMANENT RED MARKING AND LABELING AS "FIRE ALARM CIRCUIT". (EX) - EXISTING BREAKER.

NOTES:
EC TO CONFIRM EXISTING SPARE CIRCUIT BREAKERS. EC TO USE EXISTING SPARE BREAKERS FOR NEW CIRCUITS BEFORE PURCHASING NEW BREAKERS.

PROGRESSIVE COMPANIES
PROGRESSIVE AE INC.
weareprogressive.com

CAPITAL AREA TRANSPORTATION AUTHORITY
CATA RENOVATION
511 SOUTH WASHINGTON AVENUE, LANSING, MICHIGAN 48933

NOT FOR CONSTRUCTION

If this document is sealed and signed in a digital or electronic format and is received from someone other than the sealing professional identified in the document, you must contact the sealing professional in writing to validate authenticity of the document. The sealing professional disclaims the seal and signature and shall not be liable for any liability associated with it where the authenticity of any digital or electronic seal or signature has not been validated in this manner.

ISSUANCE

07/24/2026	BID SET / PERMIT SET
07/27/2026	RELEASED FOR BID

PROJECT NUMBER
75820023
PROJECT MANAGER
G. RUNIONS
PROFESSIONAL
D.HERSCHER
DRAWN BY
K.MENK
CHECKED BY
D.HERSCHER

ELECTRICAL PANEL SCHEDULES
E602

7/27/2026 2:26:29 AM Autodesk Docs://75820023 - CATA Renovation of 511 S. Washington/75820023 CATA Reno 511 S Washington - ELEC.rvt
84 - ELECTRICAL PANEL SCHEDULES
THIS DOCUMENT HAS BEEN PREPARED BY PROGRESSIVE AE INC., AS AN INSTRUMENT OF SERVICE, AND SHALL REMAIN THE PROPERTY OF PROGRESSIVE AE INC. PROGRESSIVE AE INC. RETAINS ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING THE COPYRIGHT THERETO.