

# CAPITAL AREA TRANSPORTATION AUTHORITY

# CATA RTU REPLACEMENTS

CTC: 420 S GRAND AVE, LANSING, MI 48933

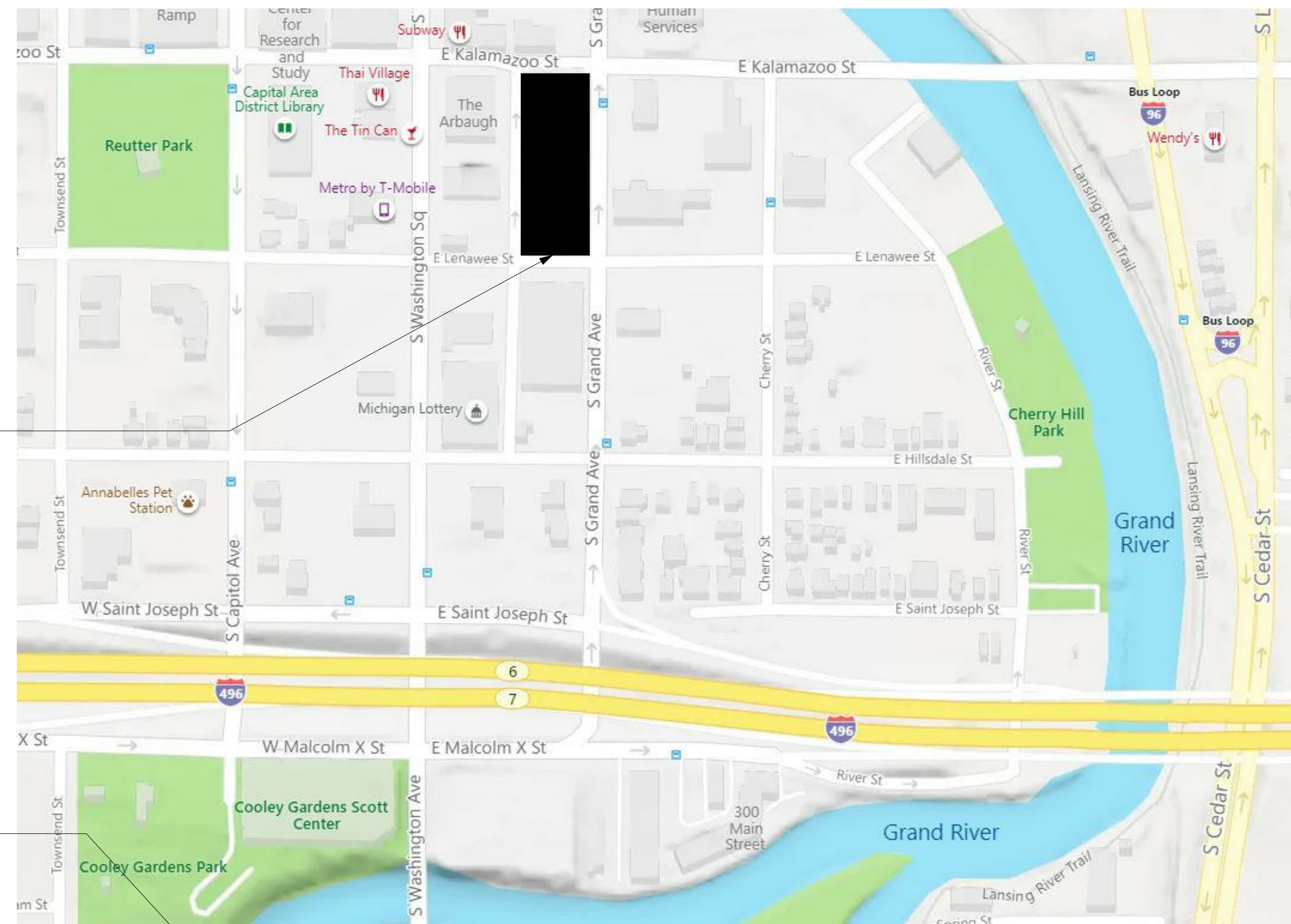
ADMIN: 4615 TRANTER ST, LANSING, MI 48910

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MP101	CTC BUILDING BASEMENT & FIRST FLOOR HYDRONIC PIPING PLANS
MB01	MECHANICAL SCHEDULES

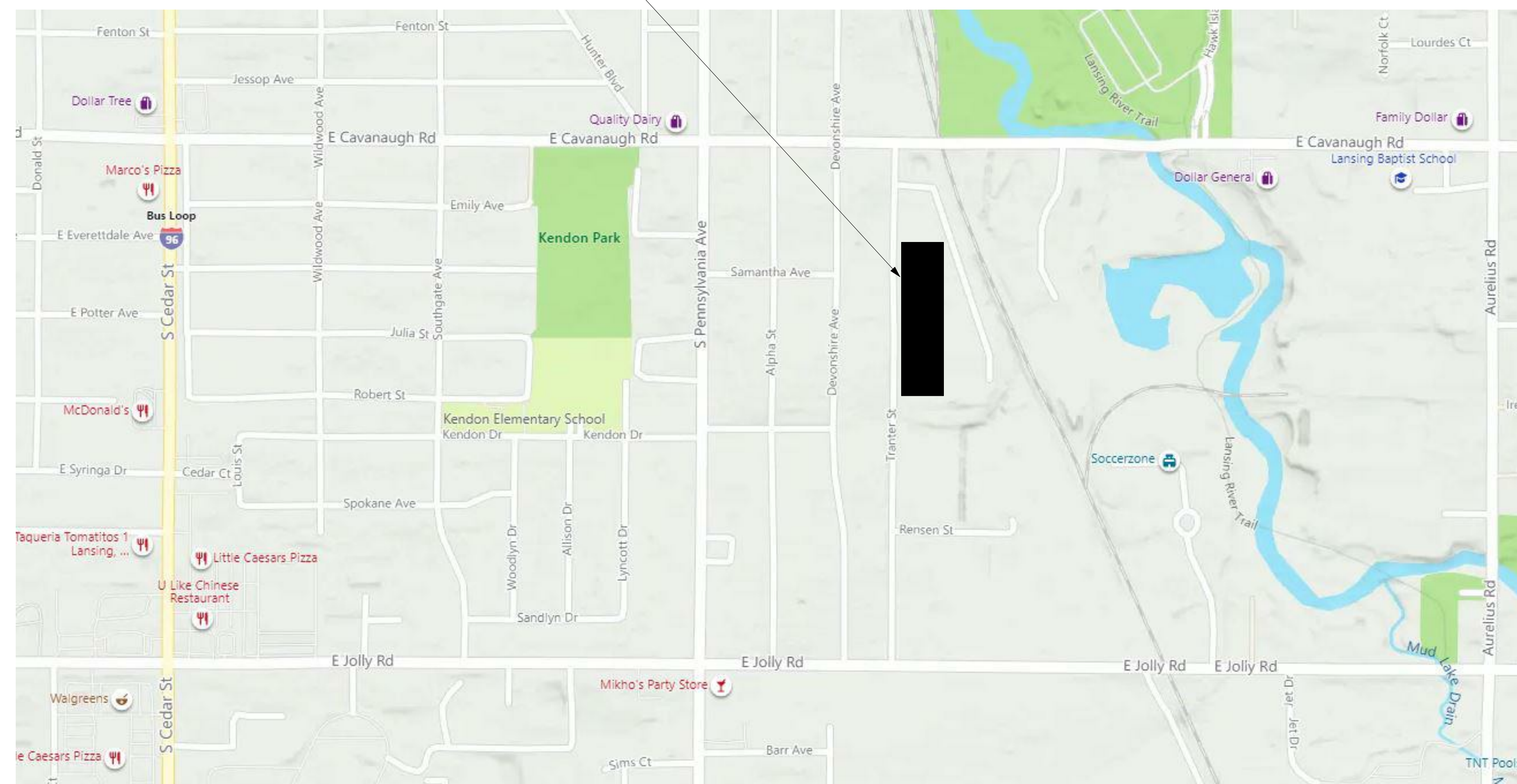
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**CATA TRANSPORTATION CENTER**  
420 S. GRAND AVENUE  
LANSING, MI 48933

**CATA STORAGE FACILITY**  
4615 TRANTOR STREET  
LANSING, MI 48910



CAPITAL AREA TRANSPORTATION AUTHORITY  
**CATA RTU REPLACEMENTS**

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BIDS AND CONSTRUCTION  
9/15/21

REVISIONS	NO.	DATE	DESCRIPTION

FILE NUMBER	78820015
PROJECT MANAGER	SEH
PROFESSIONAL	JDK
DRAWN BY	EEB
CHECKED BY	SMB

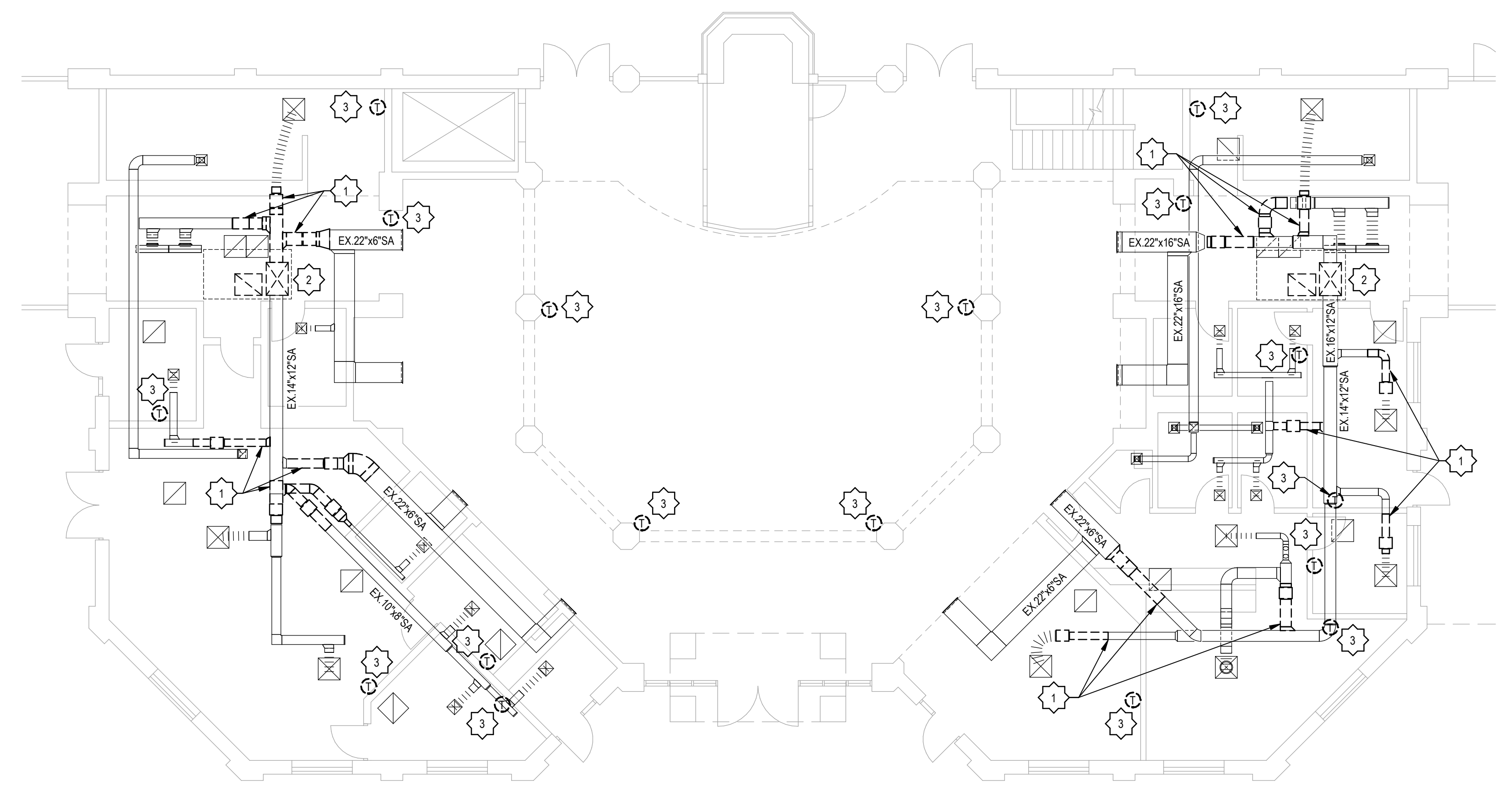
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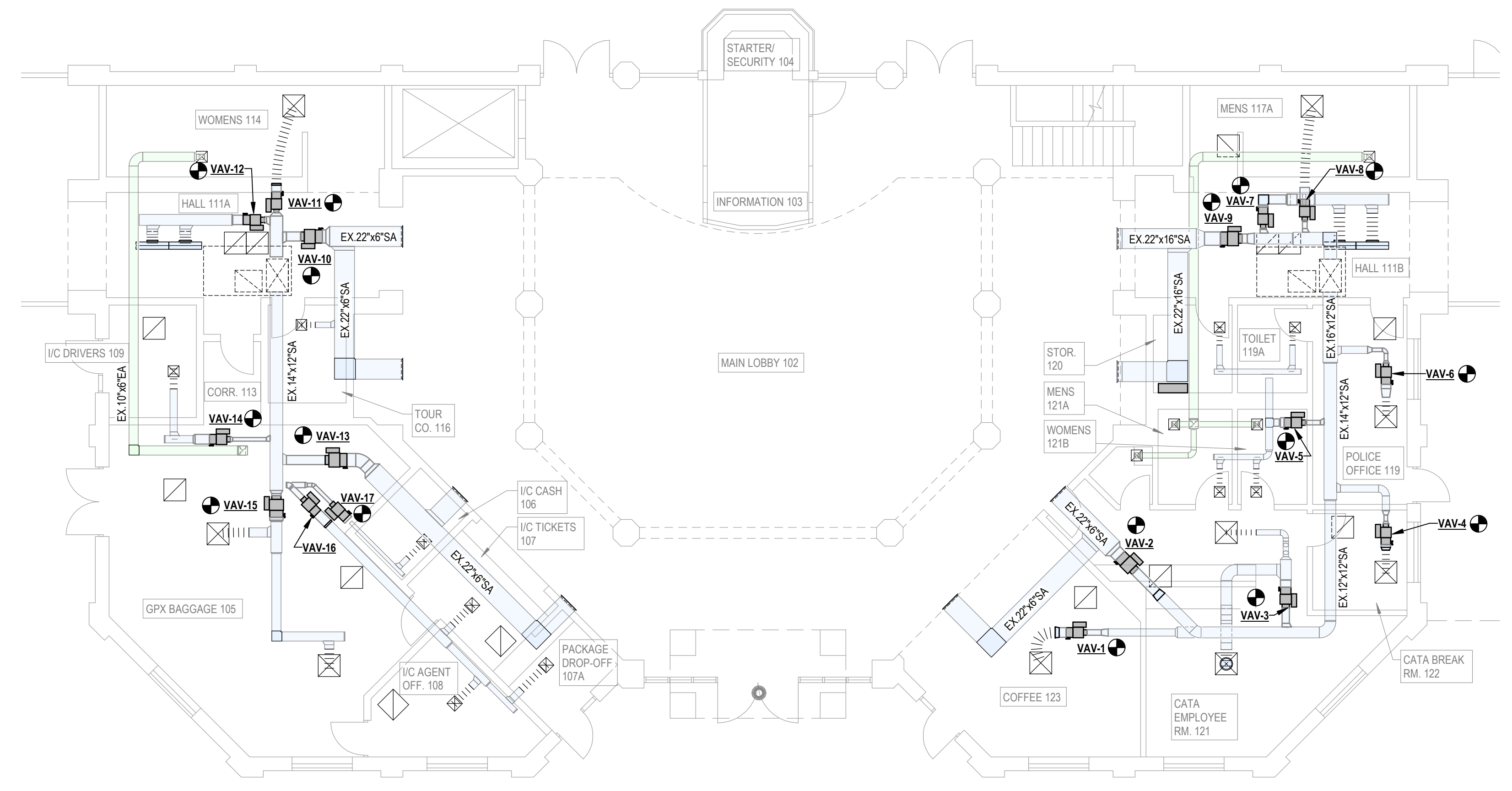


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**FIRST FLOOR SHEET METAL DEMOLITION PLAN - CENTRAL**  
 1/8" = 1'-0"



**FIRST FLOOR SHEET METAL PLAN - CENTRAL**  
 1/8" = 1'-0"

- MECHANICAL DEMOLITION KEYNOTES**
1. REMOVE EXISTING AIR VOLUME CONTROL BOX, ASSOCIATED CONTROLS AND ACCESSORIES COMPLETELY. PREPARE DUCTWORK FOR INSTALLATION OF NEW VAV BOX
  2. REMOVE EXISTING BYPASS DUCTWORK AND ASSOCIATED BYPASS DAMPER, CONTROLS AND ACCESSORIES COMPLETELY.
  3. REMOVE EXISTING WALL TEMPERATURE SENSOR.

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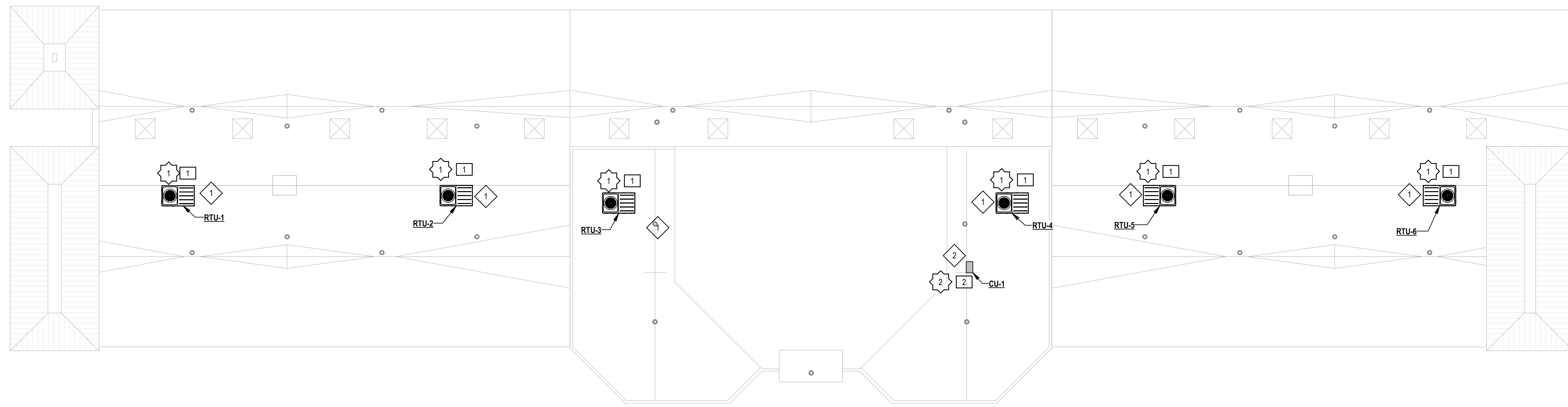
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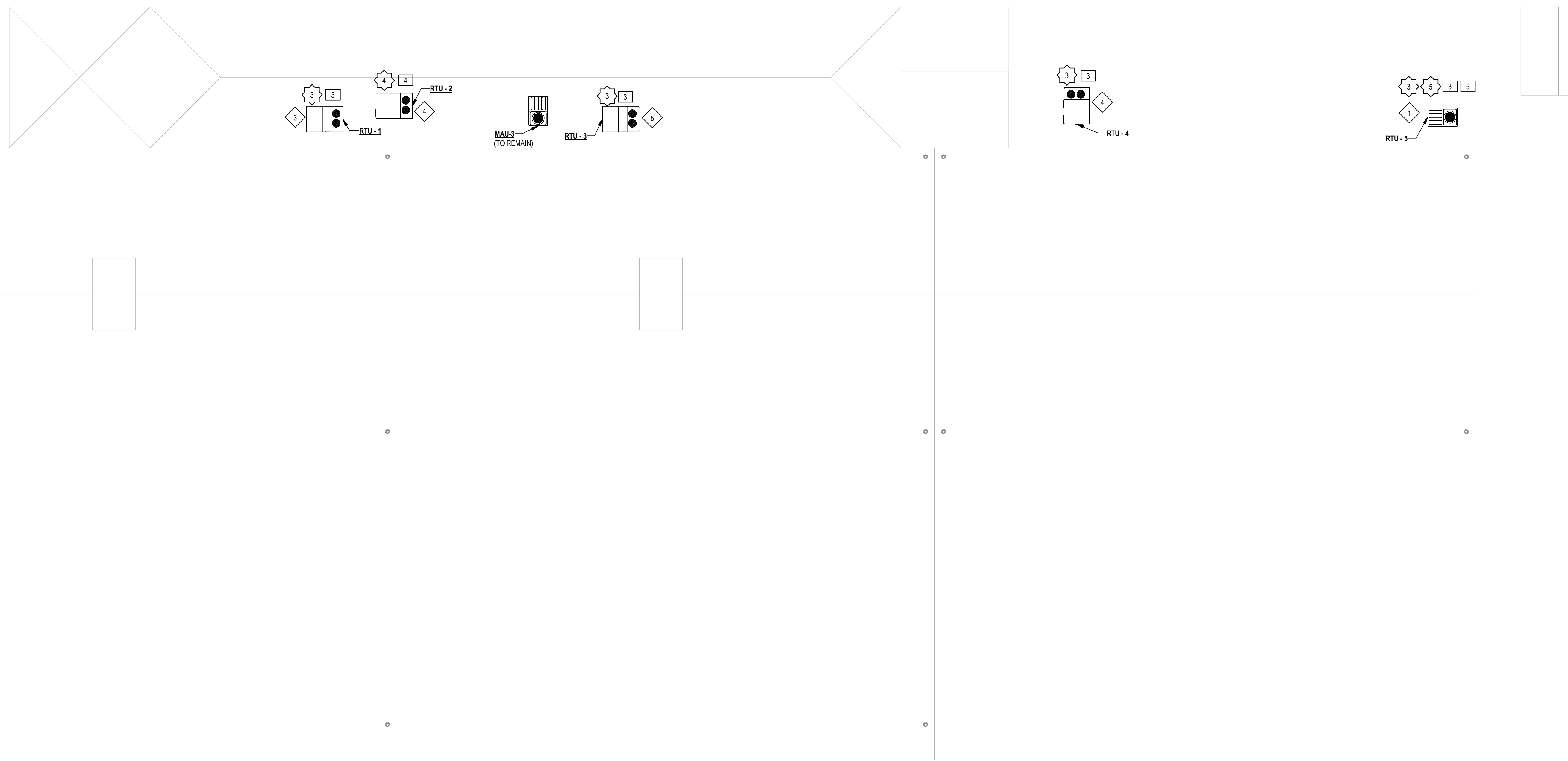
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 PROJECT MANAGER SEH  
 PROFESSIONAL JDK  
 DRAWN BY BG  
 CHECKED BY SMB

**CATC BUILDING  
 FIRST FLR SHEET  
 METAL DEMO &  
 NEW WORK  
 PLANS  
 MH101**

CTC, 409 S GRAND AVE, LANSING, MI 48233  
 ADMIN, 4615 TRANTER ST, LANSING, MI 48210



**CTC BUILDING - ROOF HVAC PLAN**  
1/16" = 1'-0"



**ADMIN BUILDING - ROOF HVAC PLAN**  
1/16" = 1'-0"

**MECHANICAL DEMOLITION KEYNOTES**

1. REMOVE EXISTING ROOFTOP UNIT, ASSOCIATED CONTROLS, AND ACCESSORIES COMPLETELY. PREPARE ROOF CURB FOR CONNECTION TO NEW ROOFTOP UNIT.
2. REMOVE EXISTING CONDENSING UNIT AND INDOOR AIR CONDITIONING UNIT, ASSOCIATED CONTROLS, ROOFTOP EQUIPMENT SUPPORTS, CONDENSATE PUMP AND ACCESSORIES COMPLETELY. REMOVE EXISTING REFRIGERANT PIPING BETWEEN EXISTING ROOFTOP CONDENSING UNIT AND EXISTING INDOOR AIR CONDITIONING UNIT.
3. REMOVE EXISTING ROOFTOP UNIT, ASSOCIATED CONTROLS, ADAPTER CURB, EXTERNAL POWERED EXHAUST FAN AND ACCESSORIES COMPLETELY. PREPARE ROOF CURB FOR CONNECTION TO NEW ROOFTOP UNIT.
4. REMOVE EXISTING ROOFTOP UNIT, ASSOCIATED CONTROLS, ADAPTER CURB, AND ACCESSORIES COMPLETELY. PREPARE ROOF CURB FOR CONNECTION TO NEW ROOFTOP UNIT.
5. REMOVE EXISTING SCREEN ATTACHED TO EXISTING ROOF TOP UNIT.

**HVAC KEYNOTES**

1. PROVIDE/INSTALL NEW ROOFTOP UNIT WITH ADAPTER CURB. SEE SCHEDULE FOR PERFORMANCE AND DETAILS.
2. PROVIDE/INSTALL NEW CONDENSING UNIT AND INDOOR AIR CONDITIONING UNIT AND REFRIGERANT PIPING. REFRIGERANT PIPE SIZING PER MANUFACTURER'S INSTALLATION MANUAL. ROUTE REFRIGERANT PIPING THROUGH NEW PIPE CURB ON ROOF (EQUAL TO PATE). PROVIDE/INSTALL NEW CONTROLS. PROVIDE NEW ROOFTOP EQUIPMENT SUPPORT RAILING (EQUAL TO KNUCKLEHEAD). PROVIDE/INSTALL NEW CONDENSATE PUMP AND CONNECT TO EXISTING DRAIN PIPING.
3. PROVIDE/INSTALL NEW ROOFTOP UNIT WITH ADAPTER CURB AND EXTERNAL POWERED EXHAUST FAN. SEE SCHEDULE FOR PERFORMANCE AND DETAILS.
4. PROVIDE/INSTALL NEW ROOFTOP UNIT WITH ADAPTER CURB. SEE SCHEDULE FOR PERFORMANCE AND DETAILS.
5. REINSTALL EXISTING SCREEN ONTO NEW ROOFTOP UNIT.

**GENERAL ELECTRICAL NOTES**

- A. SIZE CONDUCTORS TO PREVENT VOLTAGE DROP EXCEEDING 3 PERCENT FROM THE FARTHEST LOAD. ACTUAL CONDUCTOR LENGTHS SHALL BE DETERMINED BY FIELD CONDITIONS AND ACTUAL ROUTES OF FEEDERS.
- B. CONDUCTORS WITH HIGHER TEMPERATURE RATINGS PERMITTED IF EQUIPMENT IS LISTED AND IDENTIFIED FOR USE WITH SUCH CONDUCTORS AND VOLTAGE DROP IS NOT EXCEEDED.
- C. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

**ELECTRICAL KEYNOTES**

1. REFEED RTU FROM EXISTING CIRCUIT/PANEL. FIELD VERIFY EXISTING CIRCUIT BREAKER SIZE, CONDUCTORS, AND CONDUIT PRIOR TO INSTALLATION. FEED WITH 3Ø8 #100 - 34°C AND 4A/3P MAXIMUM OVERCURRENT PROTECTION PER MANUFACTURER. DISCONNECT/VPD PROVIDED WITH UNIT.
2. REFEED MINT SPLIT FROM EXISTING CIRCUIT/PANEL. FIELD VERIFY EXISTING CIRCUIT BREAKER SIZE, CONDUCTORS, AND CONDUIT PRIOR TO INSTALLATION. INSTALL 20A/2P CIRCUIT BREAKER WITH 2P/2#100 - 34°C AND MOTOR RATED SWITCH.
3. REFEED RTU FROM EXISTING CIRCUIT/PANEL. FIELD VERIFY EXISTING CIRCUIT BREAKER SIZE, CONDUCTORS, AND CONDUIT PRIOR TO INSTALLATION. FEED WITH 3Ø6 #100 - 1°C AND 50A/3P MAXIMUM OVERCURRENT PROTECTION PER MANUFACTURER. DISCONNECT/VPD PROVIDED WITH UNIT.
4. REFEED RTU FROM EXISTING CIRCUIT/PANEL. FIELD VERIFY EXISTING CIRCUIT BREAKER SIZE, CONDUCTORS, AND CONDUIT PRIOR TO INSTALLATION. FEED WITH 3Ø4 #80 - 114°C CIRCUIT BREAKER AND 70A/3P MAXIMUM OVERCURRENT PROTECTION PER MANUFACTURER. DISCONNECT/VPD PROVIDED WITH UNIT.
5. REFEED RTU FROM EXISTING CIRCUIT/PANEL. FIELD VERIFY EXISTING CIRCUIT BREAKER SIZE, CONDUCTORS, AND CONDUIT PRIOR TO INSTALLATION. FEED WITH 3Ø6 #100 - 1°C AND 60A/3P MAXIMUM OVERCURRENT PROTECTION PER MANUFACTURER. DISCONNECT/VPD PROVIDED WITH UNIT.

CAPITAL AREA TRANSPORTATION AUTHORITY  
**CATA RTU REPLACEMENTS**

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BIDS AND CONSTRUCTION  
9/15/21

**REVISIONS**  
NO. DATE DESCRIPTION

FILE NUMBER 78820015  
PROJECT MANAGER SEH  
PROFESSIONAL JDK  
DRAWN BY BG  
CHECKED BY SMB

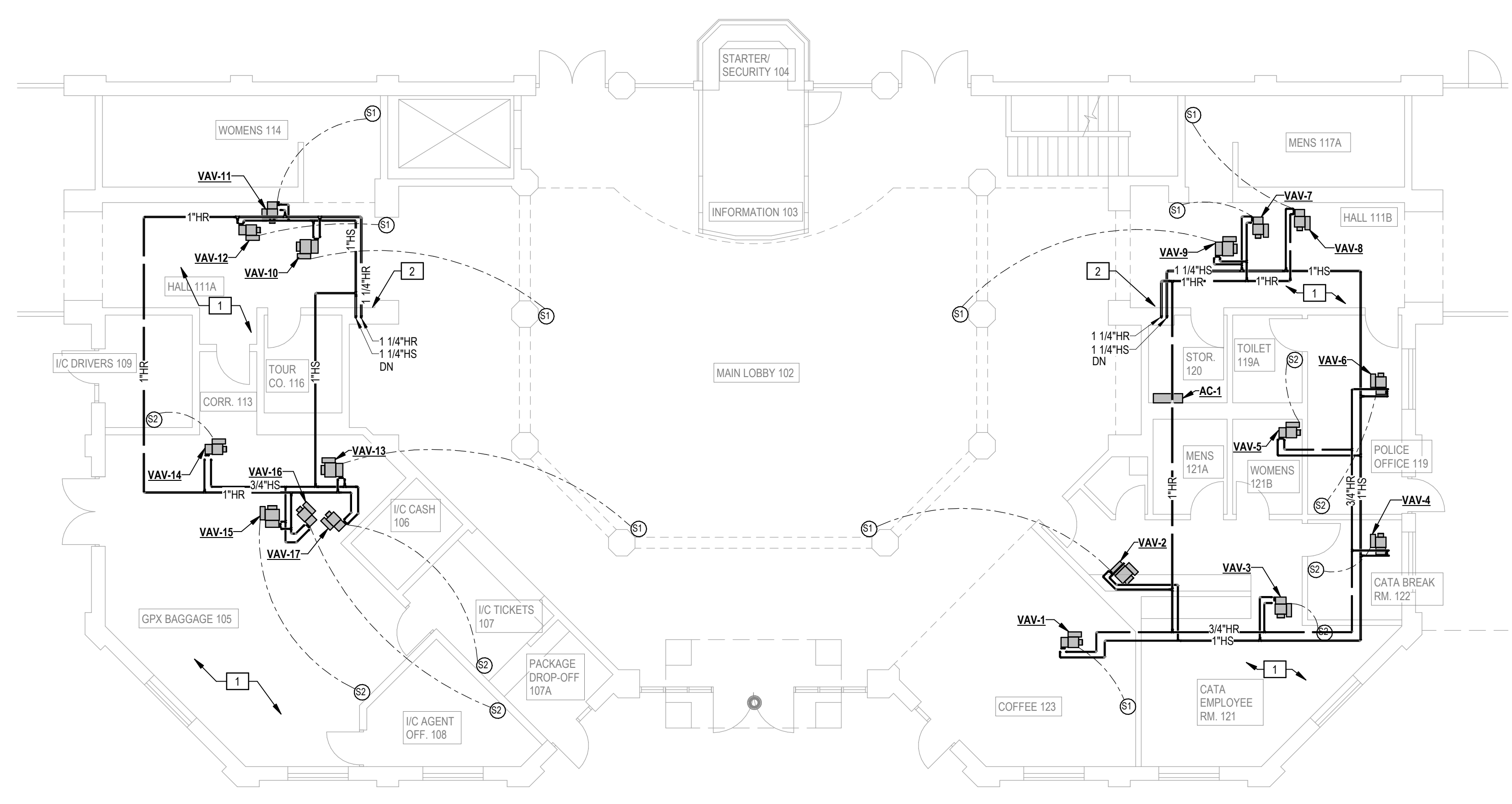
**CTC AND ADMIN BUILDING ROOF HVAC PLAN MH102**

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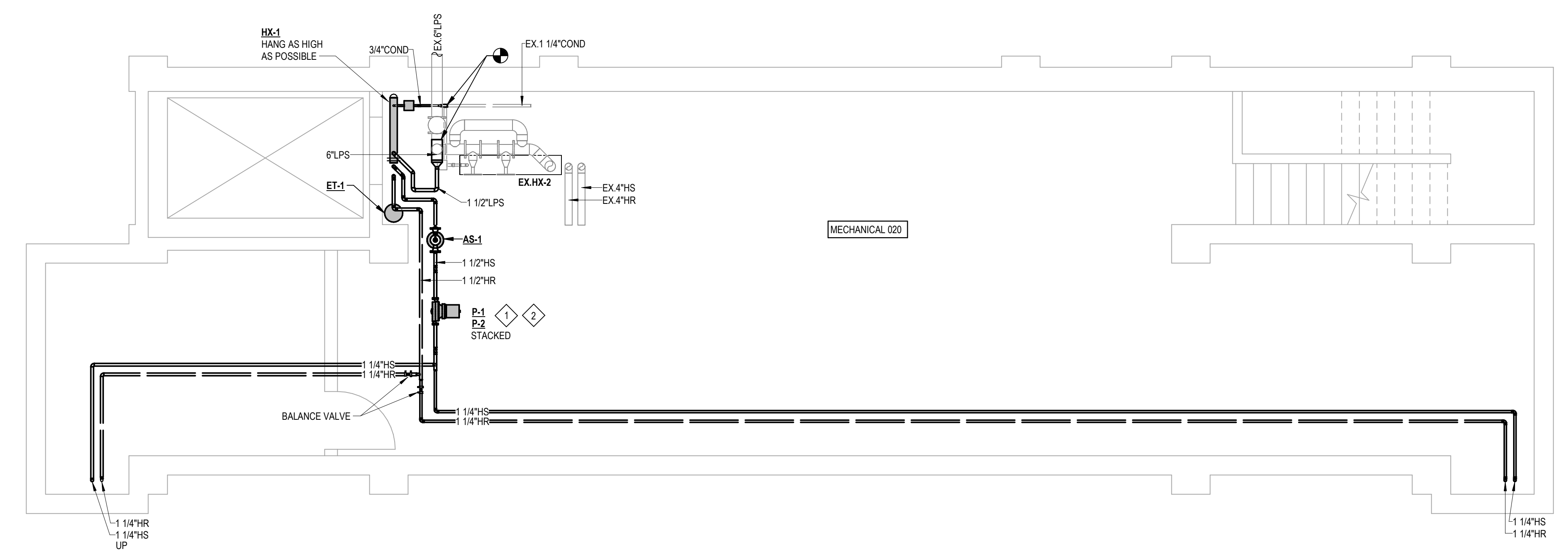
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**1 FIRST FLOOR HYDRONIC PIPING PLAN - CENTRAL**  
 1/8" = 1'-0"



**2 BASEMENT HYDRONIC PIPING PLAN**  
 1/4" = 1'-0"

**ARCHITECTURAL KEYNOTES**

- REMOVE AND REINSTALL SUSPENDED CEILING AS REQUIRED TO ACCOMMODATE HYDRONIC PIPING INSTALLATION. TYPICAL FOR ALL AFFECTED SPACES.
- DEMOLISH PORTION OF WALL TO ACCESS PIPE SHAFT. PATCH/REPAIR AND SEAL FOLLOWING NEW WORK.

**GENERAL ELECTRICAL NOTES**

- SIZE CONDUCTORS TO PREVENT VOLTAGE DROP EXCEEDING 3 PERCENT FROM THE FARTHEST LOAD. ACTUAL CONDUCTOR LENGTHS SHALL BE DETERMINED BY FIELD CONDITIONS AND ACTUAL ROUTES OF FEEDERS.
- CONDUCTORS WITH HIGHER TEMPERATURE RATINGS PERMITTED IF EQUIPMENT IS LISTED AND IDENTIFIED FOR USE WITH SUCH CONDUCTORS AND VOLTAGE DROP IS NOT EXCEEDED.
- ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER.

**ELECTRICAL KEYNOTES**

- FEED PUMP P-1 FROM PANEL RPC LOCATED IN NORTHWEST CORNER OF BASEMENT. FIELD VERIFY PANEL SPACE AND CAPACITY PRIOR TO INSTALLATION. INSTALL 20A/1P CIRCUIT BREAKER WITH 2#12-#120 - 1/2" C AND MOTOR RATED SWITCH.
- FEED PUMP P-2 FROM PANEL RPC LOCATED IN NORTHWEST CORNER OF BASEMENT. FIELD VERIFY PANEL SPACE AND CAPACITY PRIOR TO INSTALLATION. INSTALL 15A/1P CIRCUIT BREAKER WITH 2#12-#120 - 1/2" C AND MOTOR RATED SWITCH.

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 9/15/21

**REVISIONS**

NO.	DATE	DESCRIPTION

FILE NUMBER	75820015
PROJECT MANAGER	SEH
PROFESSIONAL	JDK
DRAWN BY	BG
CHECKED BY	SMB

**CTC BUILDING**  
**BASEMENT &**  
**FIRST FLOOR**  
**HYDRONIC**  
**PIPING PLANS**  
**MP101**

1811 4 Mile Rd NE Grand Rapids, MI 49525 616.361.2954 www.progressiveae.com

CTC, 409 S GRAND AVE, LANSING, MI 48233  
 ADMIN, 4616 TRANTER ST, LANSING, MI 48210

CTC BUILDING ROOF TOP UNIT - GAS/DX - SCHEDULE																								
MARK	MANUFACTURER	MODEL	MIN OA CFM	SUPPLY AIR BLOWER				DX COOLING COIL				HEATING MODULE				ELECTRICAL				WEIGHT	REMARKS			
				CFM	ESP (IN. WC)	TSP (IN. WC)	FAN RPM	MOTOR HP	EDB	EWB	LDB	LWB	TOTAL BTUH	SENS. BTUH	OUTPUT BTUH	INPUT BTUH	EDB	TEMP. RISE	VOLTS			PHASE	HZ	MCA
RTU-1	TRANE	YHC120F4RHA	800	4000	0.7	1.85	1550	2.75	80°F	67°F	60°F	58°F	113,970	94,060	200,000	250,000	60°F	47°F	460 V	3	60 Hz	22 A	25 A	
RTU-2	TRANE	YHC120F4RHA	800	4000	0.7	1.85	1550	2.75	80°F	67°F	60°F	58°F	113,970	94,060	200,000	250,000	60°F	47°F	460 V	3	60 Hz	22 A	25 A	
RTU-3	TRANE	YZC120F4RVA	720	3500	1	1.83	1458	2.75	80°F	67°F	60°F	58°F	114,520	88,880	202,500	250,000	60°F	54°F	460 V	3	60 Hz	31 A	45 A	0.00 lbf
RTU-4	TRANE	YZC120F4RVA	720	3500	1	1.83	1458	2.75	80°F	67°F	60°F	58°F	114,520	88,880	202,500	250,000	60°F	54°F	460 V	3	60 Hz	31 A	45 A	0.00 lbf
RTU-5	TRANE	YHC120F4RHA	800	4000	0.7	1.85	1550	2.75	80°F	67°F	60°F	58°F	113,970	94,060	200,000	250,000	60°F	47°F	460 V	3	60 Hz	22 A	25 A	
RTU-6	TRANE	YHC120F4RHA	800	4000	0.7	1.85	1550	2.75	80°F	67°F	60°F	58°F	113,970	94,060	200,000	250,000	60°F	47°F	460 V	3	60 Hz	22 A	25 A	

- NOTES:  
1. PROVIDE WITH FACTORY INSTALLED DISCONNECT SWITCH.  
2. MOUNT EQUIPMENT ON EXISTING CURB AND UTILIZE ADAPTER CURB.  
3. PROVIDE FACTORY INSTALLED VFD FOR SUPPLY FAN, MODULATING GAS HEAT WITH MINIMUM 5:1 TURNDOWN, VARIABLE SPEED COMPRESSORS, HOT GAS REHEAT, CONDENSATE TRAP, ENTHALPY ECONOMIZER, SHAFT GROUNDING RINGS, MERV-13 FILTERS, HINGED ACCESS DOORS THROUGH-THE-BASE ELECTRICAL CONNECTION, AND POWERED CONVENIENCE OUTLET.  
4. PROVIDE FACTORY CONTROLS. PROVIDE UNIT THAT IS CAPABLE OF PERFORMING ALL FUNCTIONS WITHIN SPEC SECTION 23 0993 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS.  
5. TIE-IN EXISTING RETURN AIR SMOKE DETECTOR INTO ROOFTOP UNIT CONTROLS AND FIRE ALARM.  
6. ALL EQUIPMENT TO MEET BUY AMERICA CRITERIA.

ADMIN BUILDING ROOF TOP UNIT - GAS/DX - SCHEDULE																								
MARK	MANUFACTURER	MODEL	MIN OA CFM	SUPPLY AIR BLOWER				DX COOLING COIL				HEATING MODULE				ELECTRICAL				WEIGHT	REMARKS			
				CFM	ESP (IN. WC)	TSP (IN. WC)	FAN RPM	MOTOR HP	EDB	EWB	LDB	LWB	TOTAL BTUH	SENS. BTUH	OUTPUT BTUH	INPUT BTUH	EDB	TEMP. RISE	VOLTS			PHASE	HZ	MCA
RTU - 1	TRANE	YHC120F4RVA	585	9500	1.2	1.28	715	5.00	80°F	67°F	56°F	55°F	206,640	196,560	280,000	350,000	70°F	46°F	460 V	3	60 Hz	31 A	45 A	2758.00 lb
RTU - 2	TRANE	YH300G4RVD	1155	9500	1.2	1.29	877	7.50	80°F	67°F	60°F	58°F	290,120	203,700	280,000	350,000	70°F	27°F	460 V	3	60 Hz	56 A	70 A	3005.00 lb
RTU - 3	TRANE	YH240G4RVD	1540	8400	1.2	1.27	748	5.00	80°F	67°F	56°F	55°F	238,970	180,500	280,000	350,000	70°F	40°F	460 V	3	60 Hz	46 A	60 A	2859.00 lb
RTU - 4	TRANE	YH300G4RVD	1715	9000	1.2	1.28	851	7.50	80°F	67°F	60°F	58°F	287,960	224,300	280,000	350,000	70°F	29°F	460 V	3	60 Hz	56 A	70 A	3005.00 lb
RTU - 5	TRANE	YH210G4RVD	885	4000	1	1.46	1442	2.75	80°F	67°F	60°F	58°F	116,910	96,100	202,500	280,000	60°F	47°F	460 V	3	60 Hz	42 A	50 A	1540.00 lb

- NOTES:  
1. PROVIDE WITH FACTORY INSTALLED DISCONNECT SWITCH.  
2. MOUNT EQUIPMENT ON EXISTING CURB AND UTILIZE ADAPTER CURB.  
3. PROVIDE FACTORY INSTALLED VFD FOR SUPPLY FAN, MODULATING GAS HEAT WITH MINIMUM 5:1 TURNDOWN, VARIABLE SPEED COMPRESSORS, HOT GAS REHEAT, CONDENSATE TRAP, ENTHALPY ECONOMIZER, SHAFT GROUNDING RINGS, MERV-13 FILTERS, HINGED ACCESS DOORS THROUGH-THE-BASE ELECTRICAL CONNECTION, AND POWERED CONVENIENCE OUTLET.  
4. PROVIDE FACTORY CONTROLS. PROVIDE UNIT THAT IS CAPABLE OF PERFORMING ALL FUNCTIONS WITHIN SPEC SECTION 23 0993 SEQUENCE OF OPERATIONS FOR HVAC CONTROLS.  
5. TIE-IN EXISTING RETURN AIR SMOKE DETECTOR INTO ROOFTOP UNIT CONTROLS AND FIRE ALARM.  
6. ALL EQUIPMENT TO MEET BUY AMERICA CRITERIA.

TERMINAL UNIT WITH HOT WATER HEAT SCHEDULE																	
MARK	BASED ON	MODEL	INLET Ø"	COOLING AIRFLOW				HOT WATER HEATING COIL							ROWS	MAX WPD (FT. HD.)	REMARKS
				MAX CFM	MIN CFM	HEATING CFM	GPM	BTUHR	EAT[F]	LAT[F]	EWI[F]	LWT [F]					
VAV-1	TRANE	VCWF	6"	335	0.6	75	250	0.6	8758	60	92.3	180	150	1	2.00	3-WAY VALVE	
VAV-2	TRANE	VCWF	10"	800	210	700	2.1	31328	60	101.2	180	150	2	2.00	3-WAY VALVE		
VAV-3	TRANE	VCWF	6"	320	0.6	75	250	0.6	8462	60	91.3	180	150	1	2.00		
VAV-4	TRANE	VCWF	6"	155	0.5	75	155	0.5	3839	60	104.6	180	150	1	2.00		
VAV-5	TRANE	VCWF	6"	240	0.5	75	120	0.5	3142	60	98.4	180	150	1	2.00		
VAV-6	TRANE	VCWF	6"	195	0.5	75	175	0.5	5366	60	99.4	180	150	1	2.00		
VAV-7	TRANE	VCWF	6"	360	0.5	200	0.5	4997	60	94.6	180	150	1	2.00			
VAV-8	TRANE	VCWF	6"	220	0.5	175	0.5	4275	60	99.3	180	150	1	2.00			
VAV-9	TRANE	VCWF	10"	800	210	700	2.1	31328	60	101.2	180	150	2	2.00			
VAV-10	TRANE	VCWF	10"	840	210	715	2.2	32242	60	101.6	180	150	2	2.00			
VAV-11	TRANE	VCWF	6"	220	0.5	175	0.5	4533	60	99.3	180	150	1	2.00			
VAV-12	TRANE	VCWF	6"	360	0.5	200	0.5	4790	60	94.6	180	150	1	2.00			
VAV-13	TRANE	VCWF	10"	800	210	720	2.1	31545	60	100.4	180	150	2	2.00			
VAV-14	TRANE	VCWF	6"	160	0.5	160	0.5	3478	60	103.2	180	150	1	2.00			
VAV-15	TRANE	VCWF	10"	700	210	400	0.9	13224	60	90.5	180	150	1	2.00			
VAV-16	TRANE	VCWF	6"	335	0.5	320	0.6	9316	60	86.8	180	150	1	2.00			
VAV-17	TRANE	VCWF	6"	80	0.5	75	80	0.5	1476	60	146.4	180	150	1	2.00	3-WAY VALVE	

- NOTES:  
1. PROVIDE WITH DDC CONTROLS ENCLOSURE.  
2. INSTALL 3-WAY VALVE CONTROL UNLESS NOTED OTHERWISE.  
3. ALL EQUIPMENT TO MEET BUY AMERICA CRITERIA.

HYDRONIC PUMP SCHEDULE										
MARK	TYPE	PUMP SERIES	MODEL	FLOW (GPM)	PRESSURE LOSS/FT OF HEAD	PUMP RPM	MOTOR			REMARKS
							HP	V	HZ	
P-1	IN-LINE	e-90	1AAB	16	30	1800	0.5	120	1	60
P-2	IN-LINE	e-90	1AAB	16	30	1800	0.5	120	1	60

- NOTES:  
1. BASIS OF DESIGN IS BELL & GOSSETT.  
2. DISCONNECT SWITCH BY ELECTRICAL CONTRACTOR.  
3. PROVIDE WITH ED MCH 00.  
4. ALL EQUIPMENT TO MEET BUY AMERICA CRITERIA.

OUTDOOR SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE														
MARK	Manufacturer	MODEL	CFM	NOMINAL COOLING CAP (BTUH)	ELECTRICAL			DIMENSIONS (IN)				UNIT WEIGHT (lbs)	PAIRED UNIT	REMARKS
					VOLTAGE	PHASE	FLA	W	D	H				
CU-1	TRANE	NTXSPB12B112AA	1215	12000.0	208 V	1	0.50 A	31 1/2"	11 1/4"	21 5/8"	84	AC-1		

- NOTES:  
1. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.  
2. MOUNT ON NEW EQUIPMENT SUPPORT RAILING AND PROVIDE NEW REFRIGERANT ROOF PENETRATION PIPE CURB.  
3. PROVIDE WITH LOW AMBIENT KIT INCLUDING WIND BAFFLE.  
4. ALL EQUIPMENT TO MEET BUY AMERICA CRITERIA.

INDOOR SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE														
MARK	Manufacturer	MODEL	CFM	NOMINAL COOLING CAP (BTUH)	ELECTRICAL			DIMENSIONS (IN)				UNIT WEIGHT (lbs)	PAIRED UNIT	REMARKS
					VOLTAGE	PHASE	FLA	W	D	H				
AC-1	TRANE	NTXWPH12B112AA	304	12000.0	208 V	1	0.65 A	36 7/16"	9 3/16"	12"	29	CU-2		

- NOTES:  
1. PROVIDE FACTORY MOUNTED DISCONNECT SWITCH.  
2. ALL EQUIPMENT TO MEET BUY AMERICA CRITERIA.

STEAM-TO-HEATING HOT WATER HEAT EXCHANGER SCHEDULE									
MARK	LOCATION	MANUFACTURER	MODEL	OUTPUT CAPACITY (MBH)	SOURCE SIDE (LOWER PRESSURE STEAM)		LOAD SIDE (HEATING HOT WATER)		REMARKS
					STEAM PRESSURE (PSI)	STEAM FLOW RATE (LB/HR)	EWI (F)	LWT (F)	
HX-1	MECHANICAL 020	BELL & GOSSETT	SU-43-4	234.9	10	243.86	190°F	180°F	

- NOTES:  
1. ALL EQUIPMENT TO MEET BUY AMERICA CRITERIA.