MECHANICAL PIPING SYMBOLS

AUTOMATIC AIR VENT (AAV)	GEAR OPERATED BUTTERFLY VALVE	THERMOMETER
AUTOMATIC FLOW CONTROL VALVE	GLOBE VALVE (GL. V.)	TRIPLE DUTY VALVE (TDV)
AUTOMATIC TEMPERATURE CONTROL VALVE (3-WAY)	HOSE END VALVE	VALVE IN RISER
AUTOMATIC TEMPERATURE CONTROL VALVE (2-WAY)	MANUAL AIR VENT (MAV)	WATER METER
BALL VALVE (BV)	PETE'S PLUG (TEMPERATURE & PRESSURE PORT)	EMERGENCY GAS SHUT-OFF VALVE
CHECK VALVE (CV)	PLUG VALVE	FLEXIBLE PIPE CONNECTION
CIRCUIT SETTER (CS)	PRESSURE GAUGE	GAS SHUT-OFF VALVE (SOV)
COMPRESSED AIR QUICK-CONNECT	PRESSURE REDUCING VALVE (PRV)	GATE VALVE (GT. V.)
CONCENTRIC PIPE REDUCER	STRAINER (STR)	STRAINER WITH BLOWDOWN
ECCENTRIC PIPE REDUCER		

MECHANICAL SUPPLEMENTAL CONDITIONS

1. BEFORE SUBMITTING A PROPOSAL, THE MECHANICAL CONTRACTOR SHALL VISIT THE SITE OF WORK AND FAMILIARIZE HIMSELF WITH ALL SITE CONDITIONS. MECHANICAL CONTRACTOR SHALL CAREFULLY EXAMINE ALL CIVIL, ARCHITECTURAL, STRUCTURAL, PLUMBING, MECHANICAL AND ELECTRICAL CONSTRUCTION DOCUMENTS. SUBMISSION OF A BID WILL ACKNOWLEDGE THE MECHANICAL CONTRACTOR HAS VISITED THE SITE AND EXAMINED ALL CONSTRUCTION DOCUMENTS AND BID INSTRUCTIONS. THE MECHANICAL CONTRACTOR'S BID SHALL INCLUDE ALL MECHANICAL WORK IN THE CONSTRUCTION DOCUMENTS, INCLUDING MECHANICAL WORK RELATED TO EQUIPMENT PROVIDED BY OTHERS.

2. MECHANICAL CONTRACTOR SHALL REQUEST CLARIFICATION ON ANY ITEM(S) OF THE CONTRACT DOCUMENTS THAT ARE NOT UNDERSTOOD OR WHERE CONFLICTS MAY EXIST. CLARIFICATIONS MUST BE PRESENTED AS A "REQUEST FOR INFORMATION" (RFI) IN WRITING PRIOR TO SUBMITTING A BID. RFI SHALL BE PRESENTED A MINIMUM OF FIVE (5) WORKING DAYS BEFORE THE BID DATE. OBTAIN THE RFI FORM AT WWW.GANDWENGINEERING.COM/DOCUMENTS. SUBMISSION OF A BID WILL ACKNOWLEDGE THE MECHANICAL CONTRACTOR UNDERSTANDS THE SCOPE OF WORK, MEANS AND METHODS OF INSTALLATION, EQUIPMENT AND MATERIALS TO BE USED. RFI THAT HAVE NOT BEEN CLARIFIED PRIOR TO BID, WILL BE PROVIDED BY THE MECHANICAL CONTRACTOR, AS DIRECTED BY THE ENGINEER OF RECORD, AND THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK SHALL APPLY. NO ADDITIONAL COMPENSATION WILL BE MADE FOR THE FAILURE OF THE CONTRACTOR TO OBTAIN CLARIFICATIONS PRIOR TO BID.

3. THE MECHANICAL CONTRACTOR'S BID SHALL BE BASED ON THE SCHEDULED EQUIPMENT, MATERIALS, AND MANUFACTURERS WHICH FORM THE "BASIS OF DESIGN". ALL OTHER EQUIPMENT, MATERIALS, AND MANUFACTURERS, ARE CONSIDERED SUBSTITUTIONS. CONTRACTOR PROPOSED SUBSTITUTIONS MUST BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW AND WITH A COMPLETED SUBSTITUTION REQUEST FORM. OBTAIN THIS FORM AT WWW.GANDWENGINEERING.COM/DOCUMENTS. APPROVALS OF SUBSTITUTIONS ARE CONTINGENT UPON ENGINEER'S REVIEW. THE MECHANICAL CONTRACTOR SHALL MAKE NO PRIOR ASSUMPTIONS ON SUBSTITUTIONS NOT APPROVED BY THE ENGINEER. IF THE ENGINEER APPROVES A SUBSTITUTION REQUEST, THE MECHANICAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR ENGINEERING REVISIONS, PHYSICAL SIZE, CAPACITIES, COORDINATION, SUPPLEMENTAL DRAWINGS AND INFORMING OTHER TRADE CONTRACTORS RELATED TO THE INSTALLATION, AS TO ANY SPECIFIED ITEM CHANGES. THE MECHANICAL CONTRACTOR SHALL BEAR AS PART OF HIS CONTRACT, ANY ADDITIONAL COSTS INCURRED IN HIS WORK OR BY THE OTHER CONTRACTORS AS A RESULT OF INSTALLATION FOR OTHER THAN "BASIS OF DESIGN" MATERIALS AND EQUIPMENT.

4. SHOP DRAWINGS SHALL BE SUBMITTED ELECTRONICALLY AS PDF FILES. SHOP DRAWINGS SHALL INCLUDE TRANSMITTAL PAGE(S) INDICATING THE NAME OF THE PROJECT, AND THE NAME, ADDRESS, AND PHONE NUMBER OF THE GENERAL AND MECHANICAL CONTRACTORS. GENERAL CONTRACTOR AND MECHANICAL CONTRACTOR SHALL REVIEW SHOP DRAWING SUBMITTALS FOR COMPLIANCE, CONTENT AND COMPLETENESS AND PROVIDE A STAMP WITH THE DATE OF REVIEW AND SIGNATURE OF THE REVIEWER. TRANSMITTAL PAGE SHALL HAVE INDEX WITH SPECIFICATION SECTION AND DESCRIPTION OF SUBMITTED ITEMS. NO EXCEPTIONS WILL BE TAKEN. SHOP DRAWINGS NOT SUBMITTED IN THIS FORMAT WILL BE REJECTED AND WILL NOT CAUSE REASON FOR PROJECT DELAYS. EQUIPMENT SHALL NOT BE ORDERED UNTIL ENGINEER OF RECORD HAS PROCESSED APPLICABLE SHOP DRAWINGS. A MINIMUM OF SEVEN WORKING DAYS WILL BE ALLOWED FOR SUBMITTAL PROCESSING BY THE ENGINEER. REFER TO PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.

5. MECHANICAL CONTRACTOR SHALL PERFORM WORK IN A SAFE MANNER. COMPLY WITH APPLICABLE OSHA SAFETY GUIDELINES DURING THE COURSE OF COMPLETING THE WORK DESCRIBED ON THESE CONSTRUCTION DOCUMENTS.

6. SUBMIT AND PAY FOR ALL REQUIRED WORK PERMITS. PROVIDE ALL REQUIRED INSPECTIONS AND RE-INSPECTIONS. PROVIDE A SIGNED CERTIFICATE OF INSPECTION AT THE PROJECT COMPLETION.

7. ALL ITEMS OF WORK AND MATERIALS SHALL BE SPECIFICALLY INSTALLED PER WRITTEN INSTALLATION INSTRUCTIONS AND METHODS OF INSTALLATION AS PROVIDED BY THE MANUFACTURER OF THE EQUIPMENT OR MATERIAL PROVIDER. MECHANICAL CONTRACTOR SHALL UNDERSTAND THE PRODUCT AND METHODS OF INSTALLATION. THE CONTRACTOR SHALL OBTAIN THE INSTALLATION INSTRUCTIONS AND REQUIREMENTS PRIOR TO BID. ALL REQUESTS FOR ADDITIONAL INFORMATION DURING CONSTRUCTION WHERE THE CONTRACTOR HAS NOT PREVIOUSLY OBTAINED THIS INFORMATION FOR BIDDING PURPOSES WILL NOT BE CAUSE FOR ADDITIONAL COSTS OR CONSTRUCTION DELAY.

8. SYSTEMS AS SHOWN ARE DIAGRAMMATIC AND GIVE THE GENERAL ARRANGEMENT ONLY. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD ON THE BASIS OF DETAIL DRAWINGS, REVIEWED DRAWINGS, AND SUPPLEMENTARY INFORMATION. INSTALLATION SHALL PROVIDE FOR OPERATING EFFICIENCY, NEATNESS OF APPEARANCE AND EASE OF MAINTENANCE. IT IS EXPECTED THAT THE CONTRACTOR WILL PREPARE DIMENSIONED FIELD ERECTION DRAWINGS AND WORK SKETCHES FOR USE BY THEIR MECHANICS, TO ENSURE PROPER INSTALLATION AND COORDINATION. THE MECHANICAL CONTRACTOR SHALL TAKE THEIR OWN MEASUREMENTS AT THE BUILDING, AND BE RESPONSIBLE FOR THE CORRECT INTERPRETATION AND USE OF ALL SIZES AND DIMENSIONS.

9. CAST IRON NO-HUB, COPPER OR BLACK IRON PIPE IS REQUIRED ABOVE CEILINGS OR IN CAVITIES USED AS A RETURN AIR PLENUM; NO PVC PIPING WILL BE ALLOWED IN RETURN AIR PLENUM SPACES. REFER TO ARCHITECTURAL, MECHANICAL OR PLUMBING DRAWINGS OR VERIFY AT SITE, ALL RETURN AIR PLENUM LOCATIONS.

10. THE CONTRACTOR SHALL KEEP "AS-BUILT" INFORMATION DURING CONSTRUCTION AND FURNISH TO THE OWNER OR TENANT A RECORD SET OF LEGIBLE BLACK LINE PRINTS AND AN ELECTRONIC COPY OF THESE DOCUMENTS AT THE PROJECT COMPLETION.

11. ALL MECHANICAL WORK SHALL BE DONE UNDER THE SUPERVISION OF THE MECHANICAL CONTRACTOR, WHO SHALL PROVIDE A COMPETENT AND SKILLED FOREMAN TO LAYOUT ALL WORK. ALL WORK SHALL BE PROVIDED WITH DUE REGARD FOR THE SPACE REQUIREMENTS OF THE OTHER CONTRACTORS. THE MECHANICAL CONTRACTOR SHALL REPORT ANY CONFLICTS OR DIFFICULTIES IN REGARD TO THE INSTALLATION IMMEDIATELY TO THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER. WHERE CROWDED LOCATIONS EXIST, OR WHERE THERE IS A POSSIBILITY OF CONFLICT BETWEEN TRADES, THE MECHANICAL CONTRACTOR SHALL MAKE COMPOSITE SUPPLEMENTARY DRAWINGS SHOWING THE EXACT LOCATIONS OF PIPES, CONDUIT, DUCTS AND EQUIPMENT. DRAWINGS SHALL BE BASED ON FIELD MEASUREMENTS AND, AFTER CONSULTATION AND AGREEMENT AMONG THE TRADES, THE GENERAL CONTRACTOR OR CONSTRUCTION MANAGER SHALL DIRECT THE SOLUTION BEFORE INSTALLATION OF THE WORK.

12. PROVIDE FIRE STOP AT EACH RATED WALL, FLOOR, ROOF AND CEILING ASSEMBLY PENETRATION. FIRE STOP SYSTEMS SHALL BE MANUFACTURED BY "3M". PROVIDE IN STRICT COMPLIANCE WITH THE MANUFACTURER'S APPLICATION DETAILS AND INSTRUCTIONS. PROVIDE TAGGED CERTIFICATIONS AT EACH PENETRATION. PROVIDE SHOP DRAWINGS FOR REVIEW WITH THE U.L. LISTING AND TEST CRITERIA. PROVIDE FIRE STOPPING WHERE REQUIRED BY THE AUTHORITY HAVING JURISDICTION. EQUAL SYSTEMS AS MANUFACTURED BY "SPEC SEAL" OR "HILTI" WILL BE ACCEPTABLE. REFER TO THE PROJECT MANUAL FOR SYSTEMS SPECIFICATIONS.

MECHANICAL SUPPLEMENTAL CONDITIONS (CONT.)

13. PROVIDE DUCT OR PIPING ASSEMBLY PENETRATIONS OF NON-RATED ASSEMBLIES WITH DRAFT STOPPING, OR SMOKE BARRIER SEALANT SYSTEMS. THROUGH PENETRATION SEALANT SYSTEMS SHALL BE MANUFACTURED BY "3M". APPLY IN STRICT COMPLIANCE WITH THE MANUFACTURER'S APPLICATION DETAILS AND INSTRUCTIONS. PROVIDE DRAFT STOPPING OR SMOKE BARRIER SEALANTS TO MEET APPROVAL OF THE AUTHORITY HAVING JURISDICTION. EQUAL SYSTEMS AS MANUFACTURED BY "SPEC SEAL" OR "HILTI" WILL BE ACCEPTABLE.

14. HVAC WORK SHALL COMPLY WITH THE LOCAL ADOPTED MECHANICAL CODE AS WELL AS GOVERNING STATE LAW AND LOCAL ORDINANCES. ALL NEW MECHANICAL EQUIPMENT, DUCTWORK AND PIPING SHALL BE ANCHORED AND SEISMICALLY RESTRAINED WHERE REQUIRED TO COMPLY WITH THE 2009 INTERNATIONAL MECHANICAL CODE. PROVIDE ENGINEERED SEISMIC RESTRAINT DETAILS SIGNED AND SEALED BY A MISSOURI LICENSED ENGINEER. SUBMIT FOR REVIEW BY ENGINEER OF RECORD.

15. MECHANICAL CONTRACTOR SHALL CUT AND PATCH ROOF, FLOORS, WALLS, AND CEILINGS WHERE REQUIRED TO INSTALL NEW MECHANICAL DUCT AND PIPING SYSTEMS. SURFACES SHALL BE PATCHED AND LEFT READY FOR FINAL SCHEDULED FINISH. ROOFING REPAIRS SHALL MAINTAIN THE ROOF WARRANTY AND BE PERFORMED BY A QUALIFIED ROOFING CONTRACTOR WHICH MAINTAINS THE WARRANTY OF THE ROOF.

16. MECHANICAL CONTRACTOR SHALL PROVIDE ALL TEMPERATURE CONTROL WIRING, INCLUSIVE OF ALL VOLTAGES NO EXCEPTIONS OR EXCLUSIONS. ALL COMPONENTS SHALL BE NEW UNLESS NOTED OTHERWISE. TYPICAL SPACE THERMOSTAT OR SENSOR MOUNTING HEIGHT SHALL BE 48" A.F.F. COORDINATE ACTUAL THERMOSTAT OR SENSOR MOUNTING WITH FINAL ARCHITECTURAL FLOOR AND FURNITURE PLANS. DO NOT MOUNT THERMOSTATS OR SENSORS IN DIRECT SUNLIGHT, NEAR HEAT SOURCES, OR ON EXTERIOR WALLS. IF THERMOSTAT MUST BE MOUNTED ON AN EXTERIOR WALL, PROVIDE INSULATED MOUNTING BASE. ALL SYSTEMS SHALL BE COMPLETE INCLUDING, BUT NOT LIMITED TO: EXPERTISE, DESIGN, EQUIPMENT, CABINETS, BOXES, RELAYS, SWITCHES, CONTACTORS, TRANSFORMERS, WIRING, RACEWAYS, AND ELECTRICAL ACCESSORIES. WIRING EXPOSED IN RETURN AIR PLENUM SHALL BE PLENUM RATED CABLE. PROVIDE SHOP DRAWINGS FOR REVIEW AND PROCESSING. THE SHOP DRAWINGS SHALL CONTAIN A FLOOR PLAN WITH THERMOSTAT LOCATIONS, CONTROL SEQUENCE STATEMENT, AND WIRING DIAGRAM WITH ALL PARTS INDICATED OR A BILL OF MATERIAL.

17. THE MECHANICAL CONTRACTOR SHALL DISCONNECT AND REMOVE ALL EXISTING MECHANICAL EQUIPMENT OCCURRING IN DEMOLISHED WALLS, FLOORS, ATTICS AND CEILING AREAS. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE COMPLETE SCOPE OF DEMOLITION. DISCONNECT AND REMOVE MECHANICAL EQUIPMENT OCCURRING IN THESE AREAS OR AS OTHERWISE DESCRIBED HEREIN. MECHANICAL COMPONENTS INCLUDING MOTORS, TEMPERATURE CONTROL DEVICES, DIFFUSERS, GRILLES, DAMPERS, PIPING, DUCTWORK, ETC., NOT TO BE RETAINED BY THE OWNER, INCLUDING PIPING, FITTINGS, HANGERS, BRACKETS, INSULATION, ETC., MUST BE REMOVED FROM THE PREMISES, TO BE LEGALLY DISPOSED OF BY THE MECHANICAL CONTRACTOR. ALL LOOSE ENDS OF SYSTEMS WHERE SUCH ABANDONMENT HAS TERMINATED SHALL BE TRIMMED CLEAR AND APPROPRIATELY CAPPED OR SEALED IN A SAFE AND SECURE MANNER. REMOVAL AND DEMOLITION SHALL BE BY THE RESPECTIVE OR APPROPRIATE TRADES. MAINTAIN BRANCH CIRCUIT CONTINUITY TO ADJOINING AREAS AS NEEDED, THIS INCLUDES BUT IS NOT LIMITED TO REMOVAL, MODIFICATION AND REINSTALLATION OF EQUIPMENT AS NEEDED TO SUSTAIN THE EXISTING WORKING CONDITION OF ALL MECHANICAL EQUIPMENT AND TO RETURN THESE AREAS TO FULL WORKING ORDER AT PROJECT COMPLETION.

18. THIS CONTRACTOR SHALL CONFINE HIS ACTIVITIES TO THE AREA SET ASIDE FOR HIM TO DO HIS WORK AND SHALL NOT INTERFERE WITH ANY OF THE OWNER'S ACTIVITIES. THIS CONTRACTOR WILL NOT BE PERMITTED TO STORE MATERIAL EXCEPT WITHIN THE AREAS AS DIRECTED BY THE GENERAL CONTRACTOR. SHOULD ANY DISTURBANCE OF EXISTING INSTALLATION BE NECESSARY, THE CONTRACTOR SHALL SO INFORM THE OWNER WELL IN ADVANCE OF THE TIME CONTEMPLATED FOR THE DISTURBANCE. AFTER A PLAN ACCEPTABLE TO THE OWNER HAS BEEN FORMULATED, THE GENERAL CONTRACTOR SHALL KEEP IN CLOSE PERSONAL CONTACT WITH THE WORK TO SEE THAT IT IS EXECUTED IN ACCORDANCE WITH THE AGREED PROCEDURE.

19. CONTINUITY OF ALL BUILDING SERVICES AND UTILITIES SERVING FACILITIES IN THE BUILDING SHALL BE MAINTAINED WITHOUT INTERRUPTION, EXCEPT FOR SUCH A PERIOD OF TIME DESIGNATED BY THE GENERAL CONTRACTOR. THIS CONTRACTOR SHALL SO ARRANGE AND EXECUTE HIS WORK THAT ANY CONNECTIONS, EITHER TEMPORARY OR PERMANENT, OR REARRANGEMENT OF PRESENT EQUIPMENT, FITTINGS, PIPING, ETC., SHALL BE IN SUCH A MANNER AS TO ASSURE FULL RESUMPTION OF SERVICE AT THE TIME DESIGNATED BY THE GENERAL CONTRACTOR. IF TEMPORARY CROSS CONNECTIONS, FITTINGS, PIPING, ETC., ARE NECESSARY TO ASSURE THIS CONTINUITY OF THE BUILDING SERVICE, THIS CONTRACTOR AT NO ADDITIONAL COST SHALL PROVIDE THEM TO THE GENERAL CONTRACTOR. WHERE USED IN THESE DOCUMENTS, MAINTAIN IS DEFINED AS FOLLOWS: SUSTAIN THE EXISTING WORKING CONDITION OF MECHANICAL DEVICES AND EQUIPMENT WHICH INCLUDES BUT IS NOT LIMITED TO REVISING, REMOVING AND REINSTALLING TO EXECUTE THE NEW WORK INDICATED. THIS BUILDING WILL BE RENOVATED IN PHASES, PROVIDE ALL NECESSARY CROSS CONNECTIONS AND TEMPORARY CONNECTIONS REQUIRED TO PERFORM THE CONSTRUCTION AS DETERMINED BY THE GENERAL CONTRACTOR.

20. THE MECHANICAL CONTRACTOR SHALL PROTECT ALL DUCT SYSTEMS, PIPING AND MECHANICAL EQUIPMENT, NEW AND EXISTING, EXPOSED TO CONSTRUCTION, FROM CONSTRUCTION DIRT. PROTECT EACH RETURN AIR DUCT OPENING OF MECHANICAL EQUIPMENT OPERATED DURING CONSTRUCTION WITH MERV 8 FILTERS AND INSTALL MERV 8 FILTER(S) IN EQUIPMENT FILTER RACK. UPON COMPLETION OF CONSTRUCTION, REMOVE RETURN DUCT FILTERS AND REPLACE EQUIPMENT FILTERS WITH NEW FILTERS AS SPECIFIED.

21. THE LANDLORD'S CONSTRUCTION CRITERIA, LEASE AGREEMENT, AND CONSTRUCTION STANDARDS IS HERE-IN MADE PART OF THIS CONTRACT. ALL REQUIREMENTS IN THE LANDLORDS CONSTRUCTION CRITERIA, LEASE AGREEMENT, AND CONSTRUCTION STANDARDS REFERRED TO AS TENANT WORK IS DEFINED AS DIVISION 15 OR 23 MECANICAL WORK AND IS TO BE PROVIDED BY THE MECHANICAL WORK CONTRACTOR. IT IS THE RESPONSIBILITY OF THE MECHANICAL WORK CONTRACTOR TO OBTAIN COPIES OF THESE DOCUMENTS AND COMPLETELY FAMILIARIZE HIMSELF WITH THESE DOCUMENTS PRIOR TO BIDDING THIS PROJECT. SUBMISSION OF A BID ACKNOWLEDGES THE MECHANICAL WORK CONTRACTOR HAS COMPLIED WITH THIS REQUIREMENT OF THE CONTRACT.

MECHANICAL SYMBOL LIST

- SUPPLY AIR DUCT UP
- SUPPLY AIR DUCT DOWN
- RETURN AIR DUCT UP
- RETURN AIR DUCT DOWN
- EXHAUST AIR DUCT UP
- EXHAUST AIR DUCT DOWN
- CHANGE IN DUCT SIZE
- TURNING VANES
- FLEXIBLE DUCT CONNECTION
- HORIZONTAL LIFE SAFETY DAMPER
- VERTICAL LIFE SAFETY DAMPER
- MOTORIZED AUTOMATIC DAMPER (MAD)
- MANUAL DAMPER
- CARBON DIOXIDE DETECTOR
- CARBON MONOXIDE DETECTOR
- HUMIDISTAT
- MANOMETER
- PRESSURE SWITCH
- RETURN AIR SMOKE DETECTOR
- REFRIGERANT (Rxxx) DETECTOR
- REFRIGERANT LEAK HORN-STROBE
- THERMOSTAT
- PIPE/DUCT IN ATTIC
- PIPE/DUCT BELOW FLOOR OR GRADE
- PIPE/DUCT ABOVE CEILING
- EXPOSED DUCT, W/ MILL PHOSPHATIZED FINISH
- PIPE/DUCT ON ROOF
- NEW CONNECTION TO EXISTING (VERIFY SIZE AND LOCATION IN FIELD PRIOR TO BID)
- NEW BRANCH DUCT TAP & CONNECTION TO EXISTING
- DUCT INSULATION (SEE SCHEDULE)
- PLAN NOTE SYMBOL
- REVISION SYMBOL
- EQUIPMENT CALLOUT (SEE SCHEDULE)
- GRILLE/DIFFUSER CALLOUT (SEE SCHEDULE)
- LIFE SAFETY DAMPER CALLOUT (SEE SCHEDULE)
- EXISTING DUCT TO REMAIN
- EXISTING TO BE DEMOLISHED

MECHANICAL PIPING

A	COMPRESSED AIR LINE
CD	CONDENSATE DRAIN
CD	CONDENSATE DRAIN BELOW FLOOR OR GRADE
CR	CONDENSER WATER RETURN
CS	CONDENSER WATER SUPPLY
CHR	CHILLED & HOT WATER RETURN
CHS	CHILLED & HOT WATER SUPPLY
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
D	DRAIN LINE
G	GAS LINE
HG	HOT GAS LINE
HPWR	HEAT PUMP WATER RETURN
HPWS	HEAT PUMP WATER SUPPLY
HPC	HIGH PRESSURE CONDENSATE
HWR	HOT WATER RETURN
HPS	HIGH PRESSURE STEAM
HWS	HOT WATER SUPPLY
LPC	LOW PRESSURE CONDENSATE
LPG	LIQUIFIED PETROLEUM GAS (PROPANE)
LPS	LOW PRESSURE STEAM
MPC	MEDIUM PRESSURE CONDENSATE
MPS	MEDIUM PRESSURE STEAM
MUW	MAKE-UP WATER
RL	REFRIGERANT LIQUID LINE
RS	REFRIGERANT SUCTION LINE
TYPE	EXISTING PIPE TO BE REMOVED
TYPE	EXISTING PIPE TO BE REMOVED
TYPE (E)	EXISTING PIPING

MECHANICAL ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
A.I.P.	ABANDON IN PLACE
AL	ALUMINUM
ALT	ALTERNATE
AP	ACCESS PANEL
AS	AIR SEPARATOR
ATC	AUTOMATIC TEMPERATURE CONTROL VALVE
ATR	ALL THREAD ROD
ATU	AIR TERMINAL UNIT
AV	MANUAL AIR VENT
BB	BASEBOARD HEATER
BDD	BACK DRAFT DAMPER
BES	BANKING EQUIPMENT SUPPLIER
BFF	BELOW FINISHED FLOOR
BMS	BUILDING MANAGEMENT SYSTEM
BOD	BOTTOM OF DUCT
BOE	BOTTOM OF EQUIPMENT
BOP	BOTTOM OF PIPE
BS	BRANCH SELECTOR - DAIKIN
CH	CHILLER
CLG	CEILING
CO	CARBON MONOXIDE
CO2	CARBON DIOXIDE
CR	CONDENSER WATER RETURN
CRAC	COMPUTER ROOM AIR CONDITIONER
CRCU	COMPUTER ROOM CONDENSING UNIT
CS	CONDENSER WATER SUPPLY
CSST	CORRUGATED STAINLESS STEEL TUBING
CT	COOLING TOWER
CU	CONDENSING UNIT
CUH	CABINET UNIT HEATER
DDC	DIRECT DIGITAL CONTROL
DIFF	DIFFUSER
DISC	DISCONNECT
DLSS	DUCTLESS SPLIT SYSTEM
DN	DOWN
DPS	DIFFERENTIAL PRESSURE SWITCH
(E)	EXISTING
EA	EXHAUST AIR
EBB	ELECTRIC BASE BOARD
EC	ELECTRICAL WORK CONTRACTOR
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EMS	ENERGY MANAGEMENT SYSTEM
EQPT	EQUIPMENT
ER	EXHAUST REGISTER
ERV	ENERGY RECOVERY VENTILATOR
ET	EXPANSION TANK
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXH	EXHAUST
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FC	FLEX CONNECTION
FCU	FAN COIL UNIT
FD	FIRE DAMPER
FPC	FIRE PROTECTION CONTRACTOR
FRT	FIRE-RETARDANT-TREATED
FSC	FOOD SERVICE CONSULTANT
FSD	FIRE/SMOKE DAMPER
FSEC	FOOD SERVICE EQPT. CONTRACTOR
FTU	FAN TERMINAL UNIT
FV	FIELD VERIFY
GC	GENERAL WORK CONTRACTOR
GF	GAS FURNACE
GWH	GAS WATER HEATER
HP	HEAT PUMP
HP	HORSEPOWER
HRCU	HEAT RECOVERY CONDENSING UNIT
HWCP	HOT WATER CIRC. PUMP
HX	HEAT EXCHANGER
IAH	INTAKE AIR HOOD
IOM	INSTALLATION & OPERATION MANUAL
ID	INSIDE DIAMETER
IR	INFRA-RED TUBE HEATER (GAS)
IV	INTAKE VENTILATOR
KEF	KITCHEN EXHAUST FAN
LLSV	LIQUID LINE SOLENOID VALVE
LV	LOUVER
LPG	LIQUIFIED PETROLEUM GAS (PROPANE)
MAX	MAXIMUM
MC	MECHANICAL WORK CONTRACTOR
MCA	MINIMUM CIRCUIT AMPERES
MCC	MOTOR CONTROL CENTER
MD	MANUAL DAMPER
MIN	MINIMUM
MH	MOUNTING HEIGHT
MOCP	MAXIMUM OVER CURRENT PROTECTION
MTD	MOUNTED
MUA	MAKE-UP AIR
MUW	MAKE UP WATER
NC	NORMALLY CLOSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
OA	OUTDOOR AIR
OD	OUTSIDE DIAMETER
OX	OXYGEN
PC	PLUMBING WORK CONTRACTOR
PCF	POUNDS/CUBIC FOOT
PSG	PUMP SUCTION GUIDE
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
RA	RETURN AIR
RAH	RELIEF AIR HOOD
RF	RETURN FAN
RG	RETURN GRILLE
RL	EXISTING DEVICE RELOCATED
RR	RETURN REGISTER
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	ROOF TOP UNIT
RV	RELIEF VENTILATOR
SA	SUPPLY AIR
SD	SPLITTER DAMPER
SF	SUPPLY FAN
SG	SUPPLY GRILLE
SMS	SHEET METAL SCREW
SS	STAINLESS STEEL
SSF	SIDE STREAM FILTER
TA	TRANSFER AIR
TEMP	TEMPORARY
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TXV	THERMAL EXPANSION VALVE
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
UNV	UNIVERSAL
UTR	UP THROUGH ROOF
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VRF	VARIABLE REFRIGERANT FLOW
VRV	VARIABLE REFRIGERANT VOLUME
VSD	VARIABLE SPEED DRIVE
W/	WITH
WP	WEATHERPROOF
WSHP	WATER SOURCE HEAT PUMP
XFMR	TRANSFORMER

G&W
ENGINEERING CORPORATION
DYNAMIC PROCESSES ◆ SUSTAINABLE RESULTS
138 WELDON PARKWAY ST. LOUIS, MO 63043
(314) 469-3737 PROJECT NUMBER: 2017-0214.00
WWW.GANDWENGINEERING.COM
MISSOURI STATE CERTIFICATE OF AUTHORITY # 2002018767

HVAC UPGRADES TO
KIPP: INSPIRE ACADEMY
MIDDLE SCHOOL
1212 N. 22ND STREET
ST. LOUIS, MO 63106

SEAL

REVISIONS

JOB NO:	2017-0214.00
DRAWN BY:	J.R.A.
CHECKED BY:	J.R.A.
DATE:	09-25-2017

SHEET NO.

M1.0

MECHANICAL TITLE SHEET

AIR HANDLING UNIT SCHEDULE

*DAIKIN

PLAN MARK	MODEL* NUMBER	SUPPLY AIRFLOW			OUTSIDE AIR					DX COOLING COIL							STEAM HEAT COIL				ELECTRICAL		NOTES
				FAN	SUMMER		WINTER		O/A	MODEL	TOT	SEN	ENTERING M.A.T.		UNIT LEAVING		MODEL	TOTAL		STEAM PRESSURE			
		CFM	ESP.	HP	DB	WB	DB	WB	CFM	NO.	MBH	MBH	DB	WB	DB	WB	NO.	MBH	EAT/LAT	PSI	V/P/HZ	MCA/MOCP	
AHU-1	CAH017GDGC	8750	2.0	10	95.0	75.0	2.0	0.0	1800	5EJ1206B	359.1	240.0	80.0	67.0	54.9	53.6	5JA0601B	337.0	55.0/90.2	5.0	208/3/60	-	1
AHU-2	CAH012GDAC	5250	1.0	5	95.0	75.0	2.0	0.0	900	5EJ0906B	216.1	142.6	80.0	67.0	55.1	53.6	5JA0601B	219.7	55.0/93.3	5.0	208/3/60	-	2

NOTES:
1. PROVIDE HORIZONTAL AIR HANDLING UNIT VFD CONTROL, DX COILING COIL, STEAM HEAT COIL, MIXING BOX, MERV 8 PLEATED FILTERS, STAINLESS STEEL DRAIN PAN, INSULATED UNIT CABINET, FUSED DISCONNECT SWITCH, CO2 BASED DEMAND VENTILATION, GLOBAL PLASMA SOLUTIONS (GPS) PLASMA AIR PURIFICATION SYSTEM, DDC SPACE SENSOR WITH SETPOINT ADJUSTMENT & TENANT OVERRIDE, AND FIELD INSTALLED JOHNSON CONTROLS.
2. PROVIDE STACKED/VERTICAL AIR HANDLING UNIT VFD CONTROL, DX COILING COIL, STEAM HEAT COIL, MIXING BOX, MERV 8 PLEATED FILTERS, STAINLESS STEEL DRAIN PAN, INSULATED UNIT CABINET, FUSED DISCONNECT SWITCH, CO2 BASED DEMAND VENTILATION, GLOBAL PLASMA SOLUTIONS (GPS) PLASMA AIR PURIFICATION SYSTEM, DDC SPACE SENSOR WITH SETPOINT ADJUSTMENT & TENANT OVERRIDE, AND FIELD INSTALLED JOHNSON CONTROLS.

ROOFTOP UNIT SCHEDULE (ALTERNATE BID #1)

*DAIKIN

PLAN MARK	MODEL* NUMBER		SUPPLY AIRFLOW			OUTSIDE AIR					DX COOLING COIL						UNIT IEER DATA	ELECTRICAL		WEIGHT (LB)	NOTES
					FAN	SUMMER		WINTER		O/A	TOT	SEN	ENTERING M.A.T.		UNIT LEAVING						
		EER	CFM	ESP.	HP	DB	WB	DB	WB	CFM	MBH	MBH	DB	WB	DB	WB		V/P/HZ	MCA/MOCP		
RTU-1	MPS020G	10	7000	1.0	7.5	95.0	75.0	2.0	0.0	900	249.1	196.2	77.6	63.8	54.1	52.2	12.5	208/3/60	116.3/150	3475	1

NOTES: 1. PROVIDE VAV UNIT WITH VFD AND DUCT PRESSURE CONTROL, 0-100% ECONOMIZER WITH DRY BULB CONTROL, BAROMETRIC RELIEF TO BE FIELD INSTALLED IN RETURN DUCT, HORIZONTAL SUPPLY AND RETURN DUCT DISCHARGE, MERV 8 PLEATED FILTERS, STAINLESS STEEL DRIP PAN, INSULATED UNIT CABINET, NON-FUSED DISCONNECT SWITCH, FIELD POWERED SERVICE RECEPTACLE, PHASE FAILURE MONITOR, CO2 BASED DEMAND VENTILATION, GLOBAL PLASMA SOLUTIONS (GPS) PLASMA AIR PURIFICATION SYSTEM, FIELD INSTALLED JOHNSTON CONTROLS, DDC SPACE SENSOR WITH SETPOINT ADJUSTMENT & TENANT OVERRIDE, AND EQUIPMENT CURB.

CONDENSING UNIT SCHEDULE

* DAIKIN

PLAN MARK	MODEL NUMBER *	CAP (MBH)	EER	IEER	SST (°F)	AMBIENT (°F)	V/PH/HZ	MCA/MOCP	WEIGHT	REFRIG. LINE CONNECTION SIZES (O.D.)			NOTES
										SUCTION	LIQUID	HOT GAS	
CU-1	RCS025D	279.3	11.0	13.6	44.0	95.0	208/3/60	125.9/175	1853	(2) 1-5/8	(2) 7/8	(2) 7/8	1
CU-2	RCS015D	182.8	12.3	13.0	44.0	95.0	208/3/60	71.9/90	1821	(2) 1-1/8	(2) 5/8	(2) 7/8	1

NOTES: 1. PROVIDE AIR COOLED CONDENSING UNIT WITH MOUNTING RAILS, BUILT IN HAIL PROTECTION, HOT GAS BYPASS, SINGLE POWER BLOCK FIELD CONNECTION, SINGLE THRU DOOR DISCONNECT SWITCH, FIELD POWERED SERVICE RECEPTACLE, AND LOW AMBIENT CONTROL TO 45 DEGREES.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

* TITUS

PLAN MARK	MODEL NO. *	NECK SIZE	FACE SIZE	MAX CFM	P.D.	BORDER	PATTERN	FINISH	NOTES
SA	DL	30x15	32-11/16"x 17"	2625	0.1	TYPE 1	2-WAY	#26	1
SB	DL	25x15	27-11/16"x 17"	1600	0.1	TYPE 1	2-WAY	#26	1
SC	DL	20x12	22-11/16"x 13-15/16"	1100	0.1	TYPE 1	2-WAY	#26	1
RA	33RS	28" x 56"	30"x58"	7000	0.08	TYPE 1	-	#26	-

NOTES: 1. PROVIDE WITH OPPOSED BLADE BALANCING DAMPER.

DUCT INSULATION SCHEDULE

ID TAG	MATERIAL K $\frac{BTU.IN}{H.SQ.FT.F}$ AT 75 F. / D $\frac{IB}{FT^3}$	FORM	THICK-NESS	R-VALUE	NO. OF LAYERS	FIELD APPLIED JACKET	VAPOR RETARDER REQUIRED
i1	MINERAL-FIBER BLANKET (0.26/0.75)	N/A	1"	3.8	ONE	FOIL & PAPER	YES
i8	THERMADUCT (0.15/3.4)	N/A	1 3/16"	8.1	N/A	NONE	YES

GENERAL NOTE: DUCT SIZES INDICATED ON DRAWINGS ARE SHEET METAL SIZE AND INCLUDE LINER SPECIFIED.

MECHANICAL PIPE & PIPE INSULATION SPECIFICATION SCHEDULE

(NOT ALL SYSTEMS MAY BE REQUIRED ON THIS PROJECT)

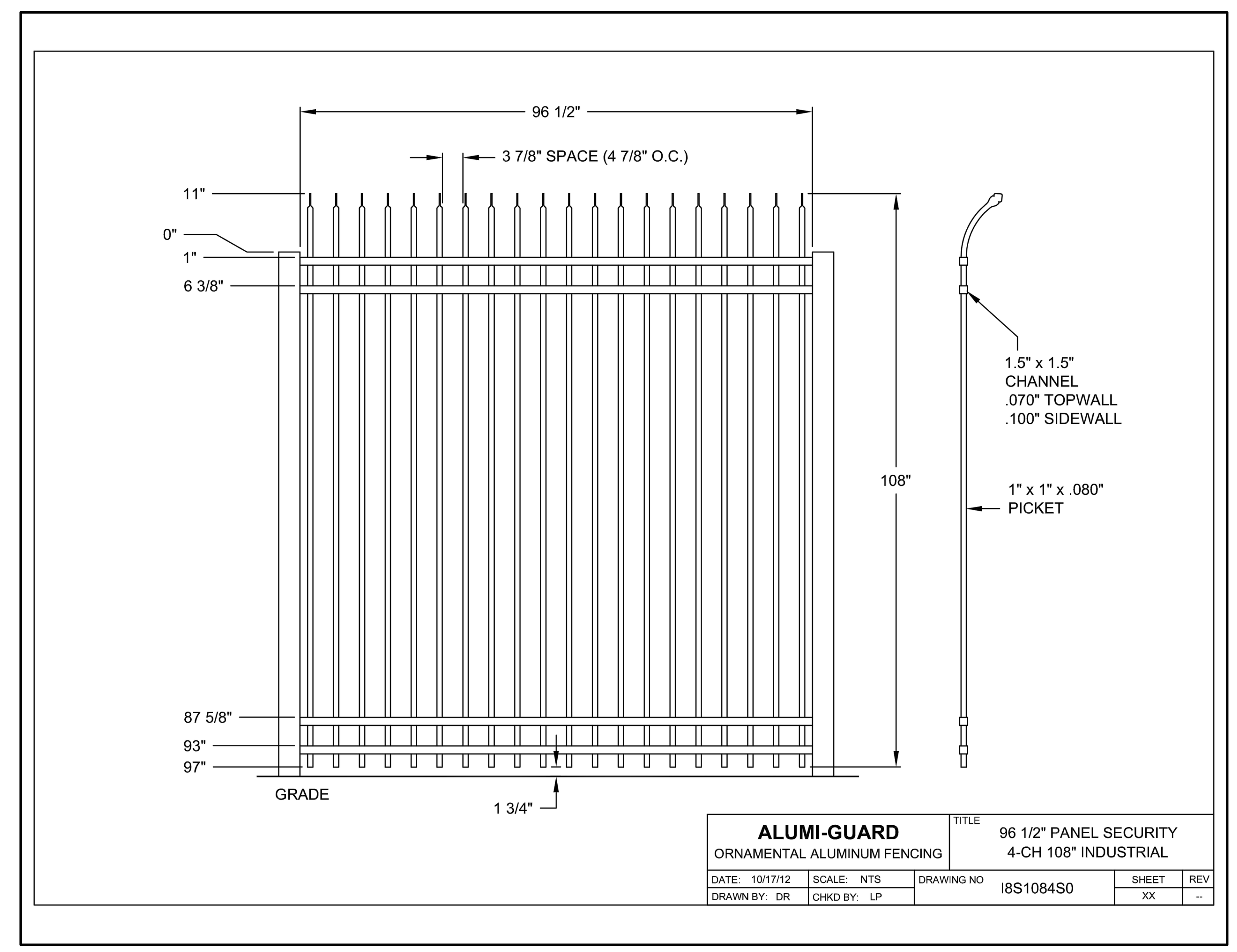
PIPE MATERIAL	TYPE OF SERVICE: REFRIGERANT	AC CONDENSATE - BLDG EXTERIOR	AC CONDENSATE - BLDG INTR. PLENUM SPACES	AC CONDENSATE - BLDG INTERIOR NON-PLENUM SPACES	STEAM
SCHEDULE 40 BLACK STEEL, TYPE E OR S, GRADE B ASTM A53/A53M - MALLEABLE IRON THREADED FITTINGS ASTM B16.3, CLASS 150, STANDARD PATTERN					●
SEAMLESS DRAWN COPPER TYPE "L-ACR" ASTM B280, WROUGHT COPPER FITTINGS ASME B16.22, ASME B16.50, BRAZE PER AWS A5.8/A5.8M; ASTM B32 SOLDER 95-5 OR ALLOY HB.	●				●
SEAMLESS ANNEALED COPPER TYPE "L-ACR" ASTM B280, WROUGHT COPPER FITTINGS ASME B16.22, ASME B16.50, BRAZE PER AWS A5.8/A5.8M; ASTM B32 SOLDER 95-5 OR ALLOY HB.	●				
DRAWN COPPER DWV TUBE, ASTM B306, CAST COPPER FITTINGS ASME B16.18, OR WROUGHT COPPER ASME B16.22, SOLDER: ASTM B 32 LEAD FREE WITH ASTM B 813 WATER-FLUSHBLE FLUX.		●	●	●	
SOLID WALL PVC SCHEDULE 40 , ASTM D 2665 DWV, PVC FITTINGS: ASTM D 2665 MADE TO ASTM 3311 DWV, PRIMER: ASTM F 656, SOLVENT: ASTM D 2564		●		●	
PIPE INSULATION					
PIPE DIAMETER: ALL 1/2" THICK, NOTE 1 (WITH VAPOR BARRIER) OR NOTE 2 (NO VAPOR BARRIER)			●	●	
PIPE DIAMETER ≤ 1.5" 1-1/2" THICK, NOTE 2.	● 3				
PIPE DIAMETER > 1.5" 1-1/2" THICK, NOTE 2.	● 3				

NOTES:
1. INORGANIC GLASS FIBER WITH ASJ
K=0.27 (BTU-IN / H-SQFT-°F) AT 75 °F, 1.5 PCF
ASTM C 547; TYPE I, TYPE IV
ASTM: C 585, C 795
ASTM C 1136 (JACKETS); TYPE I, II, III, IV, VIII
ASTM: C 665, C 1617, C 1338
ASTM: C 1104, C 356
GREENGUARD CERTIFICATION
GREENGUARD CHILDREN & SCHOOLS CERTIFICATION
NFPA 90A & 90B
UL CLASSIFIED
2. CLOSED CELL ELASTOMERIC
K=0.25 (BTU-IN / H-SQ.FT-°F) AT 75 °F, 0.05 PERM-IN
ASTM C 534, TYPE I - TUBULAR GRADE
ASTM E 84
ASTM G-21/C 1338
ASTM G-22
ASTM D 1056, 2B1
NFPA 255
NFPA 90A & 90B
UL 723
UL 181
GREENGUARD CERTIFICATION
GREENGUARD CHILDREN & SCHOOLS CERTIFICATION
3. INSULATE REFRIGERANT PIPE PER EQUIPMENT MANUFACTURER'S I.O.M. COAT INSULATION ON BUILDING EXTERIOR WITH 2 COATS OF ARMAFLEX TYPE WB FINISH, UV, OZONE, & MOISTURE RESISTANT COMPOUND.

PIPE INSTALLATION:

CONDENSATE PIPE:
1. PROVIDE MINIMUM 1 % SLOPE IN DIRECTION OF FLOW.

REFRIGERANT PIPE:
1. PROVIDE LIQUID LINE SIGHT GLASS AND DRYER-STRAINER AS MANUFACTURED BY SPORLAN OR EQUAL.
2. INSTALL REFRIGERANT PIPING IN COMPLIANCE WITH ASHRAE 15, "SAFETY CODE FOR REFRIGERATION SYSTEMS."
3. COMPLY WITH ASME B31.5, "REFRIGERATION PIPING AND HEAT TRANSFER COMPONENTS."
4. CONSTRUCT SOLDERED JOINTS ACCORDING TO ASTM B 828 OR COPPER DEVELOPMENT ASSOCIATION'S "COPPER TUBE HANDBOOK."
5. CONSTRUCT BRAZED JOINTS ACCORDING TO AMERICAN WELDING SOCIETY'S "BRAZING HANDBOOK," CHAPTER "PIPE AND TUBE."
6. USE TYPE BCuP, COPPER-PHOSPHORUS ALLOY FOR JOINING COPPER SOCKET FITTINGS WITH COPPER PIPE.
7. USE TYPE BAg, CADMIUM-FREE SILVER ALLOY FOR JOINING COPPER WITH BRONZE OR STEEL.
8. TESTS AND INSPECTIONS IN COMPLIANCE WITH ASME B31.5, CHAPTER VI.



1 / M1.1 FENCE DETAIL
NO SCALE

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(314) 469-3737 PROJECT NUMBER: 2017-0214.00
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MISSOURI STATE CERTIFICATE OF AUTHORITY # 2002018767

HVAC UPGRADES TO
KIPP: INSPIRE ACADEMY
MIDDLE SCHOOL
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SEAL

REVISIONS

JOB NO:	2017-0214.00
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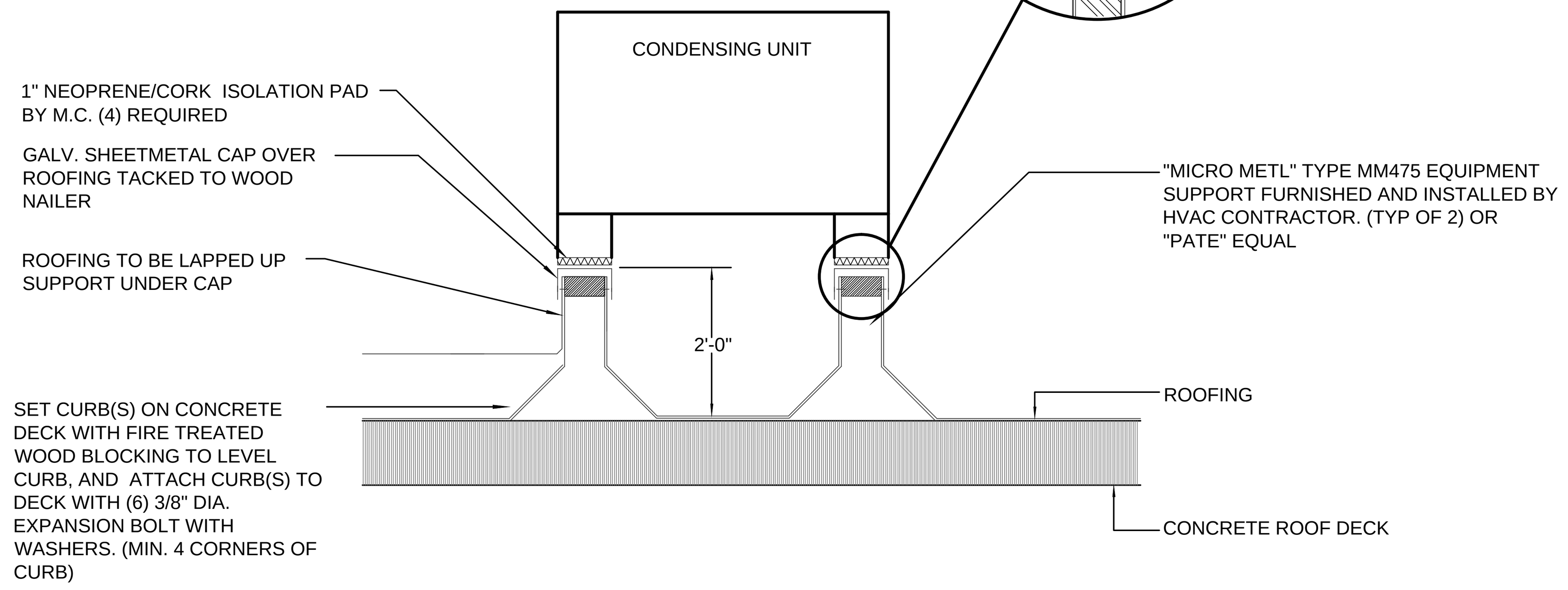
CHECKED BY:	J.R.A.
DATE:	09-25-2017
SHEET NO.	M1.1

MECHANICAL SCHEDULES & DETAILS

NOTE:
ALL ROOF WORK SHALL COMPLY WITH BUILDING STANDARDS AND BE INCLUDED IN MECHANICAL CONTRACTOR'S BID. THIS CONTRACTOR SHALL USE PROPERTY MANAGER APPROVED ROOFING CONTRACTOR AND MAINTAIN ROOF WARRANTIES.

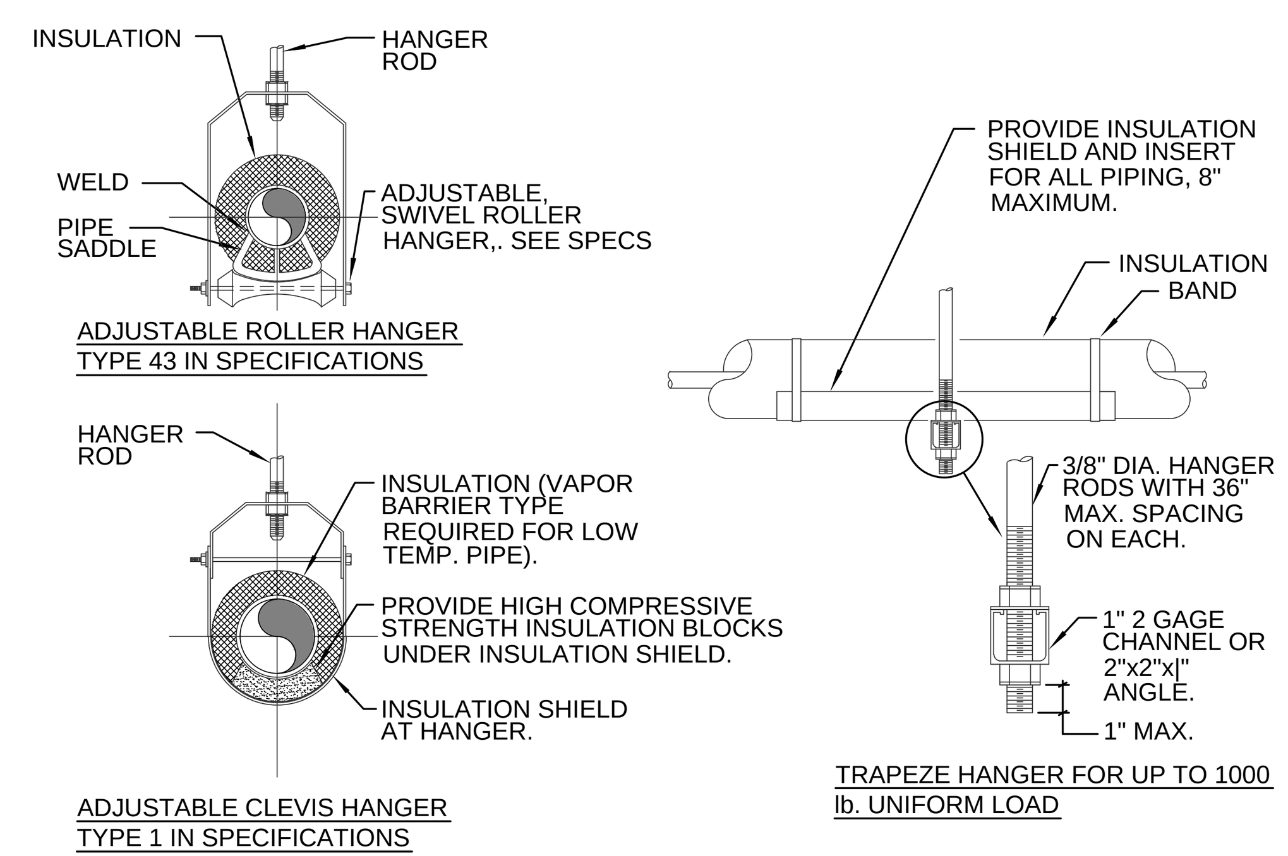


1 / M1.2 CONDENSING UNIT SUPPORT DETAIL
NO SCALE

PIPE & TUBING SUPPORT SPACING

NOMINAL PIPE SIZE (IN.)		< 1/2	1/2	3/4	1	1-1/2	2	3	4	5	6	8	10	12	14	16	18	20	24
MAXIMUM SUPPORT SPACING (FT.)	PIPE	7	7	7	9	10	11	12	14	16	17	19	22	23	25	27	28	30	32
	TUBING	5	6	7	8	8	9	10	12	13	14	16	-	-	-	-	-	-	-

NOTE: FOR TRAPEZE HANGER TAKE SPACING OF SMALLEST SIZE ON TRAPEZE.



2 / M1.2 PIPE HANGER DETAILS
NO SCALE

RECTANGULAR DUCT HANGER SCHEDULE

PAIR SPACING:	10 FT.		8 FT.		5 FT.		4 FT.	
DUCT PERIMETER, MAXIMUM HALF	STRAP	WIRE/ ROD	STRAP	WIRE/ ROD	STRAP	WIRE/ ROD	STRAP	WIRE/ ROD
	IN. x GA		IN. x GA		IN. x GA		IN. x GA	
P/2 = 30"	1 x 22	10 GA (.135")	1 x 22	10 GA (.135")	1 x 22	12 GA (.106")	1 x 22	12 GA (.106")
P/2 = 72"	1 x 18	3/8"	1 x 20	1/4"	1 x 22	1/4"	1 x 22	1/4"
P/2 = 96"	1 x 16	3/8"	1 x 18	3/8"	1 x 20	3/8"	1 x 22	1/4"
P/2 = 120"	1.5 x 16	1/2"	1 x 16	3/8"	1 x 18	3/8"	1 x 20	1/4"
P/2 = 168"	1.5 x 16	1/2"	1.5 x 16	1/2"	1 x 16	3/8"	1 x 18	3/8"
P/2 = 192"	NONE	1/2"	1.5 x 16	1/2"	1 x 16	3/8"	1 x 16	3/8"
P/2 = 193"+	SPECIAL ANALYSIS REQUIRED							

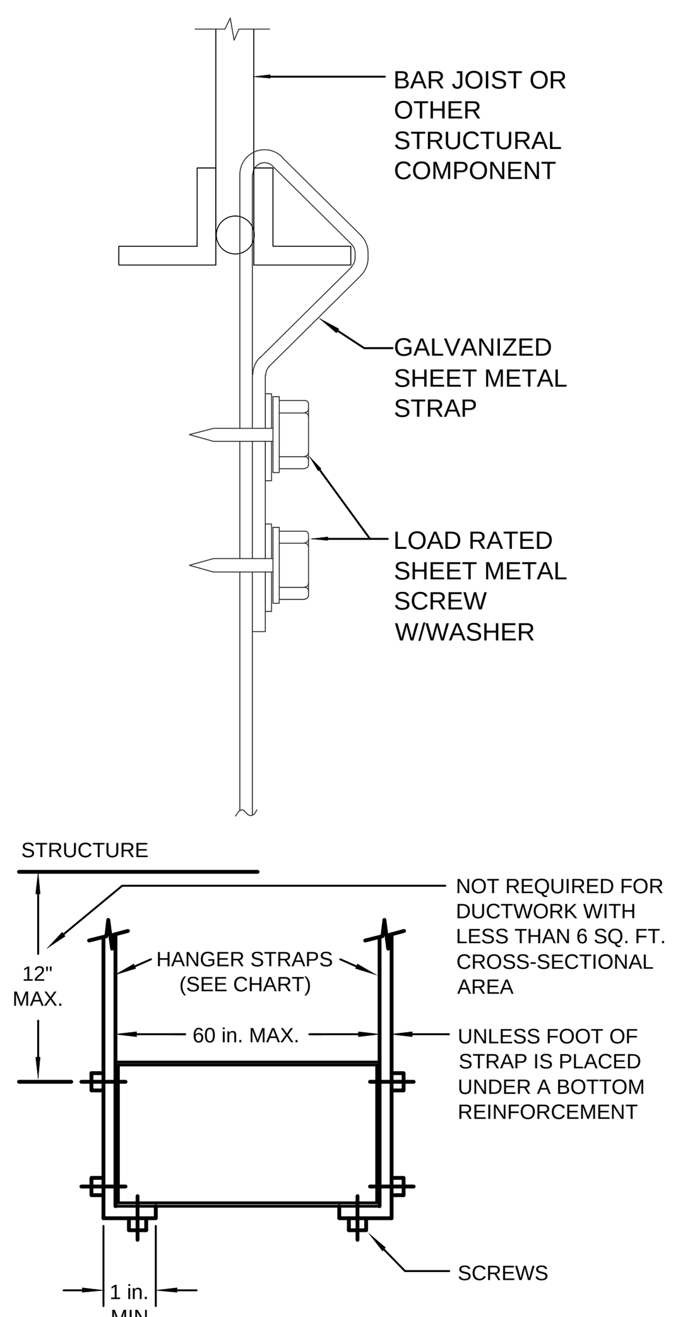
SINGLE HANGER MAXIMUM ALLOWABLE LOAD

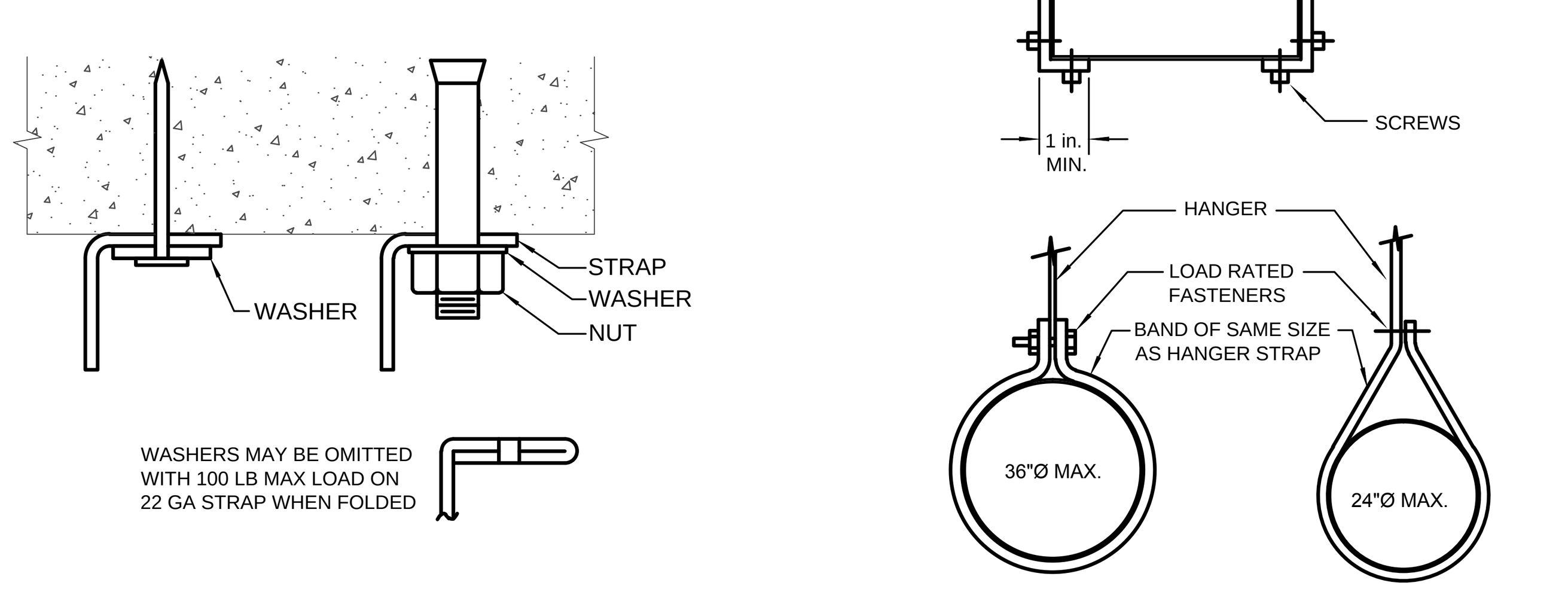
STRAP	WEIGHT	WIRE/ ROD	WEIGHT
IN. x GA	LBS.	Ø (IN.)	LBS.
1 x 22	260	0.106	80
1 x 20	320	0.135	120
1 x 18	420	0.162	160
1 x 16	700	1/4	270
1.5 x 16	1100	3/8	680
		1/2	1250
		5/8	2000
		3/4	3000

LAP JOINED STRAPS, MINIMUM FASTENERS (PLACE FASTENERS IN SERIES, NOT SIDE BY SIDE):

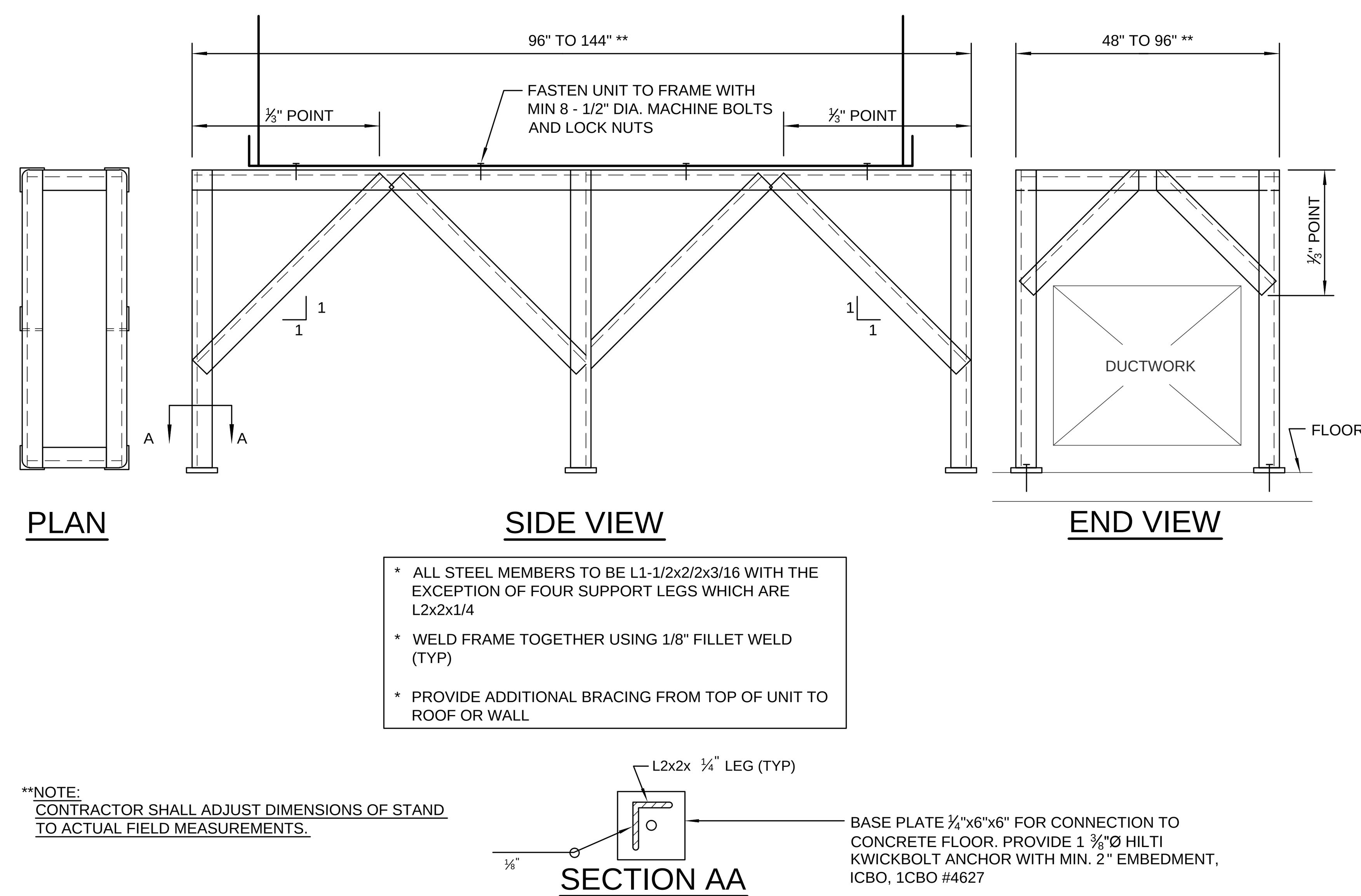
STRAP IN. x GA	FASTENERS (QTY) - SIZE
1 x 18, 20, 22	(2) - #10 SMS or
	(1) - 1/4"Ø BOLT
1 x 16	(2) - 1/4"Ø BOLT
1.5 x 16	(2) - 3/8"Ø

NOTE: TABLE ALLOWS FOR DUCT WEIGHT, 1 LB./SQ. FT. INSULATION WEIGHT, AND NORMAL REINFORCEMENT AND TRAPEZE WEIGHT.





3 / M1.2 DUCT HANGER DETAILS
NO SCALE

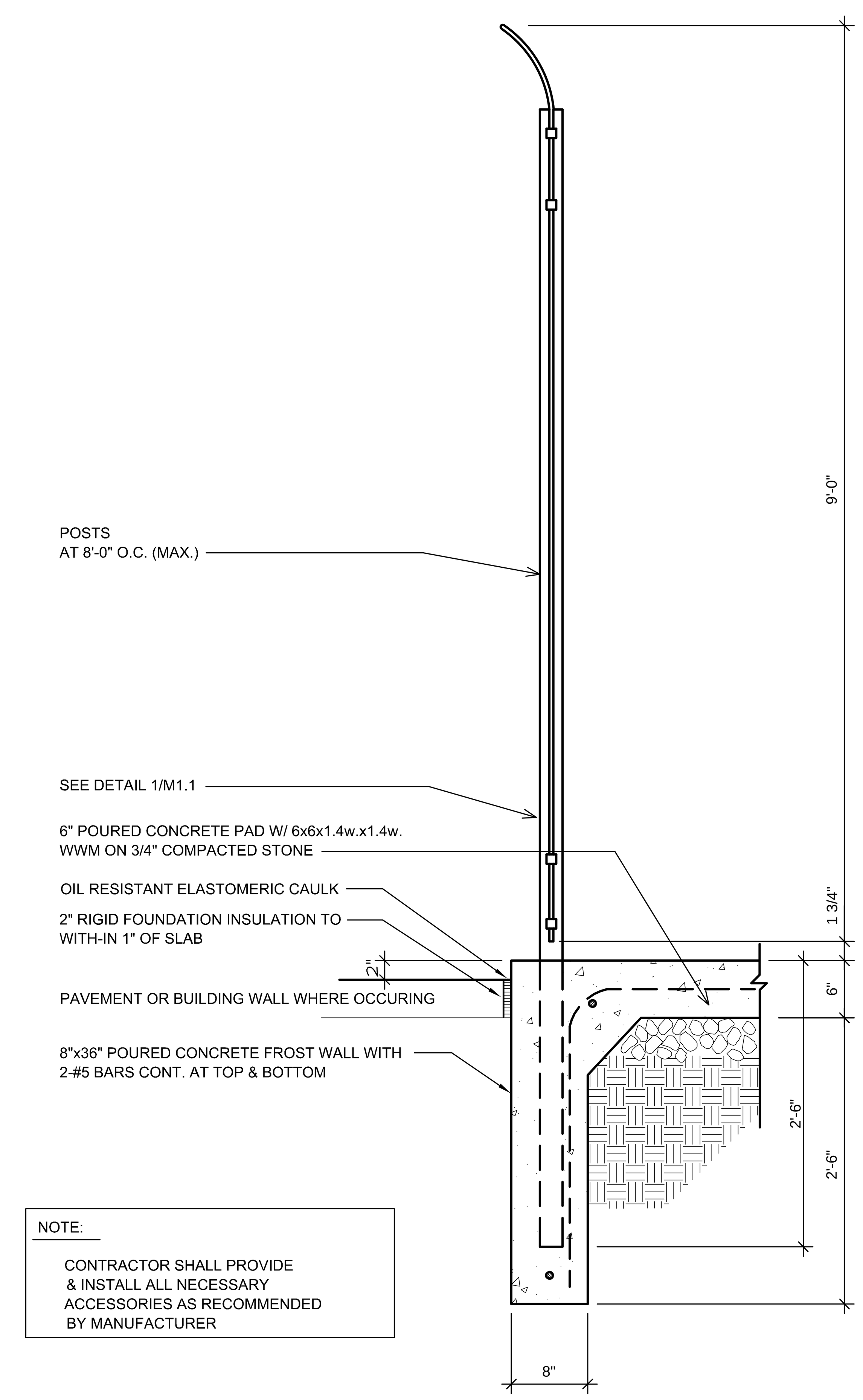


- ALL STEEL MEMBERS TO BE L1-1/2x2/2x3/16 WITH THE EXCEPTION OF FOUR SUPPORT LEGS WHICH ARE L2x2x1/4
- WELD FRAME TOGETHER USING 1/8" FILLET WELD (TYP)
- PROVIDE ADDITIONAL BRACING FROM TOP OF UNIT TO ROOF OR WALL

**NOTE:
CONTRACTOR SHALL ADJUST DIMENSIONS OF STAND TO ACTUAL FIELD MEASUREMENTS.

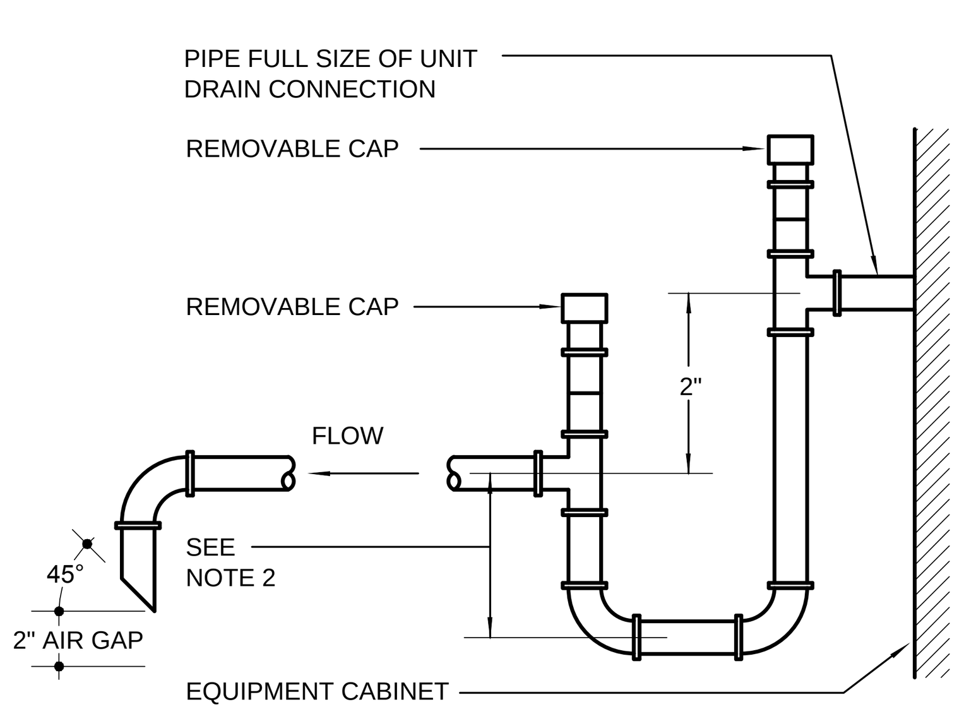
BASE PLATE ½"x6"x6" FOR CONNECTION TO CONCRETE FLOOR. PROVIDE 1 ⅜"Ø HILTI KWICKBOLT ANCHOR WITH MIN. 2" EMBEDMENT, ICBO, 1CBO #4627

4 / M1.2 MOUNTING STAND DETAIL
NO SCALE



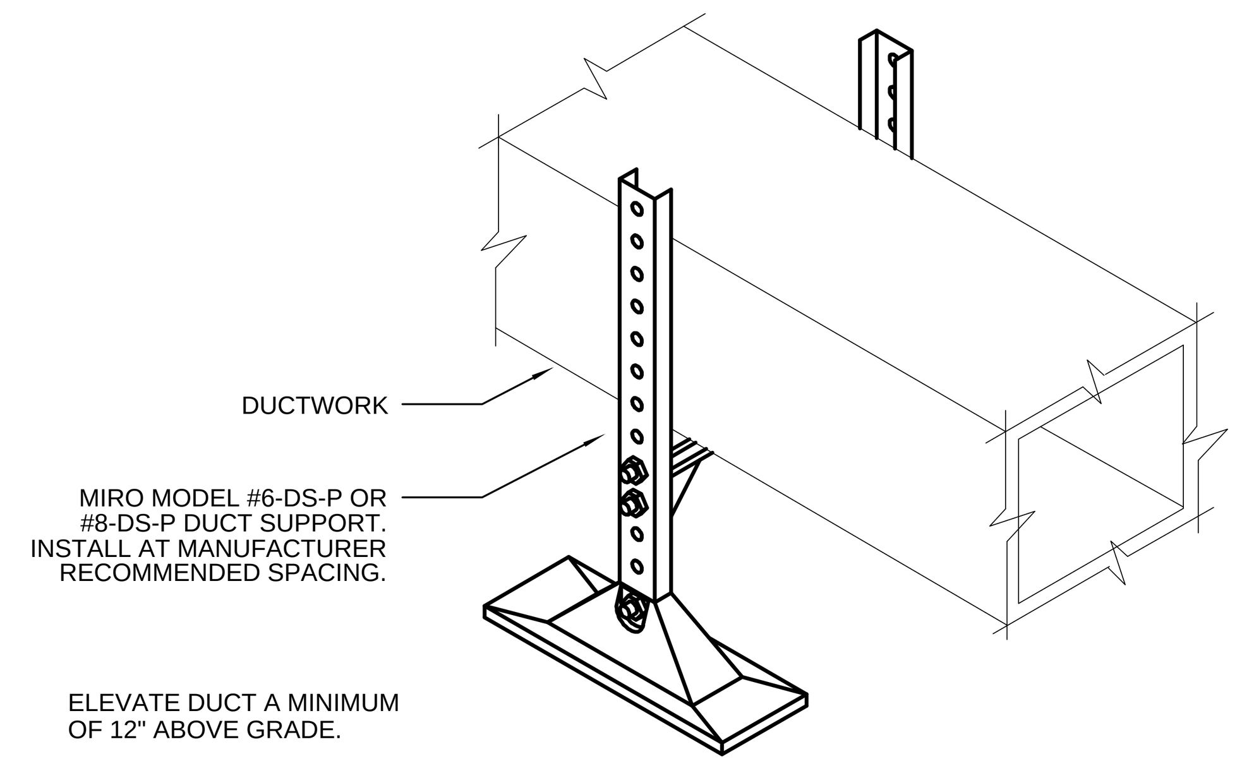
NOTE:
CONTRACTOR SHALL PROVIDE & INSTALL ALL NECESSARY ACCESSORIES AS RECOMMENDED BY MANUFACTURER

5 / M1.2 FENCE AND PAD DETAIL
NOT TO SCALE

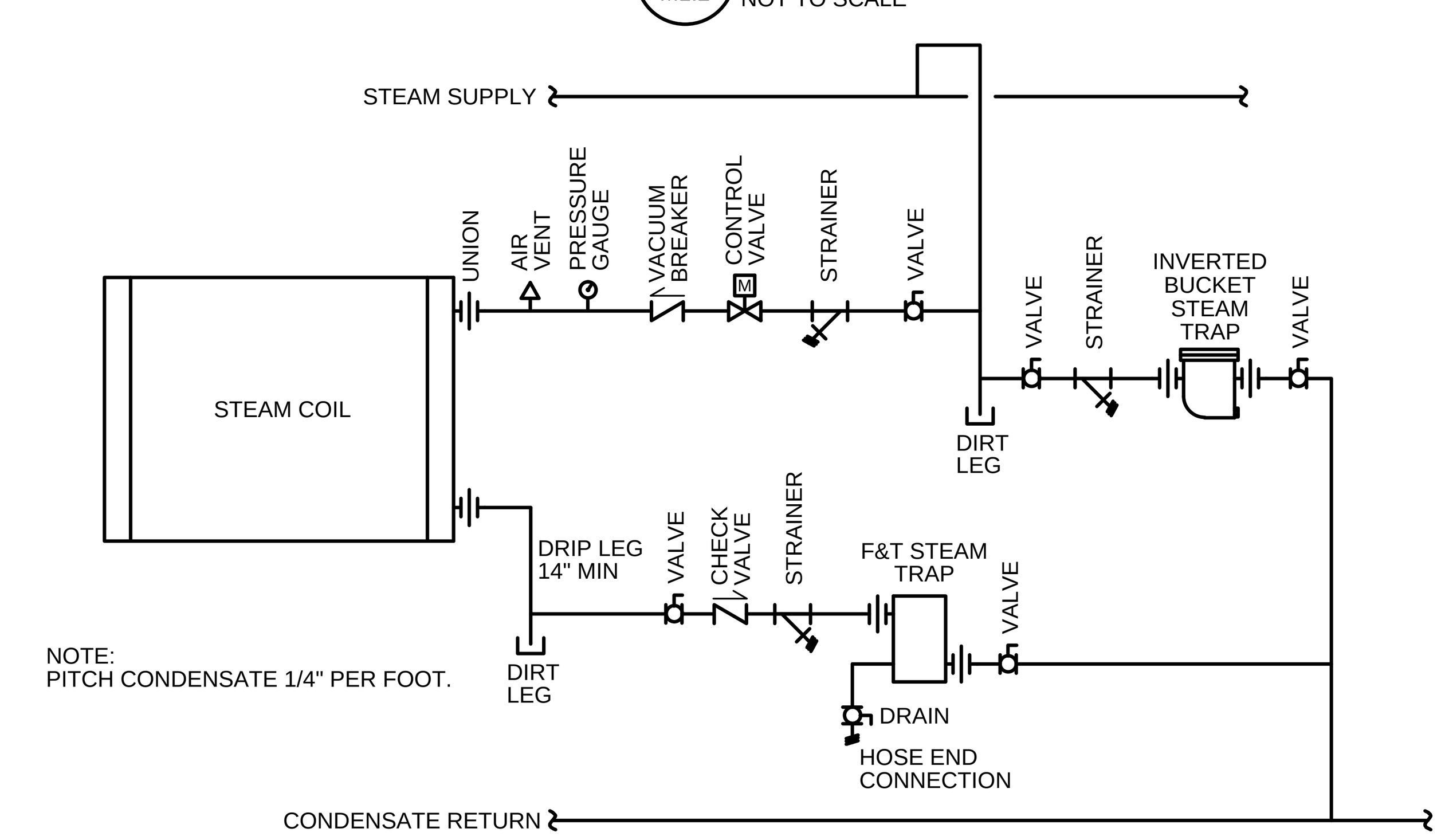


NOTES:
1. LOCATE TRAPS SO AS TO BE ACCESSIBLE FOR CLEANING.
2. HEIGHT SHALL BE EQUAL TO FAN STATIC PRESSURE, PLUS 1".
3. TERMINATE CONDENSATE LINE VIA INDIRECT CONNECTION TO NEAREST: ROOF DRAIN, GUTTER, OR FLOOR DRAIN.
4. VERIFY MFR. REQUIREMENT FOR P-TRAP, UNIT MAY CONTAIN INTERNAL TRAP.
5. PROVIDE MINIMUM 2" AIR GAP @ DRAIN TERMINATION

6 / M1.2 COOLING EQUIPMENT CONDENSATE DRAIN TRAP
NO SCALE



7 / M1.2 EXTERIOR DUCT SUPPORT DETAIL
NO SCALE



NOTE:
PITCH CONDENSATE 1/4" PER FOOT.

8 / M1.2 STEAM COIL PIPING DETAIL
NO SCALE

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JOB NO:	2017-0214.00
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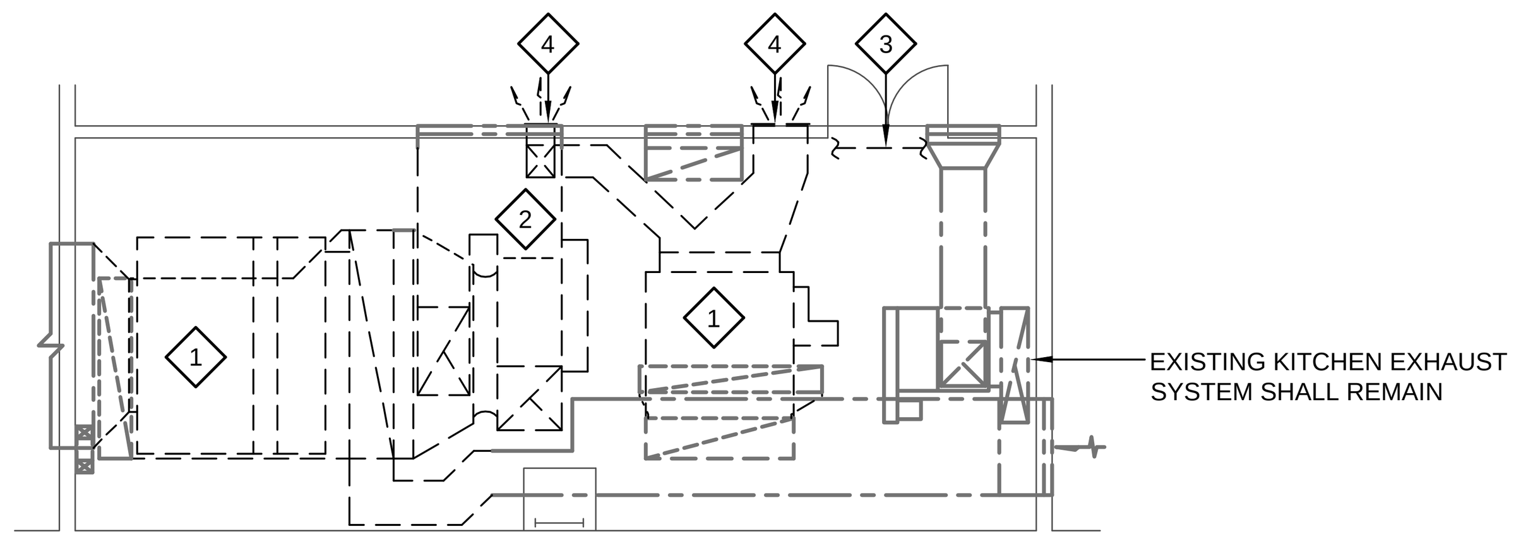
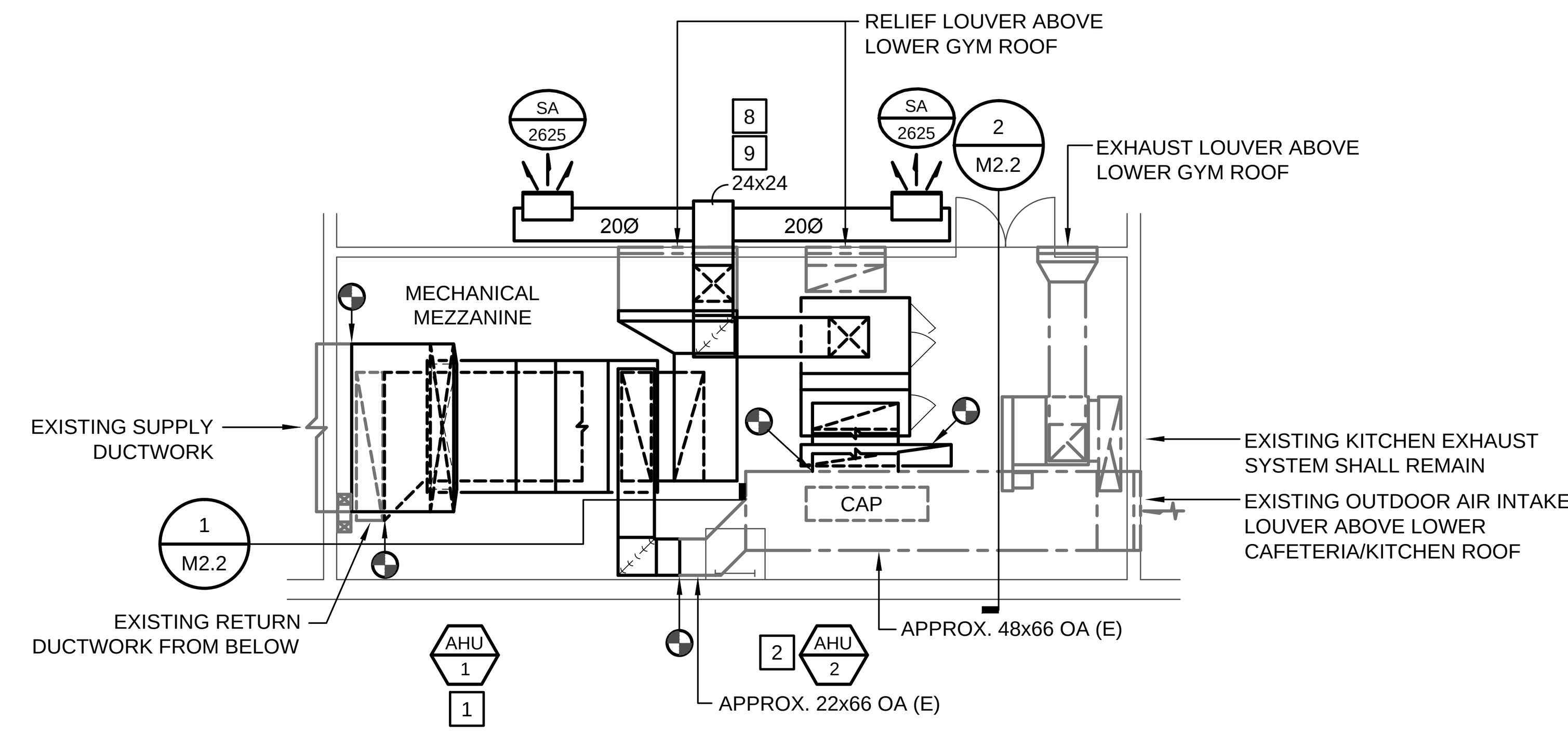
MECHANICAL DETAILS



N

MECHANICAL MEZZANINE DEMOLITION PLAN

SCALE: 1/8" = 1'-0"



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MECHANICAL MEZZANINE MECHANICAL PLAN

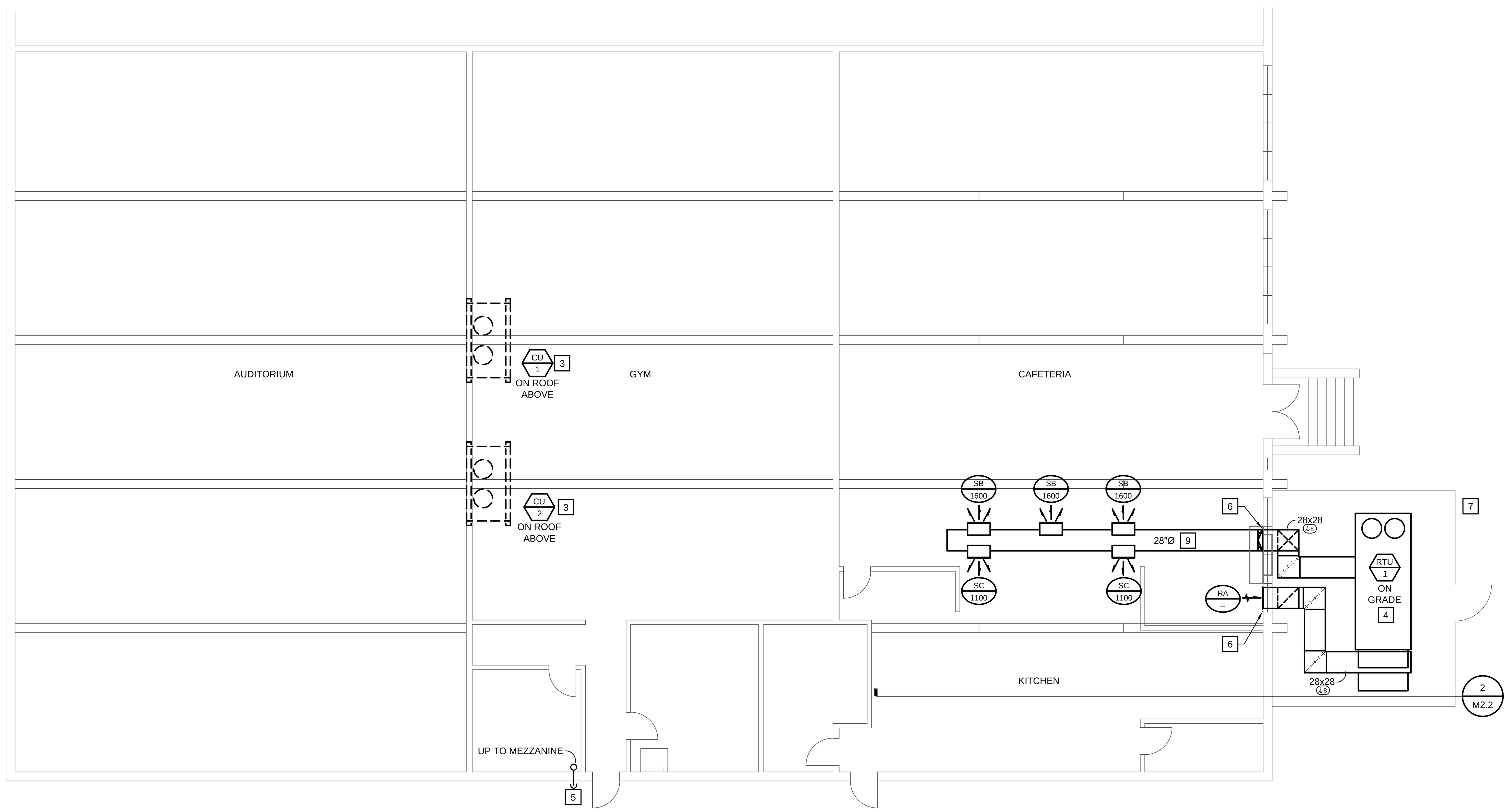
SCALE: 1/8" = 1'-0"

PLAN NOTES - MECHANICAL DEMOLITION

1. REMOVE EXISTING AIR HANDLING UNIT, HANGERS/SUPPORTS, INDICATED SUPPLY DUCTWORK, INDICATED RETURN DUCTWORK, PIPING, CONTROLS AND ASSOCIATED COMPONENTS TO MAKE WAY FOR NEW WORK.
2. REMOVE EXISTING RETURN AIR FAN, SUPPORTS, INDICATED DUCTWORK, CONTROLS AND ASSOCIATED COMPONENTS TO MAKE WAY FOR NEW WORK
3. REMOVE SECTION OF CONDENSATE PIPING IN DOORWAY TO ALLOW FOR INSTALLATION OF NEW AHU COMPONENTS.
4. REMOVE DIFFUSERS AND INFILL OPENINGS WITH CMU TO MATCH EXISTING THEN PRIME AND PAINT TO MATCH EXISTING WALL FINISH.

PLAN NOTES - MECHANICAL

1. PROVIDE STEAM HEATING/ELECTRIC COOLING SPLIT SYSTEM AIR HANDLING UNIT AS SCHEDULED AND SPECIFIED. UNIT SHALL SET DEAD LEVEL ON EQUIPMENT STAND ALLOWING RETURN DUCT TO PASS BENEATH. EXTEND AND RECONNECT EXISTING STEAM AND CONDENSATE PIPING TO NEW UNIT PER PIPING DIAGRAM; MATCH EXISTING SIZE. EXTEND FULL DIAMETER CONDENSATE DRAIN FROM COOLING COIL UNIT CONNECTION, PIPE DOWN INSIDE BUILDING AND SPILL ON GRADE IN GREEN SPACE NEXT TO BUILDING. TERMINATE WITH TURNED DOWN ELBOW. EXTEND REFRIGERANT PIPING THROUGH WALL ABOVE GYM ROOF THEN EXTEND TO CORRESPONDING CONDENSING UNIT. EXTEND SUPPLY AND RETURN DUCTS FROM FLEXIBLE CONNECTIONS FULL SIZE AT UNIT, AND TRANSITION TO DUCTS SIZED AS SHOWN.
2. PROVIDE STEAM HEATING/ELECTRIC COOLING SPLIT SYSTEM AIR HANDLING UNIT AS SCHEDULED AND SPECIFIED. UNIT SHALL SET DEAD LEVEL ON EQUIPMENT RAILS. EXTEND AND RECONNECT EXISTING STEAM AND CONDENSATE PIPING TO NEW UNIT PER PIPING DIAGRAM; MATCH EXISTING SIZE. EXTEND FULL DIAMETER CONDENSATE DRAIN FROM COOLING COIL UNIT CONNECTION, PIPE DOWN INSIDE BUILDING AND SPILL ON GRADE IN GREEN SPACE NEXT TO BUILDING. TERMINATE WITH TURNED DOWN ELBOW. EXTEND REFRIGERANT PIPING THROUGH WALL ABOVE GYM ROOF THEN EXTEND TO CORRESPONDING CONDENSING UNIT. EXTEND SUPPLY AND RETURN DUCTS FROM FLEXIBLE CONNECTIONS FULL SIZE AT UNIT, AND TRANSITION TO DUCTS SIZED AS SHOWN.
3. PROVIDE CONDENSING UNIT AS SCHEDULED AND SPECIFIED. UNIT SHALL SET DEAD LEVEL ON EQUIPMENT CURB RAILS. EXTEND RAILS A MINIMUM OF 6" BEYOND EQUIPMENT ON BOTH SIDES. EXTEND REFRIGERANT PIPING PER MANUFACTURER'S IOM TO ASSOCIATED AIR HANDLING UNIT. COAT REFRIGERANT PIPING INSULATION EXPOSED TO THE ELEMENTS WITH WEATHER PROOF COATING AS SPECIFIED.
4. ALTERNATE BID #1: PROVIDE ELECTRIC COOLING PACKAGED ROOFTOP UNIT AS SCHEDULED AND SPECIFIED. UNIT SHALL SET DEAD LEVEL ON MINIMUM 14" HIGH FACTORY CURB SET ON EQUIPMENT PAD. PROVIDE ALL SHIMS AND BUILD UP MATERIALS AS REQUIRED FOR A LEVEL INSTALLATION. EXTEND FULL DIAMETER CONDENSATE DRAIN FROM UNIT CONNECTION AND SPILL ON GRADE. EXTEND HORIZONTALLY CONFIGURED SUPPLY AND RETURN DUCTS FROM FLEXIBLE CONNECTIONS FULL SIZE AT UNIT AND TRANSITION TO DUCTS SIZED AS SHOWN.
5. RUN 1 1/4" CONDENSATE FROM AIR HANDLING UNITS DOWN EXTERIOR WALL AND EXIT BUILDING AT 6" ABOVE GRADE. SPILL CONDENSATE ON GRADE.
6. REMOVE GLASS BLOCK AS REQUIRED TO CREATE OPENING FOR DUCTWORK. FRAME OPENING FLUSH WITH INNER AND OUTER SURFACE OF BLOCK THEN COVER WITH PRE-FINISHED SHEET METAL PANELS WITH FEWEST SEAMS POSSIBLE. COLOR SHALL MATCH WINDOW FRAME COLOR. FILL VOID BETWEEN METAL PANELS WITH BATT INSULATION. CALK EDGES AND SEAMS WITH CLEAR SILICONE SEALANT.
7. PROVIDE CONCRETE PAD AND FENCE AS SPECIFIED.
8. PROVIDE NEW OPENING IN BLOCK WALL; PROVIDE LINTEL IF REQUIRED BY STRUCTURAL ENGINEER. INSTALL SHEET METAL TRIM TO TO FINISH OPENING IN WALL AND PAINT TO MATCH WALL.
9. PROVIDE PAINT GRIP FINISH ON INDOOR EXPOSED DUCTWORK. PREP, PRIME AND PAINT INDOOR EXPOSED DUCTWORK. COLOR SELECTION BY OWNER.



N

PARTIAL FIRST FLOOR MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

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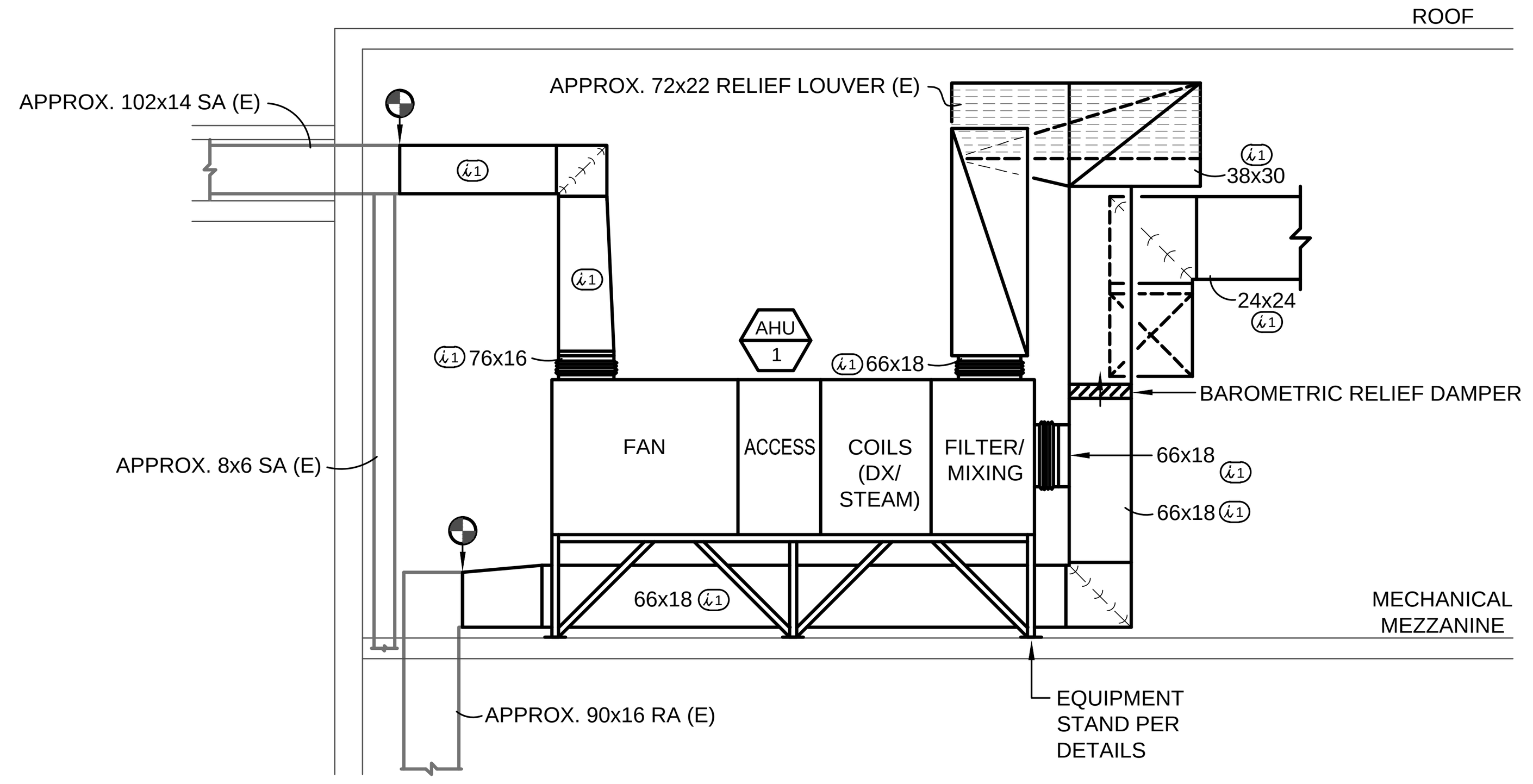
CHECKED BY:	J.R.A.
DATE:	09-25-2017

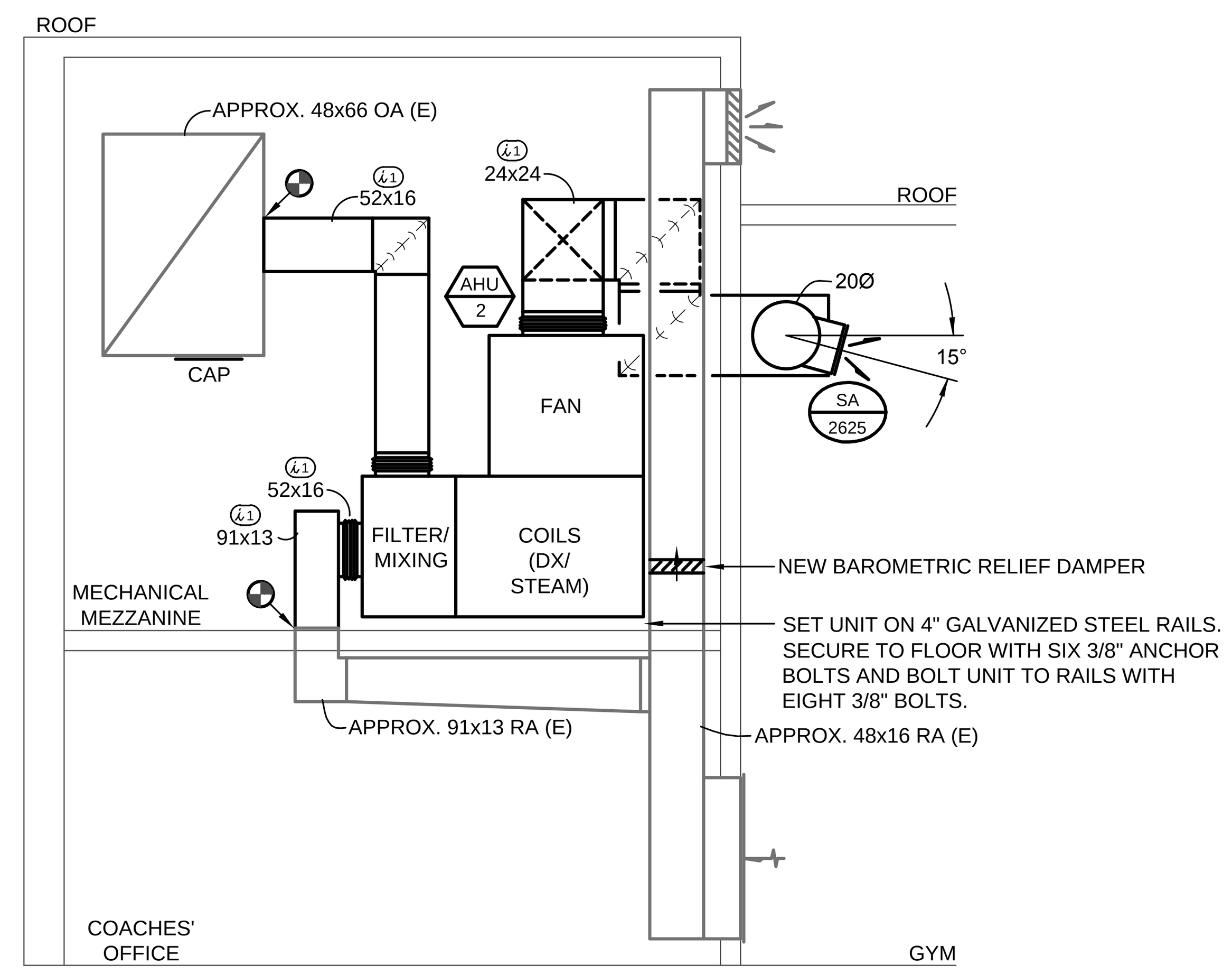
SHEET NO.

M2.1

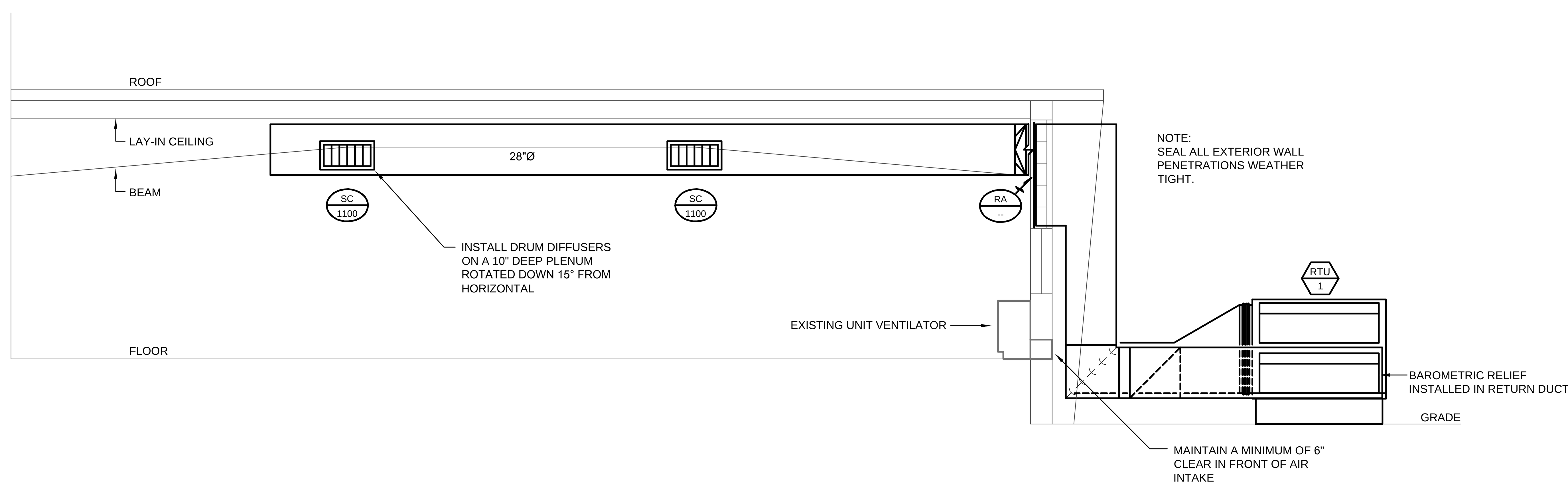
ENLARGED PLANS - MECHANICAL



1 M2.2 AHU-1 ELEVATION
SCALE: 1/4" = 1'-0"



2 M2.2 AHU-2 ELEVATION
SCALE: 1/4" = 1'-0"



3 M2.3 RTU-1 ELEVATION (ALTERNATE BID #1)
SCALE: 1/4" = 1'-0"

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SHEET NO.
M2.2
ENLARGED PLANS - MECHANICAL

ELECTRICAL SUPPLEMENTAL CONDITIONS

1. BEFORE SUBMITTING A PROPOSAL, THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE OF WORK AND FAMILIARIZE THEMSELVES WITH ALL SITE CONDITIONS. ELECTRICAL CONTRACTOR SHALL CAREFULLY EXAMINE THE ENTIRE SET OF CONSTRUCTION DOCUMENTS. SUBMISSION OF A BID WILL ACKNOWLEDGE THE ELECTRICAL CONTRACTOR HAS VISITED THE SITE AND EXAMINED ALL CONSTRUCTION DOCUMENTS AND THE BID INSTRUCTIONS. ALL ELECTRICAL WORK IN THE CONSTRUCTION DOCUMENTS, INCLUDING THAT REQUIRED BY OTHER DIVISIONS, GENERALLY INSTALLED BY THE ELECTRICAL CONTRACTOR, WHERE EQUIPMENT IS FURNISHED BY OTHERS, SHALL BE INCLUDED. IT IS EXPRESSLY UNDERSTOOD THAT THIS PROPOSAL IS BASED ON THE ABOVE REQUIREMENTS AND THAT IT COVERS MATERIAL AND LABOR NECESSARY TO COMPLETE THE SCOPE OF WORK DESCRIBED HEREIN.

2. ELECTRICAL CONTRACTOR SHALL PERFORM WORK IN A SAFE MANNER. COMPLY WITH APPLICABLE OSHA SAFETY GUIDELINES DURING THE COURSE OF PERFORMING THE WORK DESCRIBED IN THESE CONSTRUCTION DOCUMENTS.

3. ELECTRICAL CONTRACTOR SHALL REQUEST CLARIFICATION ON ANY ITEM(S) OF THE CONTRACT DOCUMENTS THAT ARE NOT UNDERSTOOD OR WHERE CONFLICTS MAY EXIST. CLARIFICATIONS MUST BE PRESENTED AS A "REQUEST FOR INFORMATION" (RFI) IN WRITING PRIOR TO SUBMITTING A BID. RFI SHALL BE PRESENTED A MINIMUM OF FIVE (5) WORKING DAYS BEFORE THE BID DATE. OBTAIN THE RFI FORM AT WWW.GANDWENGINEERING.COM/DOCUMENTS. SUBMISSION OF A BID WILL ACKNOWLEDGE THE ELECTRICAL CONTRACTOR UNDERSTANDS THE SCOPE OF WORK, MEANS AND METHODS OF INSTALLATION, EQUIPMENT AND MATERIALS TO BE USED. RFI THAT HAVE NOT BEEN CLARIFIED PRIOR TO BID WILL BE PROVIDED BY THE ELECTRICAL CONTRACTOR, AS DIRECTED BY THE ENGINEER OF RECORD, AND THE MOST STRINGENT MATERIALS, EQUIPMENT, AND SCOPE OF WORK SHALL APPLY. NO ADDITIONAL COMPENSATION WILL BE MADE FOR THE FAILURE OF THE CONTRACTOR TO OBTAIN CLARIFICATIONS PRIOR TO BID.

4. THE ELECTRICAL CONTRACTOR'S BID SHALL BE BASED ON THE SCHEDULED EQUIPMENT, MATERIALS, AND MANUFACTURERS WHICH FORM THE "BASIS OF DESIGN". ALL OTHER EQUIPMENT, MATERIALS, AND MANUFACTURERS ARE CONSIDERED SUBSTITUTIONS. CONTRACTOR PROPOSED SUBSTITUTIONS MUST BE SUBMITTED TO THE ENGINEER OF RECORD FOR REVIEW WITH A COMPLETED SUBSTITUTION REQUEST FORM. OBTAIN THIS FORM AT WWW.GANDWENGINEERING.COM/DOCUMENTS. APPROVALS OF SUBSTITUTIONS ARE CONTINGENT UPON ENGINEER'S REVIEW. THE ELECTRICAL CONTRACTOR SHALL MAKE NO PRIOR ASSUMPTIONS ON SUBSTITUTIONS NOT APPROVED BY THE ENGINEER. IF THE ENGINEER APPROVES A SUBSTITUTION REQUEST, THE ELECTRICAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR ENGINEERING REVISIONS, PHYSICAL SIZE, CAPACITIES, COORDINATION, SUPPLEMENTAL DRAWINGS AND INFORMING OTHER TRADE CONTRACTORS AS TO ANY SPECIFIED ITEM CHANGES RELATED TO THE INSTALLATION. THE ELECTRICAL CONTRACTOR SHALL BEAR AS PART OF THEIR CONTRACT, ANY ADDITIONAL COSTS INCURRED IN THEIR WORK, OR BY THE OTHER CONTRACTORS, AS A RESULT OF THE INSTALLATION FOR OTHER THAN "BASIS OF DESIGN" MATERIALS AND EQUIPMENT.

5. SHOP DRAWINGS SHALL BE SUBMITTED ELECTRONICALLY AS PDF FILES. SHOP DRAWINGS SHALL INCLUDE TRANSMITTAL PAGE(S) INDICATING THE NAME OF THE PROJECT, AND THE NAME, ADDRESS, AND PHONE NUMBER OF THE GENERAL AND ELECTRICAL CONTRACTORS. GENERAL CONTRACTOR AND ELECTRICAL CONTRACTOR SHALL REVIEW SHOP DRAWING SUBMITTALS FOR COMPLIANCE, CONTENT AND COMPLETENESS AND PROVIDE A STAMP WITH THE DATE OF REVIEW AND SIGNATURE OF THE REVIEWER. TRANSMITTAL PAGE SHALL HAVE INDEX WITH SPECIFICATION SECTION AND DESCRIPTION OF SUBMITTED ITEMS. NO EXCEPTIONS WILL BE TAKEN. SHOP DRAWINGS NOT SUBMITTED IN THIS FORMAT WILL BE REJECTED AND WILL NOT CAUSE REASON FOR PROJECT DELAYS. EQUIPMENT SHALL NOT BE ORDERED UNTIL ENGINEER OF RECORD HAS PROCESSED APPLICABLE SHOP DRAWINGS. A MINIMUM OF SEVEN WORKING DAYS WILL BE ALLOWED FOR SUBMITTAL PROCESSING BY THE ENGINEER. REFER TO PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.

6. ELECTRICAL WORK SHALL BE PROVIDED TO COMPLY WITH NFPA 70, THE 2008 NATIONAL ELECTRICAL CODE (NEC), AS WELL AS ALL APPLICABLE LOCAL ORDINANCES, STATE LAWS AND FEDERAL LAWS.

7. ELECTRICAL CONTRACTOR SHALL UNDERSTAND THE PRODUCT, MEANS AND METHODS OF INSTALLATION. ALL CONDUCTORS AND EQUIPMENT SHALL BE APPROVED AND LISTED BY A NRTL (NATIONALLY RECOGNIZED TESTING LABORATORY). LISTED AND LABELED EQUIPMENT SHALL BE INSTALLED AND USED IN ACCORDANCE WITH ANY INSTRUCTIONS INCLUDED IN THE LISTING AND LABELING IN ADDITION TO THE WRITTEN INSTALLATION INSTRUCTIONS AND METHODS OF INSTALLATION AS PUBLISHED BY THE MANUFACTURER OF THE EQUIPMENT OR MATERIAL PROVIDER. THE ELECTRICAL CONTRACTOR SHALL OBTAIN THE INSTALLATION INSTRUCTIONS AND REQUIREMENTS PRIOR TO BID. ALL RFI AND CLARIFICATIONS OF SCOPE PRESENTED DURING CONSTRUCTION WHERE THE CONTRACTOR HAS NOT PREVIOUSLY OBTAINED THIS INFORMATION FOR BIDDING PURPOSES WILL NOT BE CAUSE FOR ADDITIONAL COSTS OR PROJECT DELAY.

8. SYSTEMS ARE SHOWN AS DIAGRAMMATIC AND GIVE THE GENERAL ARRANGEMENT ONLY. EXACT LOCATIONS SHALL BE DETERMINED IN THE FIELD ON THE BASIS OF DETAIL DRAWINGS, REVIEWED DRAWINGS, AND SUPPLEMENTARY INFORMATION. INSTALLATION SHALL PROVIDE FOR OPERATING EFFICIENCY, NEATNESS OF APPEARANCE, EASE OF MAINTENANCE, AND NEC COMPLIANCE. IT IS EXPECTED THAT THE CONTRACTOR WILL PREPARE DIMENSIONED FIELD ERECTION DRAWINGS AND WORK SKETCHES FOR USE BY THEIR INSTALLERS, TO ENSURE PROPER INSTALLATION AND COORDINATION. THE ELECTRICAL CONTRACTOR SHALL TAKE THEIR OWN MEASUREMENTS AT THE BUILDING, AND BE RESPONSIBLE FOR THE CORRECT INTERPRETATION AND USE OF ALL SIZES AND DIMENSIONS. ALL CONTRACTORS SHALL ATTEND COORDINATION MEETINGS TO COORDINATE THE INSTALLATION WITH DUE REGARD FOR EACH OTHER. THE ELECTRICAL CONTRACTOR SHALL KEEP "AS-BUILT" INFORMATION DURING CONSTRUCTION AND FURNISH TO THE OWNER A RECORD SET OF BLACK LINE PRINTS AT THE PROJECT COMPLETION.

9. ALL ELECTRICAL WORK SHALL BE DONE UNDER THE SUPERVISION OF THE ELECTRICAL CONTRACTOR, WHO SHALL PROVIDE A COMPETENT AND SKILLED FOREMAN TO LAYOUT AND SUPERVISE ALL WORK. ALL WORK SHALL BE PROVIDED WITH DUE REGARD FOR THE SPACE REQUIREMENTS OF THE OTHER CONTRACTORS. THE ELECTRICAL CONTRACTOR SHALL REPORT ANY CONFLICTS OR DIFFICULTIES IN REGARD TO THE INSTALLATION IMMEDIATELY TO THE GENERAL CONTRACTOR. WHERE CROWDED LOCATIONS EXIST OR WHERE THERE IS A POSSIBILITY OF CONFLICT BETWEEN TRADES, THE ELECTRICAL CONTRACTOR SHALL MAKE COMPOSITE SUPPLEMENTARY DRAWINGS SHOWING THE EXACT LOCATIONS OF PIPES, CONDUIT, DUCTS AND EQUIPMENT. DRAWINGS SHALL BE BASED ON FIELD MEASUREMENTS, AND AFTER CONSULTATION AND AGREEMENT AMONG THE TRADES, THE GENERAL CONTRACTOR SHALL DIRECT THE SOLUTION BEFORE INSTALLATION OF THE WORK.

10. PRIOR TO BIDDING THIS PROJECT, THE ELECTRICAL CONTRACTOR SHALL CONTACT THE ELECTRICAL UTILITY COMPANY. ELECTRICAL CONTRACTOR SHALL CONFIRM THE PROPOSED ELECTRICAL SERVICE TO THE BUILDING WITH THE UTILITY COMPANY. ELECTRICAL CONTRACTOR SHALL PROVIDE, BUT IS NOT LIMITED TO, CONDUIT, CABLE, CONNECTIONS, GROUNDING EQUIPMENT, METER BASE, POTENTIAL TRANSFORMERS, CURRENT TRANSFORMERS, HARDWARE, CABINETS AND RELATED EQUIPMENT REQUIRED FOR A COMPLETE ELECTRICAL SERVICE FROM THE UTILITY COMPANY SECONDARY TERMINATION TO THE MAIN SERVICE EQUIPMENT BUS. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE SERVICE ENTRANCE ELECTRICAL WORK WITH THE UTILITY COMPANY PRIOR TO THE START OF CONSTRUCTION. SUBMIT SHOP DRAWINGS AND COORDINATE WITH THE UTILITY COMPANY FOR THE INSTALLATION OF THE METER, CURRENT TRANSFORMERS, POWER TRANSFORMERS, METERING CIRCUIT, MAIN SWITCH, AND INCLUDE ALL REQUIREMENTS OF THE UTILITY COMPANY'S RULES AND REGULATIONS IN THE BID THAT ENSURES A COMPLETE, APPROVED ELECTRICAL SERVICE INSTALLATION. SUBMISSION OF A BID ACKNOWLEDGES YOU HAVE PERFORMED THIS CONTRACT REQUIREMENT AND HAVE INCLUDED ALL NECESSARY MATERIALS AND LABOR FOR A COMPLETE AND OPERABLE ELECTRICAL SERVICE.

11. FIELD COORDINATION: THE ELECTRICAL CONTRACTOR SHALL COMPLETELY REVIEW THE ENTIRE SET OF CONSTRUCTION DRAWINGS FOR DETAILS OF CONSTRUCTION PRIOR TO STARTING WORK. ROUGH-IN OF ELECTRICAL CONDUIT, BOXES, SIGNALS, DEVICES, EQUIPMENT AND FIXTURES SHALL BE BASED ON THIS REVIEW. ANY CONFLICTS WITH BUILDING OR SITE ELEMENTS SHALL BE COMMUNICATED THROUGH THE "RFI" PROCESS PRIOR TO START OF CONSTRUCTION. ALL LIGHT SWITCHES SHALL BE LOCATED BEYOND DOOR SWINGS, TRIM, AND ON THE LATCH SIDE OF THE DOOR. COORDINATE ELECTRICAL DEVICE LAYOUT AND FRAMING WITH GENERAL CONTRACTOR PRIOR TO START OF CONSTRUCTION.

12. PROVIDE FIRE STOP AT EACH RATED WALL, FLOOR, AND CEILING-ROOF ASSEMBLY PENETRATION. FIRE STOP SYSTEMS SHALL BE MANUFACTURED BY "3M". PROVIDE IN STRICT COMPLIANCE WITH THE MANUFACTURER'S APPLICATION DETAILS AND INSTRUCTIONS. PROVIDE TAGGED CERTIFICATIONS AT EACH PENETRATION. PROVIDE SHOP DRAWINGS FOR REVIEW WITH THE U.L. LISTING AND TEST CRITERIA. PROVIDE FIRE STOPPING WHERE REQUIRED BY THE AHJ. EQUAL SYSTEMS AS MANUFACTURED BY "SPEC SEAL" OR "HILTI" WILL BE ACCEPTABLE. REFER TO THE PROJECT MANUAL FOR SYSTEMS SPECIFICATIONS.

13. PROVIDE CONDUIT, CABLES, AND ELECTRICAL ASSEMBLY PENETRATIONS OF NON-RATED ASSEMBLIES WITH DRAFT STOPPING, OR SMOKE BARRIER SEALANT SYSTEMS. THROUGH PENETRATION SEALANT SYSTEMS SHALL BE MANUFACTURED BY "3M". PROVIDE IN STRICT COMPLIANCE WITH THE MANUFACTURER'S APPLICATION DETAILS AND INSTRUCTIONS. PROVIDE DRAFT STOPPING OR SMOKE BARRIER SEALANTS TO MEET APPROVAL OF THE AHJ. EQUAL SYSTEMS AS MANUFACTURED BY "SPEC SEAL" OR "HILTI" WILL BE ACCEPTABLE.

14. ELECTRICAL CONTRACTOR SHALL CUT AND PATCH ROOF, FLOORS, WALLS, AND CEILINGS WHERE REQUIRED TO INSTALL NEW ELECTRICAL BOXES, FIXTURES, AND RACEWAY SYSTEMS. SURFACES SHALL BE PATCHED AND LEFT READY FOR FINAL SCHEDULED FINISH. ROOFING WORK SHALL BE PERFORMED BY A QUALIFIED ROOFING CONTRACTOR THAT MAINTAINS THE ROOF WARRANTY. ALL REQUIRED ROOFING WORK DUE TO ELECTRICAL SCOPE OF WORK SHALL BE INCLUDED IN THE ELECTRICAL CONTRACTOR'S BID.

15. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL TEMPORARY POWER AND LIGHTING FOR THE DURATION OF THE PROJECT. ALL TEMPORARY LIGHTING AND POWER SHALL BE PROVIDED TO MEET OSHA STANDARDS, STATE LAW, LOCAL ORDINANCES AND AHJ REQUIREMENTS. REMOVE ALL TEMPORARY POWER AND LIGHTING AT THE PROJECT COMPLETION.

16. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT AND REMOVE ALL EXISTING ELECTRICAL EQUIPMENT OCCURRING IN DEMOLISHED WALLS, FLOORS, ATTICS, CEILING CAVITIES, THE ROOF AND AS OTHERWISE DESCRIBED HEREIN AND AS SHOWN ON THE DRAWINGS. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE GENERAL SCOPE OF DEMOLITION. ELECTRICAL COMPONENTS INCLUDING MOTORS, TEMPERATURE CONTROL DEVICES, LIGHT FIXTURES, PIPING, FITTINGS, CONDUIT, WIRE, HANGERS, BRACKETS, INSULATION, ETC., NOT TO BE RETAINED BY THE OWNER OR TENANT, MUST BE REMOVED FROM THE PREMISES AND BE LEGALLY DISPOSED OF BY THE ELECTRICAL CONTRACTOR. ALL LOOSE ENDS OF SYSTEMS WHERE SUCH ABANDONMENT HAS TERMINATED SHALL BE TRIMMED CLEAR AND APPROPRIATELY CAPPED OR SEALED IN A SAFE AND SECURE MANNER. REMOVAL AND DEMOLITION SHALL BE BY THE RESPECTIVE OR APPROPRIATE TRADES. MAINTAIN BRANCH CIRCUIT CONTINUITY TO ADJOINING AREAS AS NEEDED. THIS INCLUDES, BUT IS NOT LIMITED TO, REMOVAL, MODIFICATION AND REINSTALLATION OF EQUIPMENT AS NEEDED TO SUSTAIN THE EXISTING WORKING CONDITION OF ALL ELECTRICAL EQUIPMENT AND TO RETURN THESE AREAS TO FULL WORKING ORDER AT PROJECT COMPLETION.

17. THIS ELECTRICAL CONTRACTOR SHALL CONFINE THEIR ACTIVITIES TO THE AREA SET ASIDE FOR THEM TO DO THEIR WORK AND SHALL NOT INTERFERE WITH ANY OF THE OWNER'S OR TENANT ACTIVITIES. THE ELECTRICAL CONTRACTOR WILL NOT BE PERMITTED TO STORE MATERIAL EXCEPT WITHIN THE AREAS AS DIRECTED BY THE GENERAL CONTRACTOR. SHOULD ANY DISTURBANCE OF THE EXISTING INSTALLATION BE NECESSARY, THE ELECTRICAL CONTRACTOR SHALL SO INFORM THE OWNER WELL IN ADVANCE OF THE TIME CONTEMPLATED FOR THE DISTURBANCE. AFTER A PLAN ACCEPTABLE TO THE OWNER OR TENANT HAS BEEN FORMULATED AND AGREED TO IN WRITING BY ALL PARTIES, THE GENERAL CONTRACTOR SHALL KEEP IN CLOSE PERSONAL CONTACT WITH THE WORK TO SEE THAT IT IS EXECUTED IN ACCORDANCE WITH THE AGREED-UPON PROCEDURE.

18. CONTINUITY OF ALL BUILDING SERVICES AND UTILITIES SERVING FACILITIES IN THE BUILDING SHALL BE MAINTAINED WITHOUT INTERRUPTION, EXCEPT FOR SUCH A PERIOD OF TIME DESIGNATED BY THE GENERAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL SO ARRANGE AND EXECUTE THEIR WORK SUCH THAT ANY CONNECTIONS, EITHER TEMPORARY OR PERMANENT, OR REARRANGEMENT OF PRESENT EQUIPMENT, CONDUIT, WIRING, ETC., SHALL BE IN SUCH A MANNER AS TO ASSURE FULL RESUMPTION OF SERVICE AT THE TIME DESIGNATED BY THE GENERAL CONTRACTOR. IF TEMPORARY CROSS CONNECTIONS, CONDUIT, WIRING, SWITCHES ETC., ARE NECESSARY TO ASSURE THIS CONTINUITY OF THE BUILDING SERVICE, THE ELECTRICAL CONTRACTOR SHALL PROVIDE THEM TO THE GENERAL CONTRACTOR AT NO ADDITIONAL COST. WHERE USED IN THESE DOCUMENTS, MAINTAIN IS DEFINED AS FOLLOWS: SUSTAIN THE EXISTING WORKING CONDITION OF ELECTRICAL DEVICES AND EQUIPMENT, WHICH INCLUDES, BUT IS NOT LIMITED TO, REVISING, REMOVING AND REINSTALLING TO PERFORM THE NEW WORK INDICATED.

PANELBOARD SCHEDULE

DESIGNATION/I.D.: AC		TYPE OF PANEL: CIRCUIT BREAKER **		MOUNTING: SURFACE	
VOLTAGE: 120 / 208 /3PH-4W		BUS SIZE (AMPS): 600		MAIN SWITCH: M.L.O.	MAIN RATING AIC 10k
POLES: 3PSN	LUGS: STANDARD	TOTAL SPACE REQUIRED: 30		NOTES:	
FEEDER: SEE RISER DIAGRAM		POWER SOURCE:			

CKT #	C/B	LOAD (WATTS) AØ	LOAD (WATTS) BØ	LOAD (WATTS) CØ	CLASS	LOAD DESCRIPTION	LOAD DESCRIPTION	CLASS	LOAD (WATTS) AØ	LOAD (WATTS) BØ	LOAD (WATTS) CØ	C/B	CKT #
1	40/3	3540			M3	AUDITORIUM AHU-1	GYM AHU-2	M3	1800			20/3	2
3	-		3540		M3	--	--	M3		1800		-	4
5	-			3540	M3	--	--	M3			1800	-	6
7	175/3	12591			A3	AUDITORIUM CU-1	GYM CU-2	A3	7191			90/3	8
9	-		12591		A3	--	--	A3		7191		-	10
11	-			12591	A3	--	--	A3			7191	-	12
13	20/1	600			R	GFCI SERVICE RECEPTACLES	ALT. BID #1 CAFÉ RTU	A3	12780			150/3	14
15	20/1				-	SPARE	--	A3		12780		-	16
17	20/1				-	SPARE	--	A3			12780	-	18
19	20/1				-	SPARE	SPARE	-				20/1	20
21	20/1				-	SPARE	SPARE	-				20/1	22
23	20/1				-	SPARE	SPARE	-				20/1	24
25	20/1				-	SPARE	SPARE	-				20/1	26
27	20/1				-	SPARE	SPARE	-				20/1	28
29	20/1				-	SPARE	SPARE	-				20/1	30
TOTALS		16731	16131	16131					21771	21771	21771	TOTALS	

CONNECTED LOAD: (VOLT-AMPERE) 114,306VA

NOTES: * PROVIDE LOCK ON DEVICE
** 10,000 A.I.C. RATING UNLESS OTHERWISE SPECIFIED

CALC. DEMAND LOAD AMPERE: 344A

CLASS: M1=SINGLE PH MOTOR, M3=3PH MOTOR, M2=2PH MOTOR, L=LIGHTING, R=RECEPTACLE, A1=1PH A/C LOAD, A2=2PH A/C LOAD, A3=3PH A/C LOAD, H=HEATING, K=KITCHEN; XF=TRANSFORMER-PANEL; SF=SUB-FEED

ELECTRICAL SYMBOL LIST

OUTLETS

- SINGLE RECEPTACLE (+18")
- DUPLEX RECEPTACLE (+18")
- QUADPLEX RECEPTACLE (+18")
- WP — WEATHERPROOF RECEPTACLE
- GFI TYPE RECEPTACLE
- ISOLATED GROUND TYPE D.R.
- TR — TAMPER RESISTANT RECEPTACLE
- USB — USB CHARGER RECEPTACLE
- SWITCHED RECEPTACLE
- D.R. - TOP HALF SWITCHED
- F — FLUSH FLOOR BOX. SEE PLANS.
- S — SURFACE FLOOR RECEPTACLE. SEE PLANS.
- SPECIAL PURPOSE OUTLET. SEE PLANS.
- VOICE OUTLET BOX
- DATA OUTLET BOX
- VOICE/DATA OUTLET BOX
- J — JUNCTION BOX - WALL MTD.
- J — JUNCTION BOX - CEILING MTD.
- (+XX") — MOUNTING HEIGHT TO CENTERLINE

SWITCHES

- \$x — SINGLE POLE SWITCH (+42")
- \$x3 — 3-WAY SWITCH (+42")
- \$x4 — 4-WAY SWITCH (+42")
- SWITCH WITH PILOT LIGHT
- COMB. SWITCH/DUPLEX RECEPTACLE
- TO\$x — THERMAL OVERLOAD SWITCH
- M\$x — MANUAL MOTOR SWITCH
- L\$x — LOW-VOLTAGE SWITCH
- K\$x — KEYED SINGLE POLE SWITCH (+42")
- K\$x3 — KEYED THREE-WAY SWITCH (+42")
- \$WP — WEATHERPROOF SWITCH
- \$T — TIME SWITCH
- S — MOTION DETECTOR SWITCH
- D — DIMMER SWITCH

FIXTURES

- RECESSED DOWN LIGHTING FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- PENDANT LIGHT FIXTURE
- 2x2 / 2x4 LIGHT FIXTURE
- LIGHT FIXTURE WITH EMERGENCY BATTERY
- EXIT SIGN WITH FACES & ARROWS
- EMERGENCY EGRESS LIGHT W/ BATTERY

FIRE ALARM

- F — MANUAL PULL STATION
- F — AUDIO/VISUAL ALARM HORN (+80")
- H — AUDIO/VISUAL MINI ALARM HORN
- STROBE LIGHT ONLY (+80")
- F S — SMOKE DETECTOR (CEILING MTD.)
- F T — THERMAL DETECTOR (CEILING MTD.)
- F SA — SUPPLY AIR SMOKE DETECTOR
- F RA — RETURN AIR SMOKE DETECTOR w/ SAMPLING TUBE
- F SR — R.T.U./A.H.U. SHUTDOWN RELAY
- F CM — CONTROL MODULE
- F MM — MONITOR MODULE
- F.A.A.P. — FIRE ALARM ANNUCIATOR PANEL
- F.A.C.P. — FIRE ALARM CONTROL PANEL

SERVICE AND EQUIPMENT

- R — RELAY
- N/F DISCONNECT SWITCH
- F — FUSED DISCONNECT SWITCH
- STARTER
- COMBINATION STARTER/DISC. SW.
- PUSHBUTTON OR CONTROL STATION
- PHOTOCONTROL
- MOTOR
- ENCLOSED CIRCUIT BREAKER
- MAIN DISTRIBUTION PANEL
- BRANCH CIRCUIT PANELBOARD
- XX/XX — EQUIPMENT CALLOUT
- X X X — PLAN NOTE SYMBOL
- X — REVISION SYMBOL

CIRCUITRY AND RACEWAYS

- CONCEALED CONDUIT (2 #12 AWG & APPROVED GROUND MIN. - TYP.)
- CONDUIT BELOW FLOOR OR GRADE
- CONDUIT EXPOSED
- GROUND WIRE
- ISOLATED GROUND WIRE
- P1-2,4,6 — HOMERUN: NUMBER OF WIRES, PANEL DESIGNATION, CIRCUIT NUMBERS

ELECTRICAL ABBREVIATIONS

1PH	SINGLE PHASE (LINE-LINE)
3PH	3 PHASE (L1-L2-L3)
3PL	THREE POLE
3PSN	3 POLE SOLID NEUTRAL
(60/50/3)	AMP SIZE/FUSE SIZE/POLES
A	AMPERE(S)
AIC	AMPERES INTERRUPTING CAPACITY
AFCI	ARC FLASH CIRCUIT INTERRUPTER
AFF	ABOVE FINISHED FLOOR
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AL	ALUMINUM
ALT	ALTERNATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BB	BASEBOARD HEATER
BDD	BACK DRAFT DAMPER
BES	BANKING EQUIPMENT SUPPLIER
BFF	BELOW FINISHED FLOOR
BMS	BUILDING MANAGEMENT SYSTEM
CKT	CIRCUIT
CLG	CEILING
C/B	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
COND	CONDUCTOR
C	CONDUIT (SEE RACEWAYS AND CONDUCTORS)
CP	CONTROL PANEL
CU	COPPER
CUH	CABINET UNIT HEATER
CT	CURRENT TRANSFORMER
DC	DIRECT CURRENT
DDC	DIRECT DIGITAL CONTROL
DISC	DISCONNECT
DN	DOWN
DPST	DOUBLE POLE SINGLE THROW
DR	DUPLEX RECEPTACLE
E	EMERGENCY
(E)	EXISTING
EBB	ELECTRIC BASE BOARD
EC	ELECTRICAL WORK CONTRACTOR
EF	EXHAUST FAN
EOL	END LINE RESISTOR
EMS	ENERGY MANAGEMENT SYSTEM
EMT	ELECTRICAL METALLIC TUBING
EUH	ELECTRIC UNIT HEATER
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST	EXISTING
F	FLUORESCENT
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FCU	FAN COIL UNIT
FDR	FEEDER
FPC	FIRE PROTECTION CONTRACTOR
FSD	FIRE/SMOKE DAMPER
FSC	FOOD SERVICE CONSULTANT
FTU	FAN TERMINAL UNIT
FV	FIELD VERIFY
GC	GENERAL WORK CONTRACTOR
GF	GAS FURNACE
GFI	GROUND FAULT INTERRUPTER
GRD	GROUND
GRS	GALVANIZED RIGID STEEL CONDUIT
GWH	GAS WATER HEATER
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HWC	HEAVY WALL RIGID CONDUIT
HWRCP	HOT WATER RETURN CIRCULATING PUMP
HZ	HERTZ
IG	ISOLATED GROUND
IMC	INTERMEDIATE METALLIC CONDUIT
JB	JUNCTION BOX
kVAR	KILOVAR(S)
kVA	KILOVOLT AMPERE(S)
KW	KILOWATT(S)
LCP	LIGHTING CONTROL PANEL
LC	LIGHTING CONTACTOR
MATV	MASTER ANTENNA TELEVISION
MAX	MAXIMUM
MC	MECHANICAL WORK CONTRACTOR
MIC	MICROPHONE
MIN	MINIMUM
MCA	MINIMUM CIRCUIT AMPERES
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MAH	MANHOLE
MH	METAL HALIDE
MLO	MAIN LUGS ONLY
MOCP	MAXIMUM OVERCURRENT PROTECTION
MTD	MOUNTED
NC	NORMALLY CLOSED
NF	NON FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
PC	PLUMBING WORK CONTRACTOR
PF	POWER FACTOR
PH	PHASE
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
REC	RECEPTACLE
RF	RETURN FAN
RL	EXISTING DEVICE RELOCATED
RT	RAIN TIGHT (NEMA 3R)
RTU	ROOF TOP UNIT
SEC	SECONDARY
SD	SMOKE DAMPER
SF	SUPPLY FAN
SW	SWITCH
SWBD	SWITCHBOARD
T	TELEPHONE
TC	TIMECLOCK
TEB	TELEPHONE EQUIPMENT BOARD
TEF	TOILET EXHAUST FAN
TEMP	TEMPORARY
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SYMBOL
TYP	TYPICAL
UH	UNIT HEATER
UNV	UNIVERSAL
UON	UNLESS OTHERWISE NOTED
V	VOLT(S)
VA	VOLTAMP(S)
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY DRIVE
VOIP	VOICE OVER IP
VSD	VARIABLE SPEED DRIVE
W	WATT(S)
W/	WITH
WP	WEATHERPROOF
WSHP	WATER SOURCE HEAT PUMP
WT	WATERTIGHT
XFMR	TRANSFORMER

G&W
ENGINEERING CORPORATION
DYNAMIC PROCESSES ◆ SUSTAINABLE RESULTS
138 WELDON PARKWAY ST. LOUIS, MO 63043
(314) 469-3737 PROJECT NUMBER: 2017-0214.00
WWW.GANDWENGINEERING.COM
MISSOURI STATE CERTIFICATE OF AUTHORITY # 2002008262

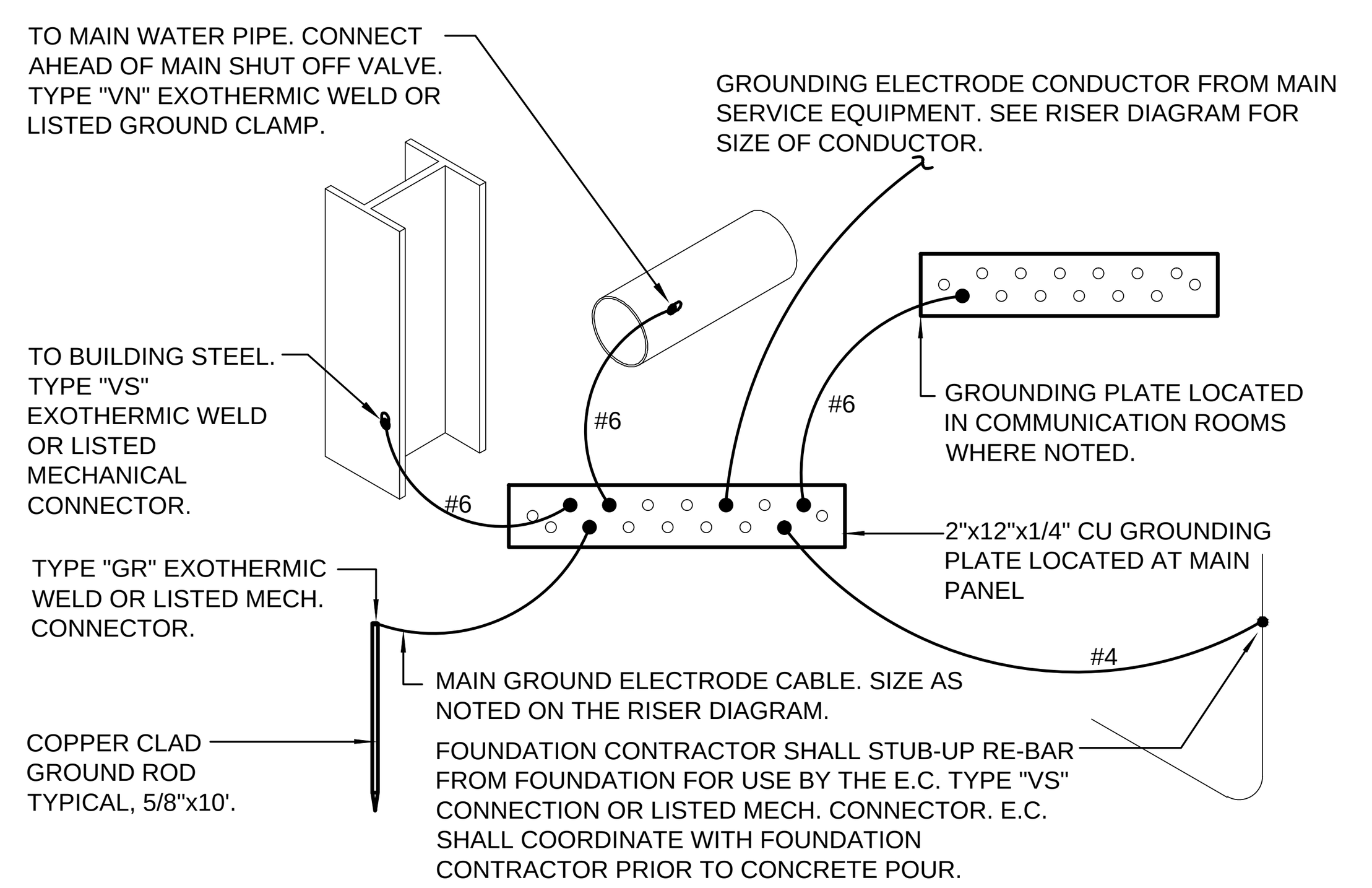
HVAC UPGRADES TO
KIPP: INSPIRE ACADEMY
MIDDLE SCHOOL
1212 N. 22ND STREET
ST. LOUIS, MO 63106

SEAL

REVISIONS

JOB NO:	2017-0214.00
DRAWN BY:	J.R.A.
CHECKED BY:	J.R.A.
DATE:	09-25-2017

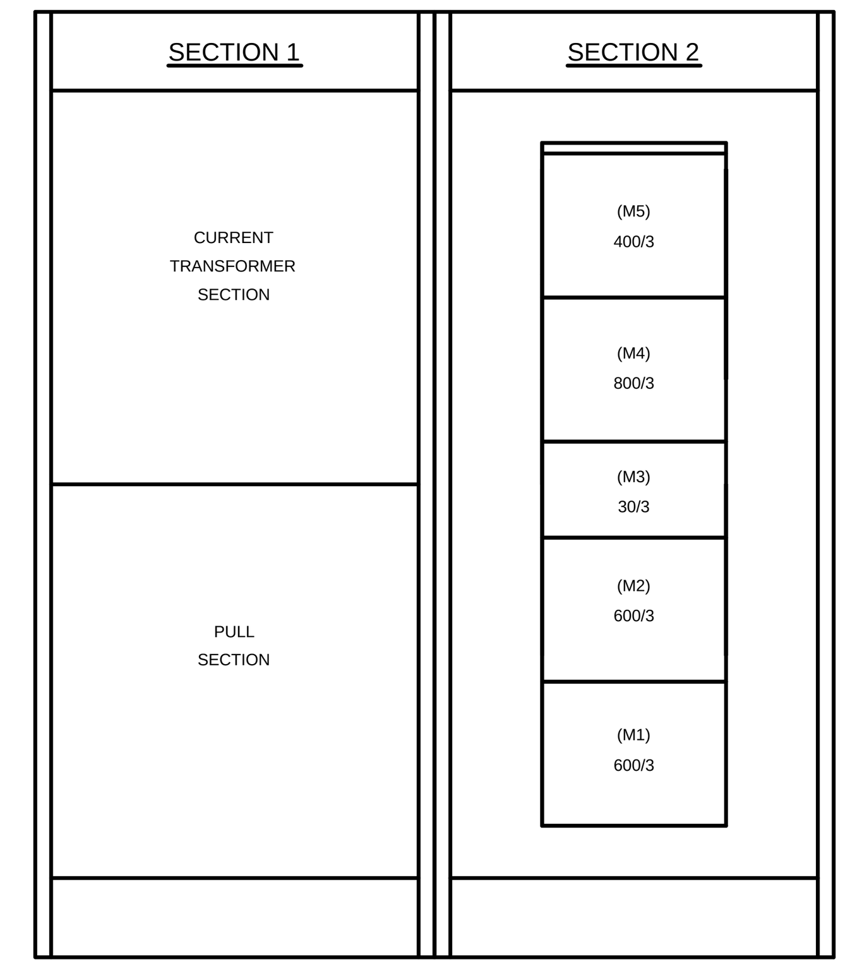
SHEET NO.
E1.0
ELECTRICAL TITLE SHEET



NOTE:

1. EXOTHERMIC WELD DESIGNATION INDICATED ABOVE ARE ERICO "CADWELD". LISTED MECHANICAL CONNECTORS ARE AN ACCEPTABLE ALTERNATE.
2. ALL GROUND BUS CONNECTIONS TO BE MADE WITH 2-HOLE COMPRESSION TYPE CONNECTORS. BUS SHALL BE INSULATED FROM ITS SUPPORT AND SHALL MAINTAIN A 2" SPACING FROM WALL.
3. ALL WIRING SHALL BE COPPER AND TYPE THHN/THWN GREEN INSULATION WHERE REQUIRED..
4. GROUND RODS ARE TO BE LOCATED AT SERVICE ENTRANCE WITH SIZE AS NOTED.
5. ALL GROUNDING AND BONDING SHALL BE INSTALLED IN ACCORDANCE WITH ARTICLE 250 OF NFPA 70 THE "NATIONAL ELECTRICAL CODE".

4 / E1.1 **GROUNDING ELECTRODE SYSTEM**
NO SCALE



"MSB"
120/208V. - 3Ø - 4W. 1600 AMP MAIN SWITCHBOARD W/ C/T SECTION AND LABELED FOR SERVICE ENTRANCE. PROVIDE GROUND BUS. PROVIDE TRANSIENT VOLTAGE SURGE SUPPRESSOR. PANEL SHALL BE SIEMENS, OR EQUAL BY CUTLER HAMMER, SIEMENS, OR SQUARE D.

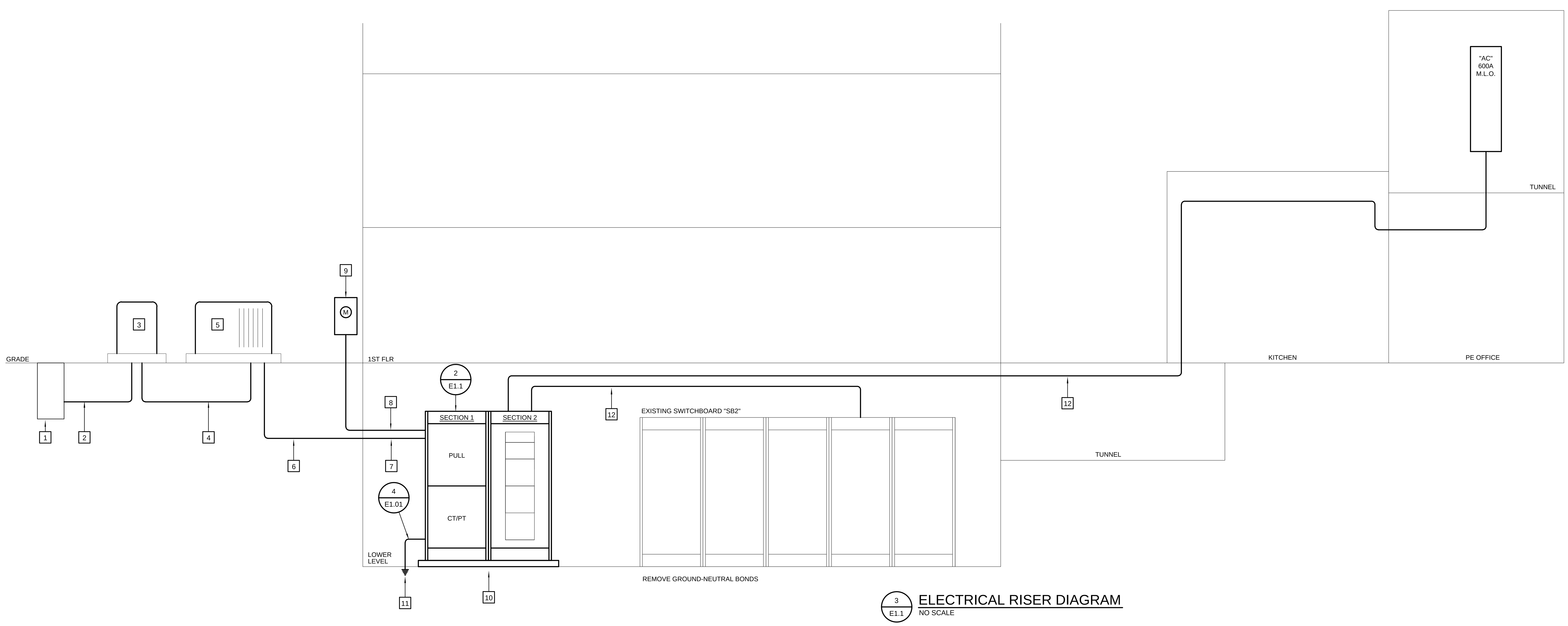
SWITCH SCHEDULE

NO.	CIRCUIT BREAKER SIZE	POLES	LOAD
SECTION 2			
M1	600	3	EXISTING SWITCHBOARD "SB2"
M2	600	3	PANELBOARD "AC"
M3	30	3	TVSS
M4	800	3	PREPARED SPACE
M5	400	3	PREPARED SPACE

2 / E101 **SWITCHBOARD "MSB" DETAIL**
NO SCALE

PLAN NOTES - RISER DIAGRAM

1. EXISTING AMEREN MANHOLE. COORDINATE CORE DRILLING AND CONNECTING NEW PRIMARY CONDUITS.
2. PROVIDE TWO 5" PVC C. WITH PULL STRING ENCASED IN CONCRETE PER AMEREN STANDARDS.
3. NEW AMEREN GEAR SET ON PRECAST PAD. CONTRACTOR SHALL PICKUP PAD FROM AMEREN AND SET PAD PER AMEREN STANDARDS.
4. PROVIDE ONE 5" PVC C. WITH PULL STRING FROM GEAR TO TRANSFORMER.
5. NEW AMEREN PAD MOUNT TRANSFORMER SET ON PRECAST PAD. CONTRACTOR SHALL PICKUP PAD FROM AMEREN AND SET PAD PER AMEREN STANDARDS.
6. INSTALL 1200A SERVICE FEEDERS NOW WITH TWO EMPTY CONDUITS ALLOWING EXPANSION TO 1600A IN FUTURE. (4 - SETS) OF 3 #500 KCMIL ALUM & 1 #350 KCMIL ALUM GRD, 4" PVC C. PROVIDE TWO ADDITIONAL 4" C WITH PULL STRING FOR FUTURE.
7. NEW SECONDARY FEEDERS EXPOSED FROM FOUNDATION TO "MSB" (APPROXIMATELY 8'-0" LENGTH).
8. METER WIRING IN 1 1/2" RIGID METALLIC CONDUIT PER AMEREN STANDARDS.
9. PROVIDE AMEREN APPROVED METER SOCKET. REFER TO AMEREN ELECTRIC SERVICE MANUAL FOR SPECIFICATIONS.
10. PROVIDE A 4" TALL HOUSEKEEPING PAD POURED ON TOP OF THE EXISTING SLAB. PAD SHALL BE 6" LARGER THAN THE EQUIPMENT. SEISMICALLY ANCHOR THE NEW PAD TO THE EXISTING SLAB WITH 1/2" REBAR DOWELS ADHESIVELY ANCHORED INTO THE EXISTING SLAB. DOWELS SHALL BE 12" O.C. AND 6" FROM EDGE OF PAD. PROVIDE A 1/2" REBAR GRID ON 10"x10" SPACING AND HOOK UNDER AN "L" BEND AT TOP OF DOWELS. ANCHOR SWITCHBOARD TO PAD WITH A MINIMUM OF FOUR 1/4" ANCHOR BOLTS PER SECTION WITH 2 1/2" EMBEDMENT.
11. #3/0 CU GRD PER NEC ART 250. REFER TO DETAIL 1/E1.1 FOR GROUNDING ELECTRODE SYSTEM REQUIREMENTS.
12. (2-SETS) OF 4 #350 KCMIL CU & 1 #1 GRD, 3" C.



3 / E1.1 **ELECTRICAL RISER DIAGRAM**
NO SCALE

G&W
ENGINEERING CORPORATION
DYNAMIC PROCESSES ◆ SUSTAINABLE RESULTS
138 WELDON PARKWAY ST. LOUIS, MO 63043
(314) 469-3737 PROJECT NUMBER: 2017-0214.00
WWW.GANDWENGINEERING.COM
MISSOURI STATE CERTIFICATE OF AUTHORITY # 2002018767

HVAC UPGRADES TO
KIPP: INSPIRE ACADEMY
MIDDLE SCHOOL
1212 N. 22ND STREET
ST. LOUIS, MO 63106

SEAL

REVISIONS

JOB NO:	2017-0214.00
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CHECKED BY:	J.R.A.
DATE:	09-25-2017

SHEET NO.
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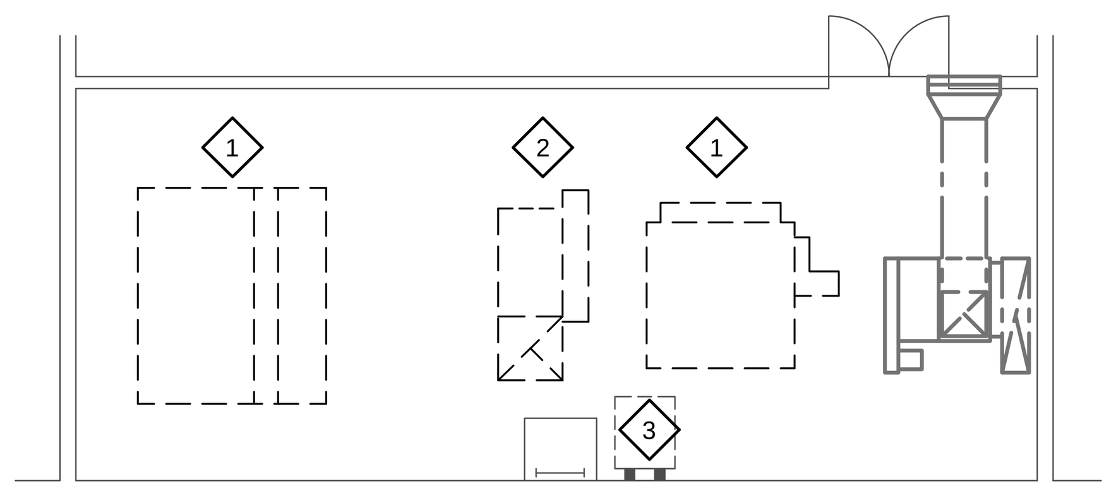
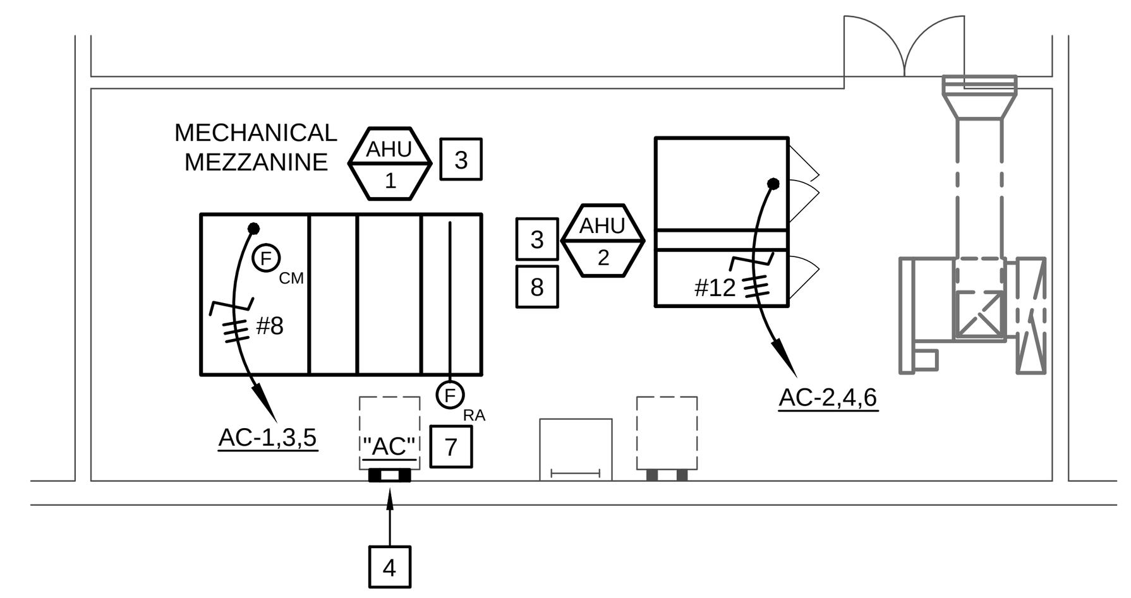
ELECTRICAL SCHEDULES & DETAILS



N
MECHANICAL MEZZANINE DEMOLITION PLAN
SCALE: 1/8" = 1'-0"



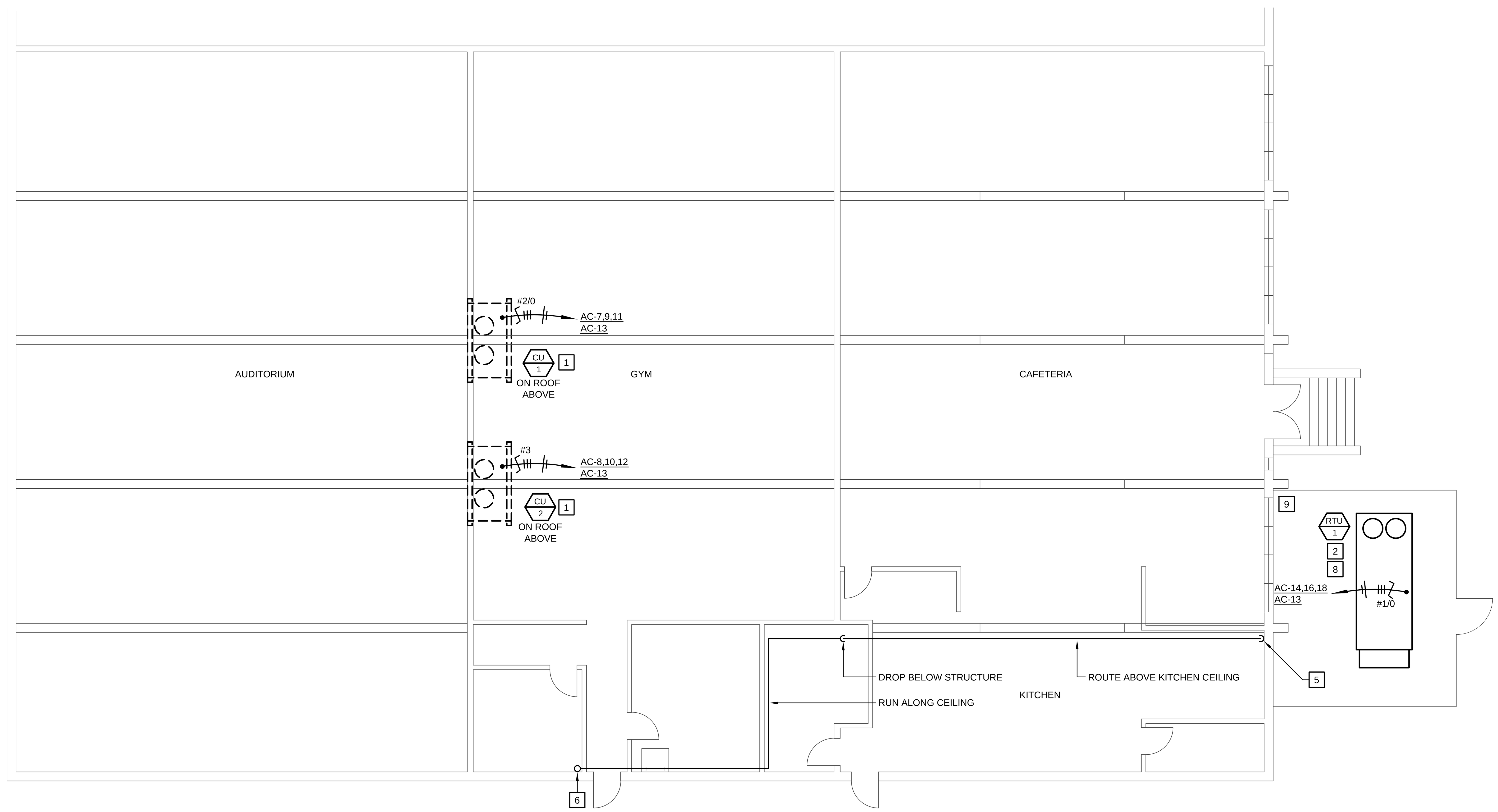
N
MECHANICAL MEZZANINE MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

PLAN NOTES - ELECTRICAL DEMOLITION

1. DISCONNECT POWER FROM EXISTING AIR HANDLING UNIT. REMOVE DISCONNECT, STARTER, WIRING, RACEWAYS, FIRE ALARM SYSTEM DUCT DETECTOR, AND ASSOCIATED ELECTRICAL COMPONENTS.
2. DISCONNECT POWER FROM EXISTING RETURN AIR FAN. REMOVE DISCONNECT, WIRING, RACEWAY AND ASSOCIATED ELECTRICAL COMPONENTS.
3. EXISTING PANELBOARD AND FEEDERS SHALL REMAIN. LABEL EXISTING BREAKERS RENDERED UNUSED AS A RESULT OF THIS PROJECT AS SPARE.

PLAN NOTES - ELECTRICAL

1. CONNECT CONDENSING UNIT COMPLETE AND READY FOR OPERATION. FACTORY DISCONNECT AND GFCI RECEPTACLE PROVIDED WITH UNIT FOR FIELD WIRING. COORDINATE WITH M.C.
2. AILTERNATE BID #1: CONNECT ROOFTOP UNIT COMPLETE AND READY FOR OPERATION. FACTORY DISCONNECT AND GFCI RECEPTACLE PROVIDED WITH UNIT FOR FIELD WIRING. COORDINATE WITH M.C.
3. CONNECT AIR HANDLING UNIT COMPLETE AND READY FOR OPERATION. FACTORY VFD PROVIDED WITH UNIT FOR FIELD WIRING. COORDINATE WITH M.C.
4. NEW PANELBOARD; FIELD LOCATE TO MAINTAIN NEC SERVICE CLEARANCES.
5. CORE DRILL FLOOR SLAB THEN EXTEND PANEL FEEDERS FROM TUNNEL TO ABOVE KITCHEN CEILING. INSTALL VERTICAL CONDUIT ON STANDOFFS TO ALLOW CLEANING OF WALL BEHIND CONDUIT. REMOVE AND REINSTALL CEILING GRID/PADS AS REQUIRED FOR INSTALLATION.
6. CORE DRILL MEZZANINE FLOOR SLAB THEN EXTEND PANEL FEEDERS FROM FIRST FLOOR CEILING TO NEW PANEL ON MEZZANINE.
7. RELOCATE AN EXISTING RETURN AIR DUCT SMOKE DETECTOR TO NEW RETURN AIR DUCT AND PROVIDE INTERLOCK FOR UNIT SHUTDOWN UPON DETECTION OF SMOKE. PROVIDE NEW SAMPLING TUBE. PROVIDE FIRE ALARM SYSTEM PROGRAMMING AND TESTING.
8. UNIT SERVES A SINGLE AREA; RETURN AIR DUCT SMOKE DETECTOR IS NOT REQUIRED.
9. VIDEOFIED SURVEILLANCE AND SECURITY SYSTEM - BY OWNER.



N
PARTIAL FIRST FLOOR MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

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HVAC UPGRADES TO
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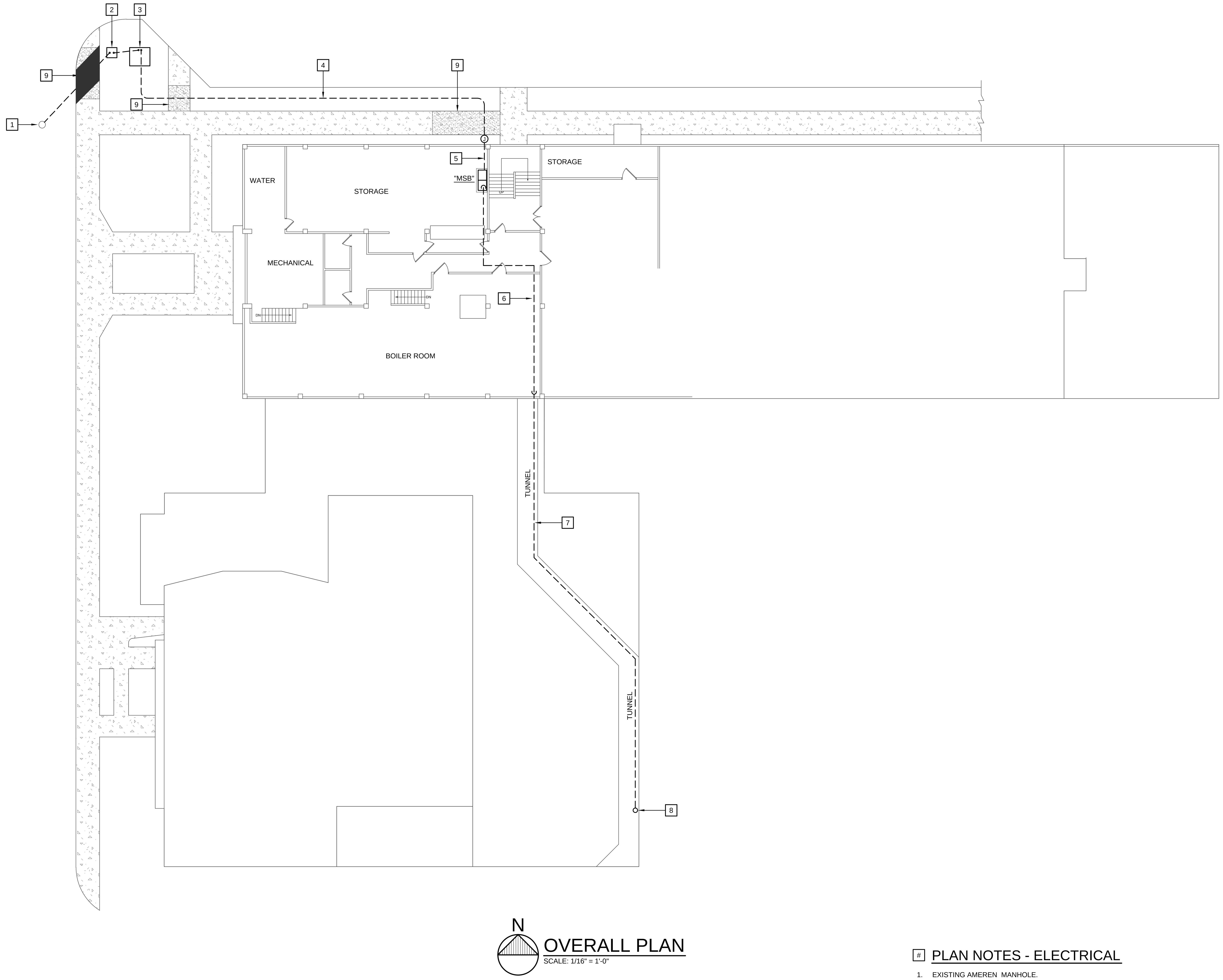
ENLARGED PLANS - ELECTRICAL



OVERALL PLAN

SCALE: 1/16" = 1'-0"

PLAN NOTES - ELECTRICAL

1. EXISTING AMEREN MANHOLE.
2. NEW AMEREN GEAR SET ON PRECAST PAD.
3. NEW AMEREN PAD MOUNT TRANSFORMER SET ON PRECAST PAD.
4. NEW SECONDARY FEEDERS FROM TRANSFORMER TO NEW "MSB".
5. NEW SECONDARY FEEDERS EXPOSED FROM FOUNDATION TO "MSB".
6. ROUTE NEW PANEL "AC" FEEDERS TIGHT TO THE LOWER LEVEL CEILINGS.
7. ROUTE NEW PANEL "AC" FEEDERS THROUGH THE TUNNEL TIGHT TO CEILING OR WALL OF TUNNEL.
8. CORE DRILL FIRST FLOOR SLAB THEN EXTEND FEEDERS UP INTO KITCHEN AREA.
9. SAW CUT AND REMOVE SECTION OF SIDEWALK FOR INSTALLATION OF NEW ELECTRICAL RACEWAYS. BACKFILL THEN POUR NEW SIDEWALK.

NOTE: REFER TO ONE LINE DIAGRAM FOR ADDITIONAL INFORMATION.

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E2.2

OVERALL PLAN - ELECTRICAL