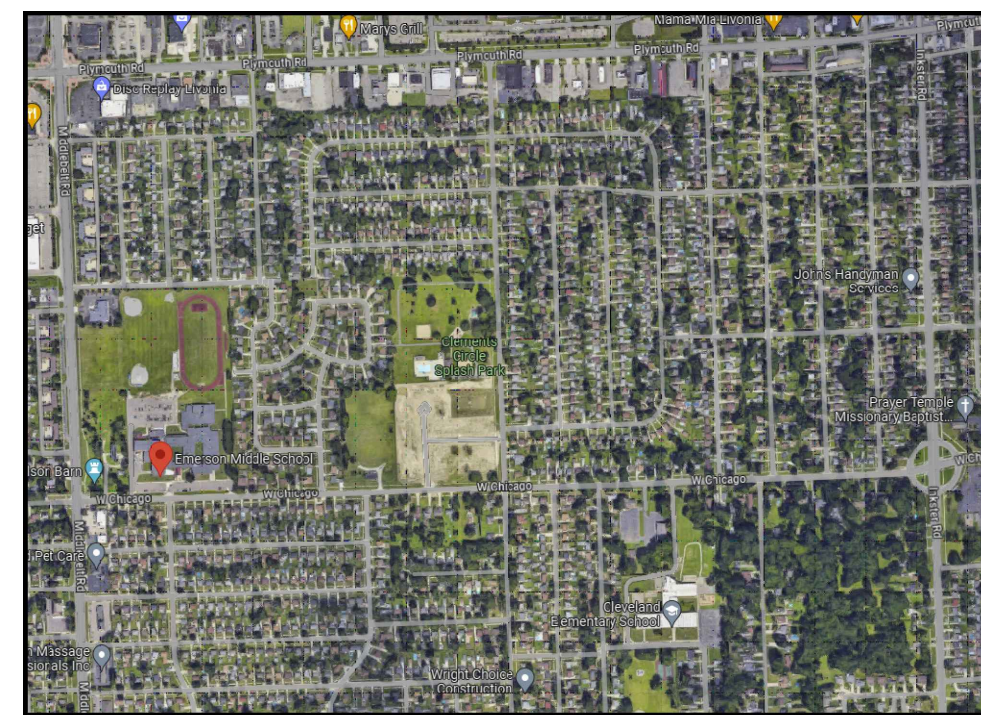


LIVONIA PUBLIC SCHOOLS - EMERSON

2023 WOODSHOP/ART ROOM AC REPLACEMENTS



LOCATION MAP



PROJECT ADDRESS

EMERSON MIDDLE SCHOOL
29100 WEST CHICAGO RD.
LIVONIA, MI 48150

OWNER NAME AND ADDRESS

LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI 48154

MEP ENGINEERS



UNIFIED BUILDING SYSTEMS
ENGINEERING, LLC
UBS PROJECT NO.
001.23.04



PROJECT SHEET INDEX

MECHANICAL DRAWING INDEX

SHEET #	DESCRIPTION
M0.00	MECHANICAL GENERAL INFORMATION
M1.00	MECHANICAL DEMOLITION AND NEW WORK PLANS
M8.00	DETAILS, SCHEDULES, AND TEMPERATURE CONTROLS

ELECTRICAL DRAWING INDEX

SHEET #	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
EP1.00	ELECTRICAL POWER DEMOLITION AND NEW WORK PLANS
E5.00	ELECTRICAL DETAILS, SCHEDULES, AND DIAGRAMS

STRUCTURAL DRAWING INDEX

SHEET #	DESCRIPTION
S100	ROOF FRAMING PLAN

BIDS: 10/16/2023

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	COOLING
CO	CLEAN OUT
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
DB	DRY BULB TEMPERATURE
DEG	DEGREES
DDC	DIRECT DIGITAL CONTROL
DN	DOWN
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FA	FACE AREA (COIL) / FREE AREA (LOUVER)
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FLA	FULL LOAD AMPS
FLR	FLOOR
PFM	FEET PER MINUTE
FFD	FUNNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FS	FLOOR SINK
FT	FEET
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HO	HUB OUTLET
HP	HORSEPOWER

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
HR	HOUR
HTG	HEATING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
INST	INSTALLED
INV	INVERT
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS/HR	POUNDS PER HOUR
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOP	MAXIMUM OVER-CURRENT PROTECTION
N.C.	NOISE CRITERIA
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	NOMINAL
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER / CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
ORS	OVERFLOW ROOF SUMP
OS&Y	OUTSIDE SCREW AND YOKE
PD	PRESSURE DROP (FEET OF WATER)
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE
PT	PRESSURE / TEMPERATURE PORT
RA	RETURN AIR
RH	RELATIVE HUMIDITY
REQD	REQUIRED
RELA	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
SA	SUPPLY AIR
SH	SHOWER
SP	STATIC PRESSURE
SqFt / SF	SQUARE FOOT/SQUARE FEET
SS	SERVICE SINK
TC	TEMPERATURE CONTROL
T & P	TEMPERATURE AND PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
UR	URINAL
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VTR	VENT THRU ROOF
W	WASTE
W&V	WASTE AND VENT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WG	WATER GAUGE
WH	WALL HYDRANT

ABBREV.	DESCRIPTION
	PIPE ELBOW UP
	PIPE ELBOW DOWN
	PIPE TEE DOWN
	DIRECTION OF FLOW
	UNION
	STRAINER
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	FLEXIBLE CONNECTION
	PIPE ANCHOR
	PIPE GUIDE
	PIPE CAP OR PLUG
	ISOLATION VALVE
	CIRCULATING PUMP
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	ANGLE VALVE
	CHECK VALVE (SWING)
	CHECK VALVE (SPRING)
	PLUG VALVE
	NEEDLE VALVE
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)
	PRESSURE REGULATING VALVE
	SOLENOID VALVE
	CONTROL VALVE (2-WAY / 3-WAY)
	CENTRIFUGAL FAN
	AUTOMATIC GAS SHUT-OFF VALVE
	TRAP (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)
	ROOF SUMP
	CLEAN OUT (IN FLOOR)
	CLEAN OUT (IN LINE)
	CLEAN OUT (WALL)
	BACKFLOW PREVENTER
	WATER METER ASSEMBLY
	HOSE BIBB, WALL HYDRANT
	DIRECTION OF PIPE PITCH
	SPRINKLER HEAD (UPRIGHT)
	SPRINKLER HEAD (SIDEWALL)
	FLOW SWITCH
	SIAMESE CONNECTION (YARD)
	SIAMESE CONNECTION (WALL MOUNTED)
	FIRE HYDRANT
	FLOW MEASURING DEVICE
	BALANCING VALVE
	COMBINATION FLOW MEASURING AND BALANCING DEVICE
	AUTOMATIC AIR VALVE
	MANUAL AIR VALVE

MECHANICAL PIPING SYMBOLS

MECHANICAL SYMBOLS

ABBREV.	DESCRIPTION
	RECTANGULAR TAKE-OFF (SINGLE LINE)
	RECTANGULAR TAKE-OFF (DOUBLE LINE)
	ROUND TAKE-OFF (SINGLE LINE)
	ROUND TAKE-OFF (DOUBLE LINE)
	SPIN-IN FITTING (WITH VOLUME DAMPER)
	ELBOW (WITH TURNING VANES)
	RADIUS RECTANGULAR ELBOW
	RADIUS ROUND ELBOW
	RECTANGULAR ELBOW UP
	ROUND ELBOW UP
	RECTANGULAR ELBOW DOWN
	ROUND ELBOW DOWN
	CONCENTRIC TRANSITION (DOUBLE LINE)
	CONCENTRIC TRANSITION (SINGLE LINE)
	ECCENTRIC TRANSITION (DOUBLE LINE)
	ECCENTRIC TRANSITION (SINGLE LINE)
	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)
	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)
	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)
	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER
	SUPPLY DIFFUSER
	LINEAR SLOT DIFFUSER
	RETURN OR EXHAUST GRILLE
	TRANSFER GRILLE
	CROSS SECTION OF SUPPLY AIR DUCT
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT
	EXISTING FIRE DAMPER (HORIZONTAL)
	NEW FIRE DAMPER (HORIZONTAL)
	EXISTING FIRE DAMPER (VERTICAL)
	NEW FIRE DAMPER (VERTICAL)
	EXISTING SMOKE DAMPER
	NEW SMOKE DAMPER
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
	NEW COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	NEW COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	VOLUME DAMPER (MANUALLY ADJUSTABLE)
	MOTORIZED DAMPER
	SMOKE DETECTOR
	CO2 SENSOR
	THERMOSTAT OR TEMPERATURE SENSOR
	HUMIDISTAT OR HUMIDITY SENSOR
	RETURN OR EXHAUST / SUPPLY AIR FLOW

PIPING LEGEND

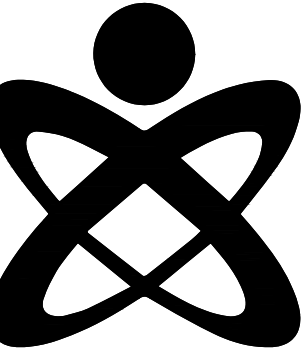
ABBREV.	DESCRIPTION
—CA—	COMPRESSED AIR PIPING
—CD—	CONDENSATE DRAIN PIPING
—DT—	DRAIN TILE
—F—	FIRE PROTECTION PIPING
—FOR—	FUEL OIL RETURN PIPING
—FOS—	FUEL OIL SUPPLY PIPING
—G—	NATURAL GAS PIPING
—BCW—	BOOSTED-DOMESTIC COLD WATER PIPING
—BHW—	BOOSTED-DOMESTIC HOT WATER PIPING
—CW—	DOMESTIC COLD WATER PIPING
—NPCW—	NON POTABLE COLD WATER PIPING
—TW—	TEMPERED WATER PIPING
—HW—	DOMESTIC HOT WATER PIPING
—HW(140°F)—	DOMESTIC 140°F HOT WATER PIPING
—HWR—	DOMESTIC HOT WATER RETURN PIPING
—SAN—	SANITARY WASTE PIPING
—PSAN—	PUMPED SANITARY PIPING
—V—	VENT PIPING
—ST—	STORM SEWER PIPING
—PST—	PUMPED STORM PIPING
—RC—	RAIN CONDUCTOR PIPING
—ORC—	OVERFLOW RAIN CONDUCTOR PIPING
—CHWR—	CHILLED WATER RETURN PIPING
—CHWS—	CHILLED WATER SUPPLY PIPING
—CWR—	CONDENSER WATER RETURN PIPING
—CWS—	CONDENSER WATER SUPPLY PIPING
—HHWR—	HEATING HOT WATER RETURN PIPING
—HHWS—	HEATING HOT WATER SUPPLY PIPING
—HPLR—	HEAT PUMP LOOP RETURN PIPING
—HPLS—	HEAT PUMP LOOP SUPPLY PIPING
—RL—	REFRIGERANT LIQUID PIPING
—RS—	REFRIGERANT SUCTION PIPING
—HGB—	HOT GAS BY-PASS PIPING
—GXHR—	GEO HEAT EXCHANGE RETURN
—GXHS—	GEO HEAT EXCHANGE SUPPLY
—STM—	STEAM PIPING
—HPS—	HIGH PRESSURE STEAM PIPING
—LPS—	LOW PRESSURE STEAM PIPING
—CR—	STEAM CONDENSATE RETURN PIPING
—PCR—	PUMPED STEAM CONDENSATE RETURN PIPING
—LPC—	LOW PRESSURE CONDENSATE PIPING
—HPC—	HIGH PRESSURE CONDENSATE PIPING
—MA—	MEDICAL AIR PIPING
—N—	NITROGEN GAS PIPING
—O2—	OXYGEN GAS PIPING
—VAC—	VACUUM PIPING

DRAWING INDEX	
SHT. NO.	DESCRIPTION
M0.00	MECHANICAL GENERAL INFORMATION
M1.00	MECHANICAL NEW WORK PLAN
M8.00	MECHANICAL DETAILS, SCHEDULES, AND TEMPERATURE CONTROLS

DRAWING NOTATION

SYMBOL	DESCRIPTION
	NEW WORK KEY NOTE NO. 1
	DEMOLITION KEY NOTE NO. 1
AHU-1	EQUIPMENT TAG
S-1 12x12 150-2	AIR TERMINAL TAG: IE: DIFFUSER TYPE = S-1 NECK SIZE = 12x12 CFM = 150 (TYPICAL FOR 2)
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	POINT OF NEW CONNECTION

APPLICABLE CODES AND REGULATIONS	
YEAR	CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
2018	MICHIGAN PLUMBING CODE
2015	MICHIGAN MECHANICAL CODE
2015	MICHIGAN UNIFORM ENERGY CODE
2015	INTERNATIONAL FUEL GAS CODE
2012	NFPA 101 WITH BFS AMENDMENTS

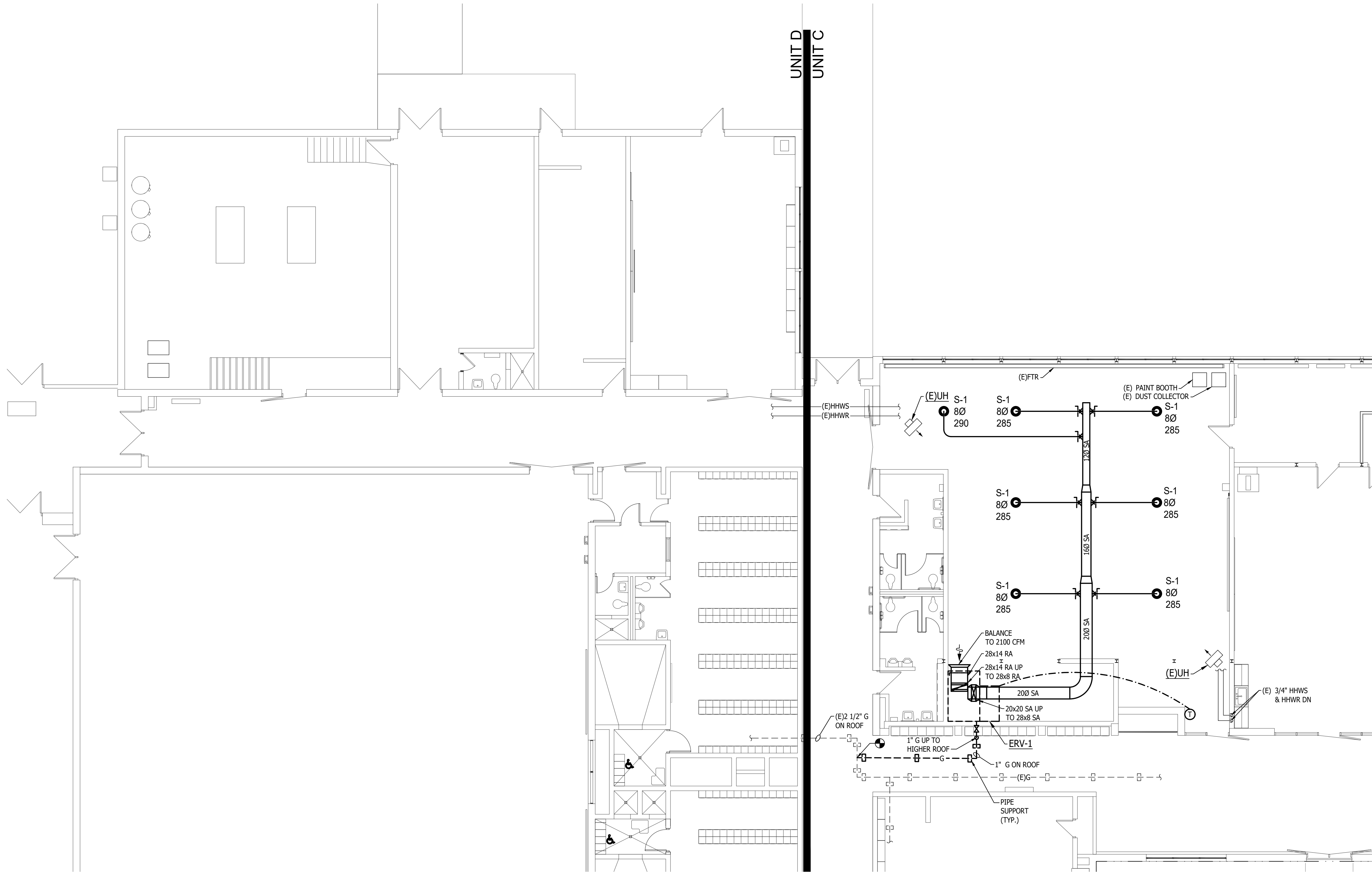


CLIENT:
LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI 48154

PROJECT:
**EMERSON ELEMENTARY
WOODSHOP AC
REPLACEMENT**

HVAC GENERAL NOTES	
A	THESE DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE GENERAL EXTENT OF THE WORK TO BE PERFORMED. PROVIDE AND EXECUTE ALL HVAC SYSTEMS PER ENGINEER'S SPECIFICATION, AND LOCAL APPLICABLE CODES INCLUDING AMENDMENTS, BULLETINS, ETC. AS WELL AS THE STANDARDS OF INSTALLATION AND EQUIPMENT ESTABLISHED FOR THE BUILDINGS, AND REQUIREMENTS OF THE OWNER.
B	EXCEPT FOR CHANGES AS MAY BE SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD, IN ACCORDANCE WITH ALTERNATES OF OPTIONS AS STATED HEREINAFTER, ALL WORK MUST BE IN FULL ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS. SYSTEMS ARE TO BE COMPLETE, EFFICIENT, AND SATISFACTORY OPERATION WHEN PROJECT IS DELIVERED TO THE OWNER.
C	THE CONTRACTOR AND EACH SUBCONTRACTOR COVENANTS AND AGREES TO IDENTIFY, DEFEND, AND HOLD HARMLESS THE CONSULTING ENGINEER, ARCHITECT, AND OWNER FROM AND AGAINST ANY LIABILITY, LOSS, DAMAGE, OR EXPENSE INCLUDING ATTORNEYS ARISING FROM A FAILURE OR ALLEGED FAILURE ON THE PART OF THE CONTRACTOR, SUBCONTRACTORS, AND THEIR AGENTS/EMPLOYEES PROPERLY TO DISCHARGE THE OBLIGATIONS ASSUMED BY HIM/HER IN THE PERFORMANCE OF THE WORK, INCLUDING ANY ACT OR OMISSION ALLEGEDLY RESULTING IN DEATH, PERSONAL INJURY, PROPERTY DAMAGE, OR IMPROPER CONSTRUCTION PROTOCOL.
D	CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVAL FROM GOVERNING AUTHORITIES AND FILE NECESSARY FORMS, PAY ALL INSPECTION FEES.
E	CONTRACTOR TO EXAMINE ALL ADJOINING WORK BEFORE COMMENCEMENT OF HIS/HER SCOPE OF WORK. REPORT ANY DISCREPANCIES TO THE CONSTRUCTION MANAGER FOR REVIEW AND APPROVAL. COORDINATE ALL WORK WITH OTHER TRADES TO ENSURE THAT INSTALLATION IS MADE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
F	PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT, DUCTWORK/PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
G	CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. ALL PIPING CONNECTIONS SHALL BE MINIMUM 3/4" UNLESS NOTED OTHERWISE.
H	FURNISH ADEQUATE LIABILITY INSURANCE AND BONDING DOCUMENTS AS REQUIRED BY THE OWNER.
J	SUPPORT ALL ANCHORS SECURED TO THE BOTTOM OF FLOOR SLABS SHALL BE DROP-IN OR SLEEVE ANCHOR TYPE. ALL SUPPORTING STEEL SHALL BE PROVIDED BY THE CONTRACTOR.
K	DUCTWORK/PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
L	THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL FOR THE PROPER INSTALLATION OF MECHANICAL SYSTEMS.
M	BRANCH DUCTWORK TO GRILLES, REGISTERS, AND DIFFUSERS SHALL BE THE SAME SIZE AS THE TERMINAL DEVICE NECK SIZE WHERE NO DUCT SIZE IS INDICATED.

NEW WORK KEYED NOTES	
1	XXX
2	XXX



MECHANICAL NEW WORK PLAN
SCALE: 1/8" = 1'-0"

10/16/2023

ISSUANCE:
BIDS

DRAWN: RDD
APPROVED: PPM

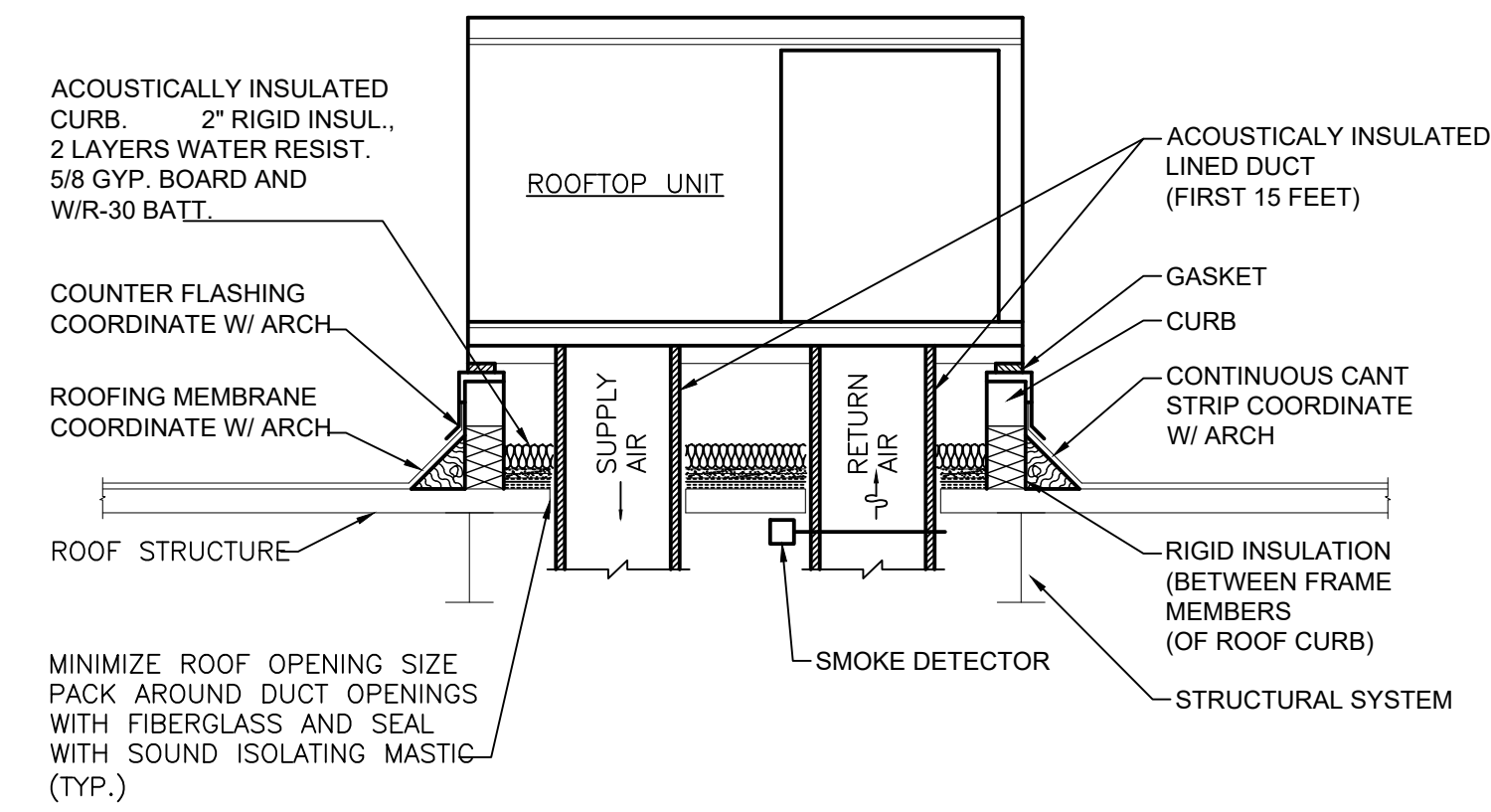
**MECHANICAL NEW
WORK PLAN**

M1.00

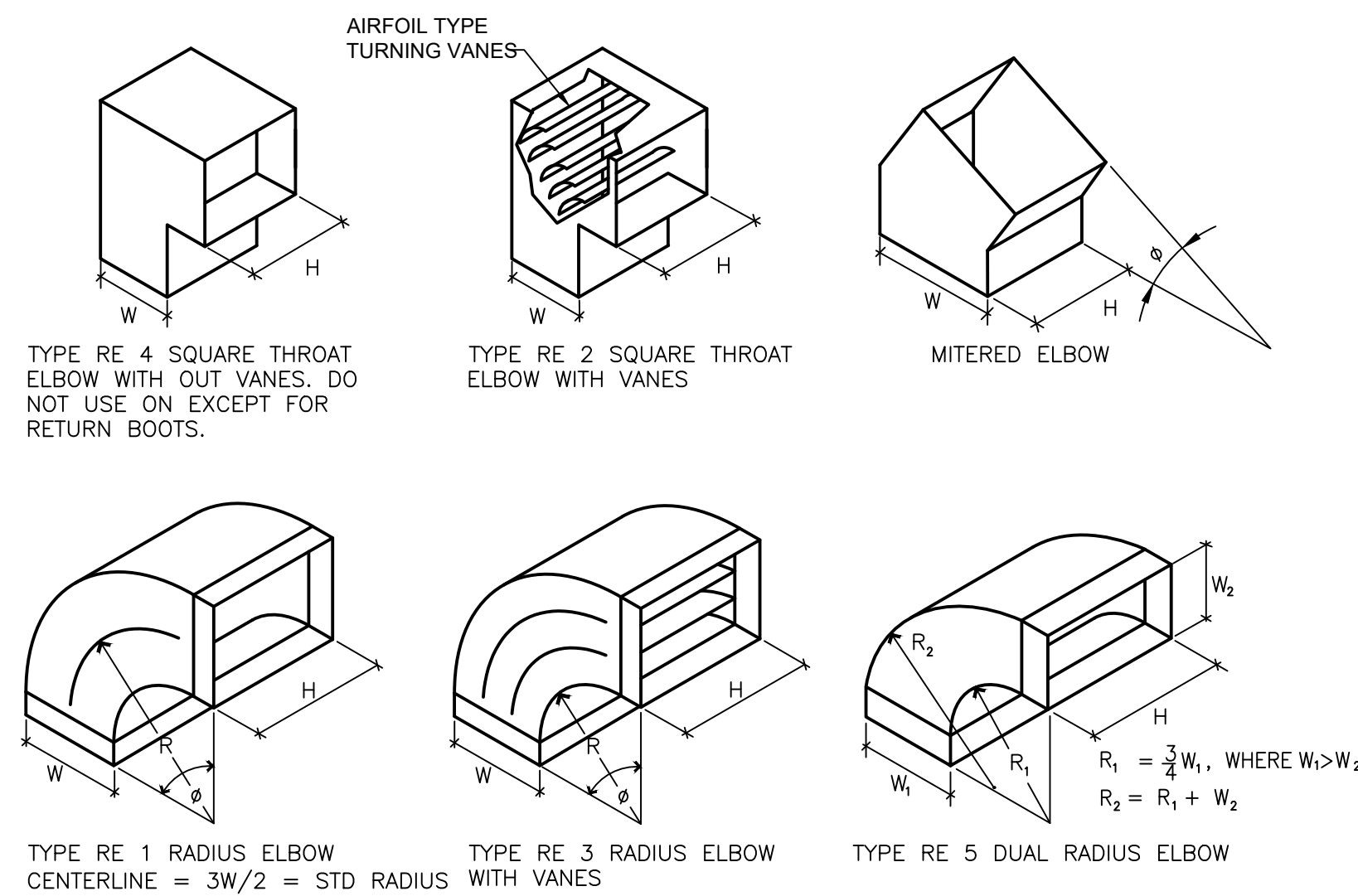


ENERGY RECOVERY UNIT WITH COOLING, GAS HEAT AND HOT GAS REHEAT SEQUENCE OF OPERATION
NOTE: ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

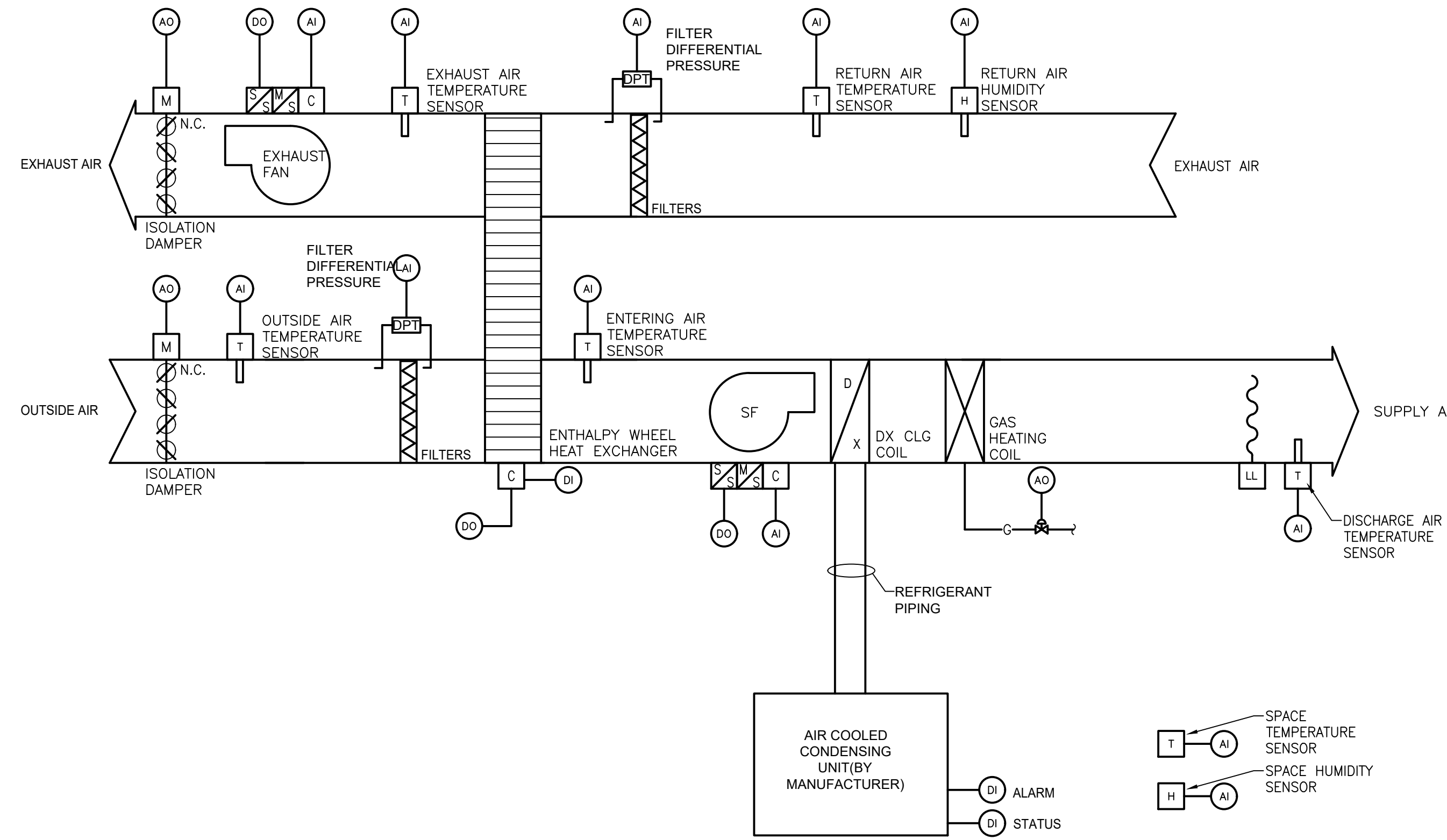
- WITH THE SUPPLY AND EXHAUST FAN'S HAND/OFF/AUTO SWITCHES IN THE "AUTO" POSITION, THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED WITH THE DDC/BAS SYSTEM OCCUPANCY SCHEDULE.
- FAN CONTROL: THE SUPPLY AND EXHAUST FANS WILL BE STARTED ACCORDING TO OCCUPIED AND UNOCCUPIED PROGRAMMED SCHEDULES. DURING OCCUPIED PERIODS THE UNIT SUPPLY AND EXHAUST FANS OPERATE CONTINUOUSLY. DURING UNOCCUPIED PERIODS THE FANS SHALL NOT OPERATE.
- ROOM TEMPERATURE AND HUMIDITY: THE DDC/BAS SYSTEM SHALL AVERAGE ALL OF THE FLOOR TEMPERATURE AND HUMIDITY SENSORS TO DETERMINE CONTROL SETPOINT.
- ENERGY RECOVERY WHEEL ECONOMIZER: THE ECONOMIZER WILL BE LOCKED OUT WHEN THE OUTSIDE AIR TEMPERATURE IS LESS THAN 40°F (ADJUSTABLE). THE ECONOMIZER IS ONLY ACTIVE WHEN THE OUTSIDE AIR TEMPERATURE IS LESS THAN THE ROOM TEMPERATURE SETPOINT. THE HEAT WHEEL VFD MODULATES THE WHEEL SPEED IN ORDER TO MAINTAIN THE ROOM TEMPERATURE SETPOINT.
- ENERGY RECOVERY WHEEL DEFROST: THE ENERGY RECOVERY WHEEL VFD MODULATED THE WHEEL SPEED IN ORDER TO MAINTAIN THE EXHAUST AIR TEMPERATURE ABOVE THE DEFROST SET POINT OF 20°F.
- ENERGY RECOVERY WHEEL ENERGY RECOVERY: WHEN THE DEFROST AND ECONOMIZER FUNCTIONS ARE INACTIVE, THE ENERGY RECOVERY WHEEL VFD MODULATES THE WHEEL TO 100% SPEED.
- HEATING TEMPERATURE CONTROL: WHEN THE ROOM TEMPERATURE FALLS BELOW ITS SETPOINT THE DDC CONTROLLER SHALL MODULATE THE GAS BURNER TO MAINTAIN THE ROOM TEMPERATURE SETPOINT (72 DEGREES).
- COOLING TEMPERATURE CONTROL: WHEN THE ROOM TEMPERATURE RISES ABOVE ITS SETPOINT, DDC SHALL ACTIVATE STAGES OF DX COOLING TO MAINTAIN THE ROOM TEMPERATURE SETPOINT (74 DEGREES).
- WHEN THE SUPPLY FAN IS DE-ENERGIZED, THE OUTSIDE AIR AND EXHAUST DAMPERS SHALL BE CLOSED.
- THE DDC SYSTEM SHALL MONITOR THE FOLLOWING POINTS: OUTDOOR AIR TEMPERATURE, ENTERING AIR TEMPERATURE, EXHAUST AIR TEMPERATURE, RETURN AIR TEMPERATURE, RETURN AIR HUMIDITY, DISCHARGE AIR TEMPERATURE, FILTER PRESSURE DIFFERENTIAL, SUPPLY FAN STATUS, EXHAUST FAN STATUS, REFRIGERATION CIRCUIT STATUS, DX REHEAT STATUS, GAS VALVE POSITION, HEAT RECOVERY WHEEL SPEED, AND ALL ALARMS.



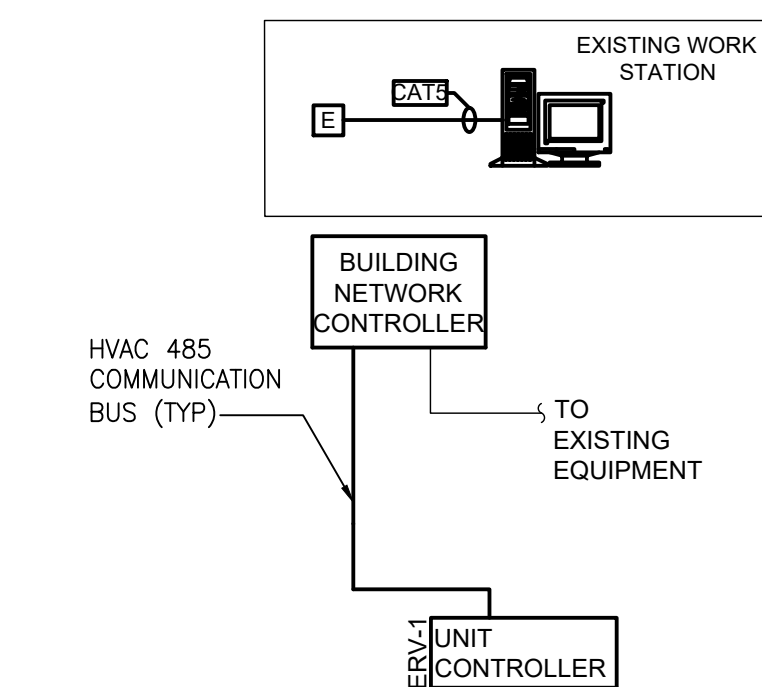
ROOFTOP UNIT - CURB MOUNTING DETAIL
NO SCALE



RECTANGULAR SHEET-METAL ELBOWS
NO SCALE



ENERGY RECOVERY WITH GAS HEAT CONTROL DIAGRAM
NO SCALE



PACKAGED ROOFTOP ENERGY RECOVERY UNIT SCHEDULE - NATURAL GAS/DX																																															
UNIT ID	SUPPLY FAN						EXHAUST FAN						ENTHALPY WHEEL - SUMMER						ENTHALPY WHEEL - WINTER						POST ENTHALPY WHEEL CONDITIONING						GAS HEAT			ELECTRICAL			UNIT WEIGHT (LBS)	CURB HEIGHT (IN)	MODEL NO.	REMARKS							
	ESP (IN WG)	FLOW (CFM)	FAN TYPE	DRIVE TYPE	BHP	HP	ESP (IN WG)	FLOW (CFM)	FAN TYPE	DRIVE TYPE	BHP	HP	OUTSIDE AIR				EXHAUST AIR				DX COOLING COIL								INPUT (MBH)	OUTPUT (MBH)	NO. STAGES	MOCP	MCA	FLA	VOLTS	PHASE											
													EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	EDB (°F)	RH	LDB (°F)	LWB (°F)	EDB (°F)	LDB (°F)	EDB (°F)	RH	LDB (°F)	TOTAL CAPACITY (MBH)	SENSIBLE CAPACITY (MBH)	EDB (°F)													EWB (°F)	LDB (°F)	LWB (°F)	APD (IN WG)	MIN. EFFICIENCY (EER/IEER)	REFRIGERANT TYPE	
ERV-1	1.0	1,900	SWSI	DIRECT	2.0	4.0	1.0	2,100	SWSI	DIRECT	1.30	4.0	95.0	75.0	79.5	66.9	75.0	62.1	81.5	68.2	-10.0	50.3	70.0	10%	41.2	70.3	49.8	77.8	65.9	53.8	53.7	0.43	11.3/19.3	R-410A	MERV 13	120.0	96.0	MODULATING 5:1	50	42.3	38.5	208	3	1652	18	DP5006A	

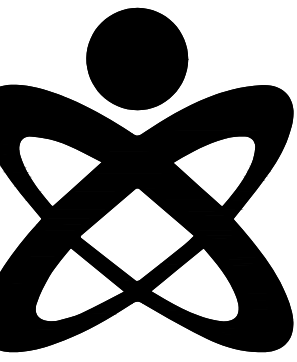
- NOTES:
- MODEL NUMBER IS DAIKIN.
 - DUAL INPUT ENTHALPY CONTROL ECONOMIZER.
 - 2" PLEATED MEDIA ENERGY RECOVERY WHEEL FILTERS.
 - DISCONNECT SWITCH.
 - 115V SERVICE RECEPTACLE.
 - REFRIGERATION COMPRESSORS SHALL BE VARIABLE SPEED OR DIGITAL.
 - ALL FANS SHALL BE ECM.
 - PROVIDE WITH REFRIGERATION CONTROLS ONLY. UNIT DDC CONTROLLER TO BE AUTOMATED LOGIC DDC FIELD INSTALLED BY TCC.
 - MODULATING GAS HEAT.

10/16/2023

ISSUANCE:
BIDS

DRAWN: TDD
APPROVED: MPH

MECHANICAL DETAILS,
SCHEDULES, AND
TEMPERATURE
CONTROLS



CLIENT:
LIVONIA PUBLIC SCHOOLS

15125 FARMINGTON RD.
LIVONIA, MI 48154

PROJECT:
**EMERSON ELEMENTARY
WOODSHOP AC
REPLACEMENT**

LIGHTING SYMBOL LIST

SYMBOL	DESCRIPTION
	LIGHT FIXTURE - CEILING/GRID MOUNT
	LIGHT FIXTURE - INTERIOR WALL MOUNT LINEAR
	LIGHT FIXTURE - DOWNLIGHT WITH WALLWASH DIST.
	LIGHT FIXTURE - INTERIOR WALL SCONCE
	LIGHT FIXTURE - INTERIOR SURFACE MOUNT
	LIGHT FIXTURE - INTERIOR WALL MOUNTED
	LIGHT FIXTURE - INTERIOR PENDANT MOUNT
	LIGHT FIXTURE - INTERIOR PENDANT MOUNT CYLINDER
	TRACK AND TRACK MOUNTED LIGHT FIXTURES
	EXIT LIGHT - CEILING MOUNTED - ARROWS AS INDICATED ON PLAN (SHADED AREA INDICATES FACE(S) OF FIXTURE)
	EXIT LIGHT - WALL MOUNTED - ARROWS AS INDICATED ON PLAN (SHADED AREA INDICATES FACE(S) OF FIXTURE)
	EMERGENCY LIGHT FIXTURE - EMERGENCY BATTERY UNIT
	EMERGENCY LIGHT FIXTURE - BATTERY UNIT/EXIT SIGN
	LIGHT FIXTURE - EXTERIOR POLE MOUNT TYPE
	LIGHT FIXTURE - EXTERIOR WALL MOUNT TYPE
	LIGHT FIXTURE - EXTERIOR POST TOP TYPE
	LIGHT FIXTURE - EXTERIOR BOLLARD TYPE

NOTES:
1. LIGHTING SYMBOLS AS INDICATED ON PLANS ARE NOT DRAWN TO SCALE UNLESS NOTED OTHERWISE.

LIGHTING CONTROLS LEGEND

SYMBOL	DESCRIPTION
	SWITCH SINGLE POLE
	OCCUPANCY SENSOR SWITCH
	VACANCY SENSOR SWITCH
	LOW VOLTAGE DIMMER SWITCH
	VACANCY DIMMER SENSOR SWITCH
	CEILING MOUNTED OCCUPANCY SENSOR
	CEILING MOUNTED VACANCY SENSOR
	SWITCH THREE-WAY
	SINGLE POLE KEY SWITCH

POWER SYMBOL LIST

SYMBOL	DESCRIPTION
	CONDUIT DOWN
	CONDUIT UP
	CONTACTOR
	DISCONNECT SWITCH - NON FUSED
	DISCONNECT SWITCH - FUSED
	DISCONNECT SWITCH - COMB. MOTOR STARTER
	ELECTRICAL PANEL - 208/240 VOLTS
	ELECTRICAL PANEL - 480 VOLTS
	GROUNDING ROD
	GROUND
	GROUNDING BAR
	JUNCTION BOX
	JUNCTION BOX WITH HARDWIRED CONNECTION
	METER
	MOTOR - SINGLE PHASE
	MOTOR - THREE PHASE
	MOTOR RATED SWITCH
	POWER RECEPTACLE - SIMPLEX TYPE
	POWER RECEPTACLE - DUPLEX TYPE
	POWER RECEPTACLE - DUPLEX 6' ABOVE COUNTER
	POWER RECEPTACLE - USB/DUPLEX COMBO. DEVICE
	POWER RECEPTACLE - QUADRUPLEX TYPE
	POWER RECEPTACLE - RECESSED FLOOR TYPE
	POWER RECEPTACLE - SPECIALTY TYPE
	SURGE PROTECTION DEVICE
	TIME CLOCK
	TRANSFORMER (REFER TO SCHEDULES FOR INFO)
	VARIABLE SPEED DRIVE

NOTES:
1. ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

AUXILIARY SYST. SYMBOL LIST

SYMBOL	DESCRIPTION
	CAMERA
	CARD READER
	COMMUNICATIONS DEVICE - 6' ABOVE COUNTER
	COMMUNICATIONS DEVICE - FLOOR
	COMMUNICATIONS DEVICE - WALL
	MAGNETIC DOOR HOLDER
	PUSH BUTTON
	SPEAKER
	WALL CLOCK - SINGLE FACE
	WALL CLOCK - DOUBLE FACE
	WALL CLOCK AND SPEAKER UNIT

NOTES:
1. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED.
2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

FIRE ALARM SYMBOL LIST

SYMBOL	DESCRIPTION
	DETECTION DEVICE
	DETECTION DEVICE - DUCT MOUNTED
	DETECTION DEVICE - FLOW SWITCH
	DETECTION DEVICE - TAMPER SWITCH
	FIRE ALARM ANNUCIATOR PANEL
	FIRE ALARM CONTROL PANEL
	FIRE DEPARTMENT COMMUNICATION OUTLET
	MANUAL DEVICE - PULL STATION
	NOTIFICATION DEVICE - WALL MOUNTED
	NOTIFICATION DEVICE - CEILING MOUNTED

NOTES:
1. DRAWINGS INDICATE DESIGN INTENT ONLY. FINAL LOCATIONS AND DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.

ELECTRICAL ABBREVIATIONS

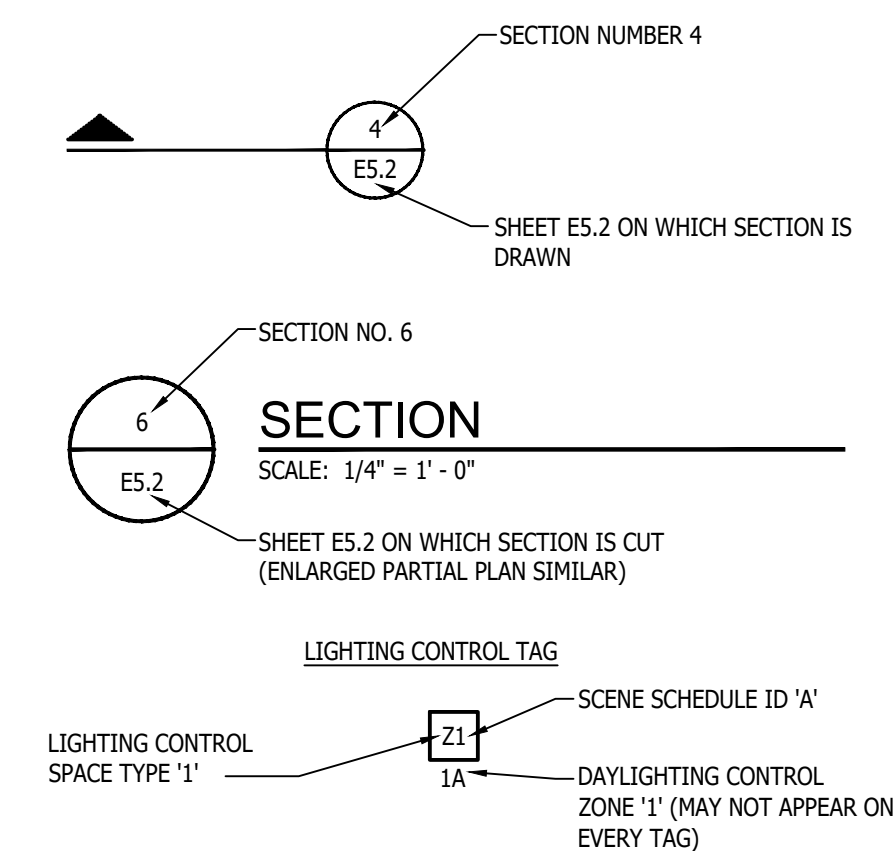
ABBREV.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
A	AMPERE
AF	AMPERE FUSE/AMPERE FRAME
AWG	AMERICAN WIRE GAUGE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
C	CONDUIT OR CEILING MOUNTED
CB	CIRCUIT BREAKER
CU	COPPER
CT	CURRENT TRANSFORMER
DIA	DIAMETER
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EPO	EMERGENCY POWER OFF
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
F	FUSE
G/GRD	GROUND
GF/CI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LP	LIGHTING PANEL
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N/NEU	NEUTRAL
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
OF/CI	OWNER FURNISHED / CONTRACTOR INSTALLED
OF/OI	OWNER FURNISHED / OWNER INSTALLED
PH. OR Ø	PHASE
P	POLE
PF	POWER FACTOR
PVC	POLYVINYL CHLORIDE (PLASTIC)
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
(RR)	REMOVE AND REINSTALL
RMC	RIGID METALLIC CONDUIT
RP	RECEPTACLE PANEL
SPEC/SPECS	SPECIFICATIONS
TBB	TELEPHONE BACKBOARD
TYP.	TYPICAL
UC	UNDER COUNTER
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLT
VA	VOLT AMPERE
W	WATT
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

DRAWING INDEX

SHT. NO.	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
EP1.00	ELECTRICAL POWER NEW WORK PLAN
ES.00	ELECTRICAL DETAILS, SCHEDULES, AND DIAGRAMS

DRAWING NOTATION

SYMBOL	DESCRIPTION
	LIGHTING FIXTURE TAG
	CONSTRUCTION KEY NOTE NUMBER 1
	DEMOLITION KEY NOTE NUMBER 1
	FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE ON THIS SHEET)
	EQUIPMENT DESIGNATION, (I.E. EXHAUST FAN NUMBER 1)
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	NEW OR MODIFIED UNDERGROUND WIRING
	EXISTING SYSTEM COMPONENT TO BE REMOVED



APPLICABLE CODES AND REGULATIONS

YEAR	CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN ENERGY CODE
2017	MICHIGAN ELECTRICAL CODE RULES, PART 8
2017	NATIONAL ELECTRICAL CODE (NFPA 70)
2013	NFPA 20
2013	NFPA 72
2012	NFPA 101
2013	NFPA 110
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES

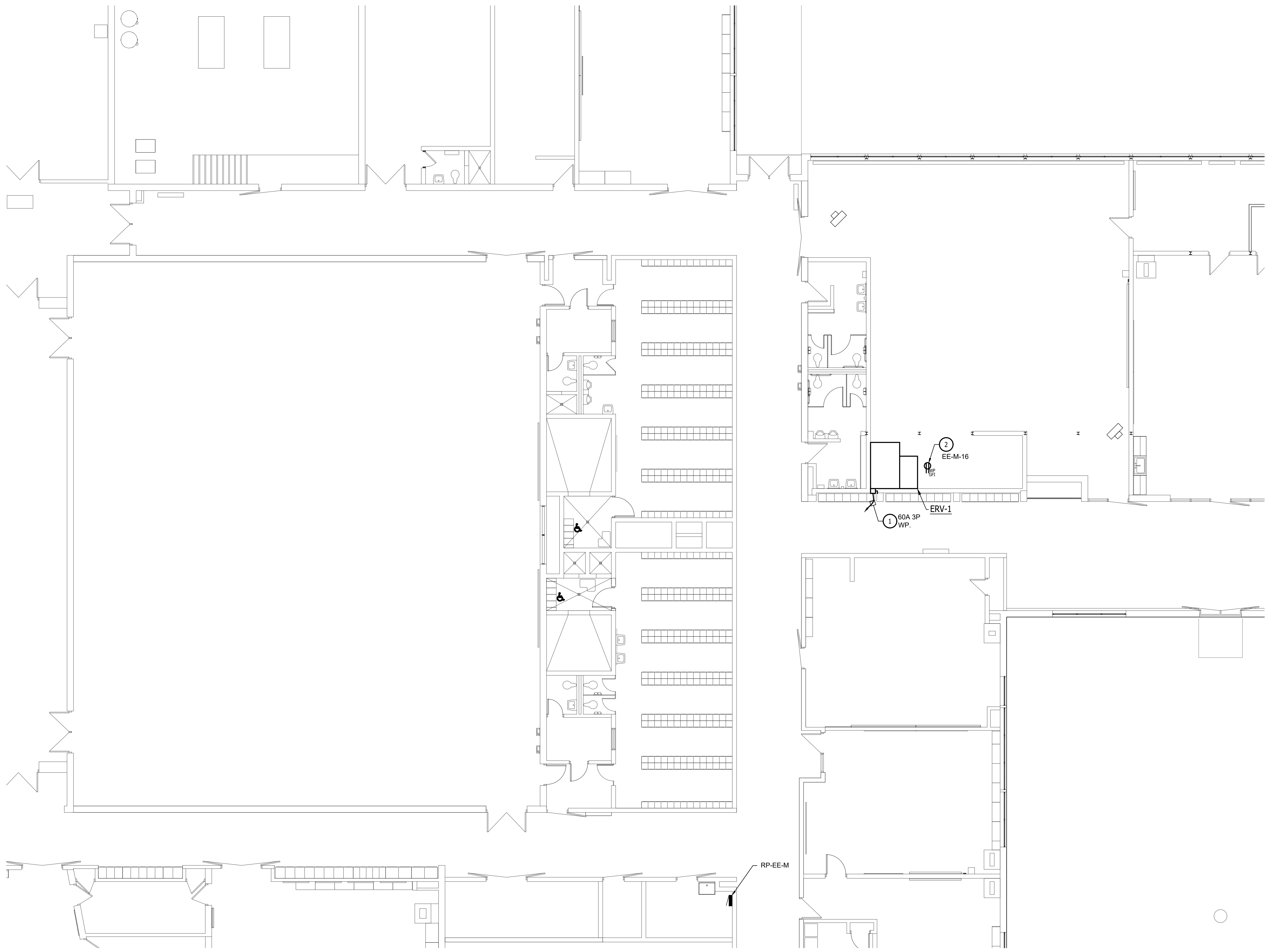
10/16/2023

ISSUANCE:
BIDS

DRAWN: TDD
APPROVED: MPH

**ELECTRICAL
GENERAL
INFORMATION**

E0.00



POWER GENERAL NOTES	
A	THESE DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE GENERAL EXTENT OF THE WORK TO BE PERFORMED. PROVIDE AND EXECUTE ALL HVAC SYSTEMS PER ENGINEER'S SPECIFICATION, AND LOCAL APPLICABLE CODES INCLUDING AMENDMENTS, BULLETINS, ETC. AS WELL AS THE STANDARDS OF INSTALLATION AND EQUIPMENT ESTABLISHED FOR THE BUILDINGS, AND REQUIREMENTS OF THE OWNER.
B	EXCEPT FOR CHANGES AS MAY BE SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD, IN ACCORDANCE WITH ALTERNATES OF OPTIONS AS STATED HEREINAFTER, ALL WORK MUST BE IN FULL ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS. SYSTEMS ARE TO BE COMPLETE, EFFICIENT, AND SATISFACTORY OPERATION WHEN PROJECT IS DELIVERED TO THE OWNER.
D	CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVAL FROM GOVERNING AUTHORITIES AND FILE NECESSARY FORMS, PAY ALL INSPECTION FEES.
E	ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE LATEST NATIONAL ELECTRICAL CODE, LIFE SAFETY CODE AND APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
F	ELECTRICAL EQUIPMENT AND WIRING SHALL BE NEW AND SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
G	WIRING SHALL BE IN CONDUIT. CONDUIT SHALL BE 3/4" CONDUIT MINIMUM. CONDUITS IN FINISHED AREAS SHALL BE CONCEALED.
H	NEW WIRES SHALL BE TYPE THHN. MINIMUM SIZE SHALL BE #12 AWG, UNLESS OTHERWISE NOTED. FINAL CONNECTIONS TO EQUIPMENT, FURNISHED AND INSTALLED BY OTHERS, SHALL BE PROVIDED BY THIS CONTRACTOR.

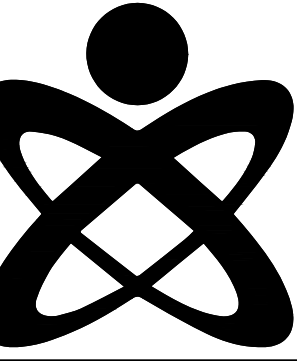
NEW WORK KEYED NOTES	
1	NEW ERV-1 ON ROOF, PROVIDE 3P 60A WP SWITCH, RUN 3#6&1#8G 1" C TO EXISTING RP-EE-M-10,12,14 IN JANITOR CLOSET E124. REFER PANEL SCHEDULE E5.00
2	PROVIDE NEW 120V 20A GFI WEATHER PROOF RATED RECEPTACLE WITHIN 25 FT OF ERV-1, CONNECT TO CIRCUIT SHOWN.

10/16/2023

ISSUANCE:
BIDS

DRAWN: RDD
APPROVED: PMA

**ELECTRICAL
POWER NEW WORK
PLAN**



CLIENT:
LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI 48154

PROJECT:
EMERSON ELEMENTARY
WOODSHOP AC
REPLACEMENT

KEYED NOTES

- ① EXISTING PANEL BEING REWORKED TO ACCEPT AND UPDATE AS REQUIRED. CONTRACTOR SHALL PROVIDE A NEW AND ACCURATE PANEL SCHEDULE INDICATING DESCRIPTION OF LOAD BEING SERVED, AND LOCATION I.E. (RECEPTACLE CIRCUIT ROOM #123).

①

Panel Designation: RP-EE-M		Main: MLO		P-P Voltage: 208										
Panel Location: JANITOR CLOSET E124		Bussing: 125		P-N Voltage: 120										
Fed From: MDP		Ground Bus: STANDARD		Phase: 3										
Feeder Size: 1 1/2", 4#2/0 & 1#6 GRD.		Mounting: SURFACE		Wire: 4										
		Neutral: 100%		Min SC Interrupting Rating: 10K										
Remarks	Light Load	Recept Load	Cont Load	nonC Load	OC Prof	ØA	ØB	ØC	ØC	nonC Load	Cont Load	Recept Load	Light Load	Remarks
CU-1 ON ROOF				2048	30	1	X		2	2048				CU-1 ON ROOF
CU-1 ON ROOF				2048	30	3	X		4	2048				CU-1 ON ROOF
CU-1 ON ROOF				2048	30	5	X		6	2048				CU-1 ON ROOF
OUTLET ON ROOF		720		2048	30	7	X		8	2048				CU-1 ON ROOF
SPARE					20	9	X		10	2933				ERV-1 (WOODSHOP)
SPARE					20	11	X		12	50				ERV-1 (WOODSHOP)
SPARE					20	13	X		14	2933				ERV-1 (WOODSHOP)
SPARE					20	15	X		16	20		180		OUTLET ON ROOF
SPARE					20	17	X		18	20				SPARE
SPARE					20	19	X		20	20				SPARE
SPARE					20	21	X		22	20				SPARE
SPARE					20	23	X		24	20				SPARE
SPACE					20	25	X		26					SPACE
SPACE					20	27	X		28					SPACE
SPACE					20	29	X		30					SPACE
Summary														
Connected Load				Demand				Demand Load						
Load Description	ØA	ØB	ØC	Total	Factor	ØA	ØB	ØC	Total					
Lighting or Continuous Load (Volt-Amps)	0	0	0	0	1.00	0	0	0	0					
180VA Receptacle Load (Volt-Amps)	0	900	0	900	1.00 (1st 10kVA) 0.50 (1st 10kVA)	0	900	0	900	Receptacle Demand Factor per Article 220.44 of the National Electrical Code.				
Continuous Load (Volt-Amps)	0	0	0	0	1.00	0	0	0	0					
Non-Continuous Load (Volt-Amps)	11125	7029	7029	25182	1.00	11125	7029	7029	25182					
Total Load (kVA)	11.12	7.93	7.03	26.08	125% of Light/Cont and Recept (<10kVA) load plus other load	11.12	7.93	7.03	26.08					
Total Ampacity (Amps)	92.6	66.0	58.5	72.4		92.6	66.0	58.5	72.4					
Minimum Feeder Sizing (Amps)	92.6	67.9	58.5	73.0	<--- per NEC Article 215.2 --->	92.6	67.9	58.5	73.0					

PROVIDE NEW BREAKERS FOR ALL NEW LOADS

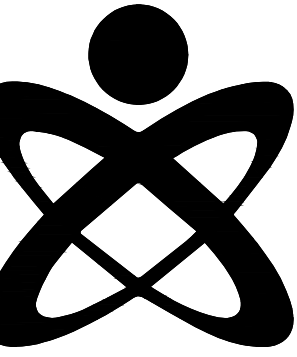
10/16/2023

ISSUANCE:
BIDS

DRAWN: RDL
APPROVED: FAA

ELECTRICAL DETAILS,
SCHEDULES, AND
DIAGRAMS

E5.00



GENERAL NOTES
GENERAL CONDITIONS

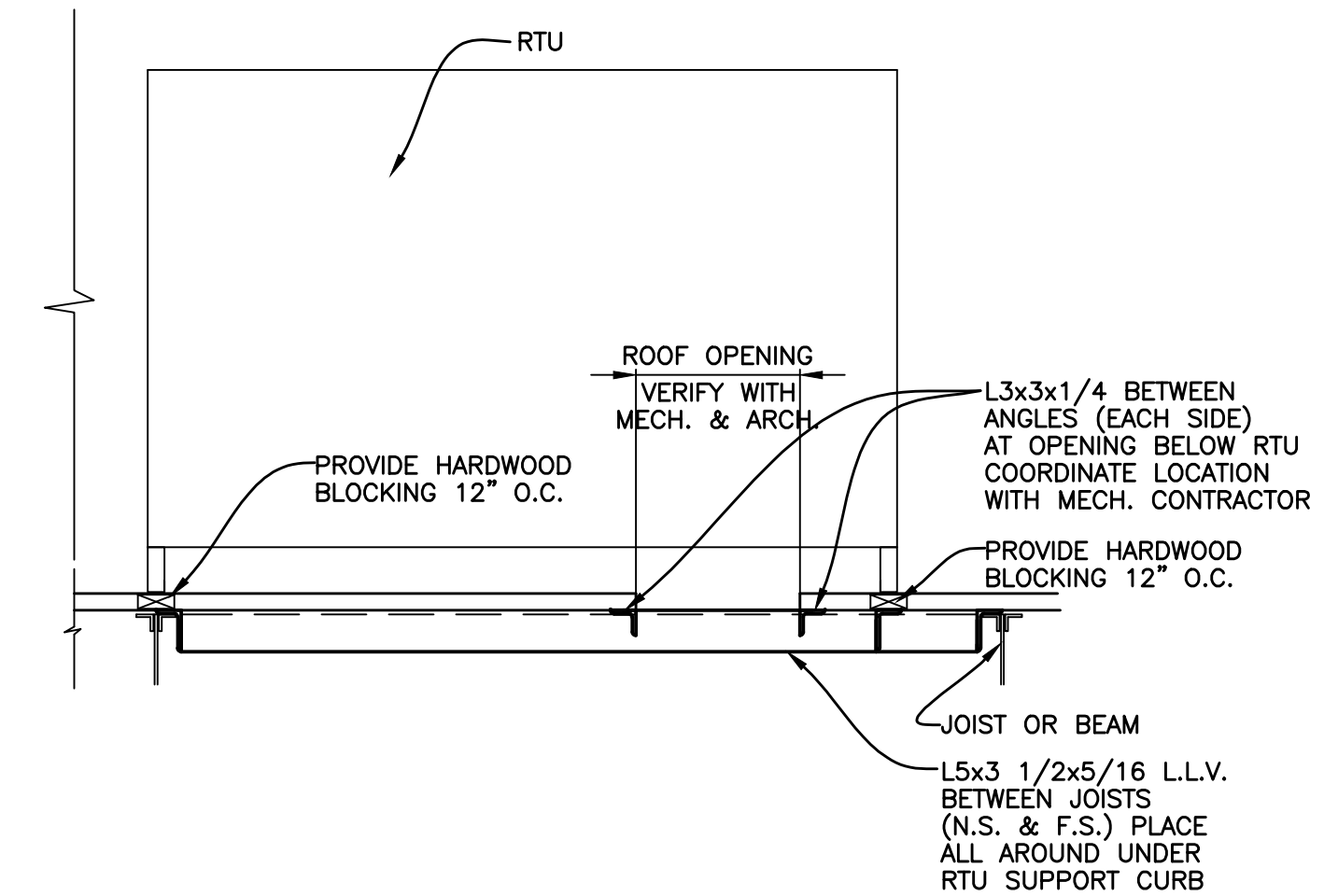
- IF ANY GENERAL NOTE CONFLICTS WITH ANY DETAIL OR NOTE ON THE PLANS OR IN THE SPECIFICATIONS, THE STRICTEST PROVISION SHALL GOVERN.
- THE STRUCTURAL DRAWINGS ARE FOR THE PLACEMENT AND SIZE OF STRUCTURAL COMPONENTS ONLY. O.S.H.A., LOCAL GOVERNMENT CODES AND SAFETY CODE REQUIREMENTS SHALL BE ADHERED TO BY THE CONTRACTOR.
- THE STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER IT IS FULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES PROVIDING TEMPORARY BRACING, SHORING, GUYS OR TIE-DOWNS. THESE TEMPORARY SUPPORTS WILL REMAIN IN PLACE UNTIL ALL STRUCTURAL COMPONENTS ARE IN PLACE AND COMPLETED.
- USE OF ENGINEERING DRAWINGS AS ERECTION DRAWINGS BY THE CONTRACTOR IS STRICTLY PROHIBITED. DIMENSIONS SHOWN ON THE STRUCTURAL DRAWINGS ARE FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR BUILDING LAYOUT AND LOCATION. SEE ARCHITECTURAL DRAWINGS AND SITE PLAN FOR THESE PURPOSES.
- THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF SHOP DRAWINGS PRIOR TO SUBMITTAL. THE CONTRACTOR SHALL CHECK SHOP DRAWINGS PRIOR TO SUBMITTAL AND IS SOLELY RESPONSIBLE FOR ERRORS & OMISSION IN THE PREPARATION OF SHOP DRAWINGS TO CONFORM TO THE DESIGN DRAWINGS. SUBMIT NO MORE THAN ONE REPRODUCIBLE AND TWO PRINTS OF SHOP DRAWINGS FOR ENGINEER REVIEW. TWO COPIES WILL BE RETURNED TO THE ARCHITECT.

EXISTING CONDITIONS

- VERIFY ALL EXISTING ASSUMED DIMENSIONS AND CONDITIONS (I.E. EXISTING MATERIALS; FRAMING MEMBER SIZES AND LOCATIONS; METHODS OF CONSTRUCTION; ETC.) AT THE SITE PRIOR TO CONSTRUCTION AND FABRICATION. IF DISCREPANCIES ARE FOUND, NOTIFY ARCHITECT BEFORE PROCEEDING WITH WORK.

STRUCTURAL STEEL

- STEEL DESIGN, FABRICATION AND ERECTION TO BE IN ACCORDANCE WITH THE LATEST A.I.S.C. MANUAL AND SPECIFICATION FOR STRUCTURAL STEEL FOR BUILDINGS. ALL WIDE FLANGE BEAMS AND COLUMNS SHALL CONFORM TO THE LATEST ASTM. SERIAL DESIGNATION A992, GR50; ALL MISCELLANEOUS STEEL PLATES, BARS, ANGLES, ETC., SHALL CONFORM TO ASTM A36; STEEL TUBING TO BE ASTM A500, GRADE B; STEEL PIPE ASTM. A-53, GRADE B. ANCHOR BOLTS TO BE ASTM F1554 GRADE 36 KSI MINIMUM UNLESS OTHERWISE NOTED.
- ALL WELDED CONNECTIONS SHALL BE IN ACCORDANCE WITH THE LATEST AWS CODE, E70XX ELECTRODES, WITH WELDING PERFORMED BY QUALIFIED WELDERS.
- THE DESIGN, CONFIGURATION & ERECTION SAFETY OF ALL STRUCTURAL STEEL CONNECTIONS SHALL BE THE RESPONSIBILITY OF THE STRUCTURAL STEEL FABRICATOR. REVIEW AND ACCEPTANCE OF THE SHOP DRAWINGS BY THE ENGINEER SHALL CONSTITUTE APPROVAL OF THE LOAD CARRYING ADEQUACY ONLY.
- ALL EXPOSED STRUCTURAL STEEL TO BE GALVANIZED.

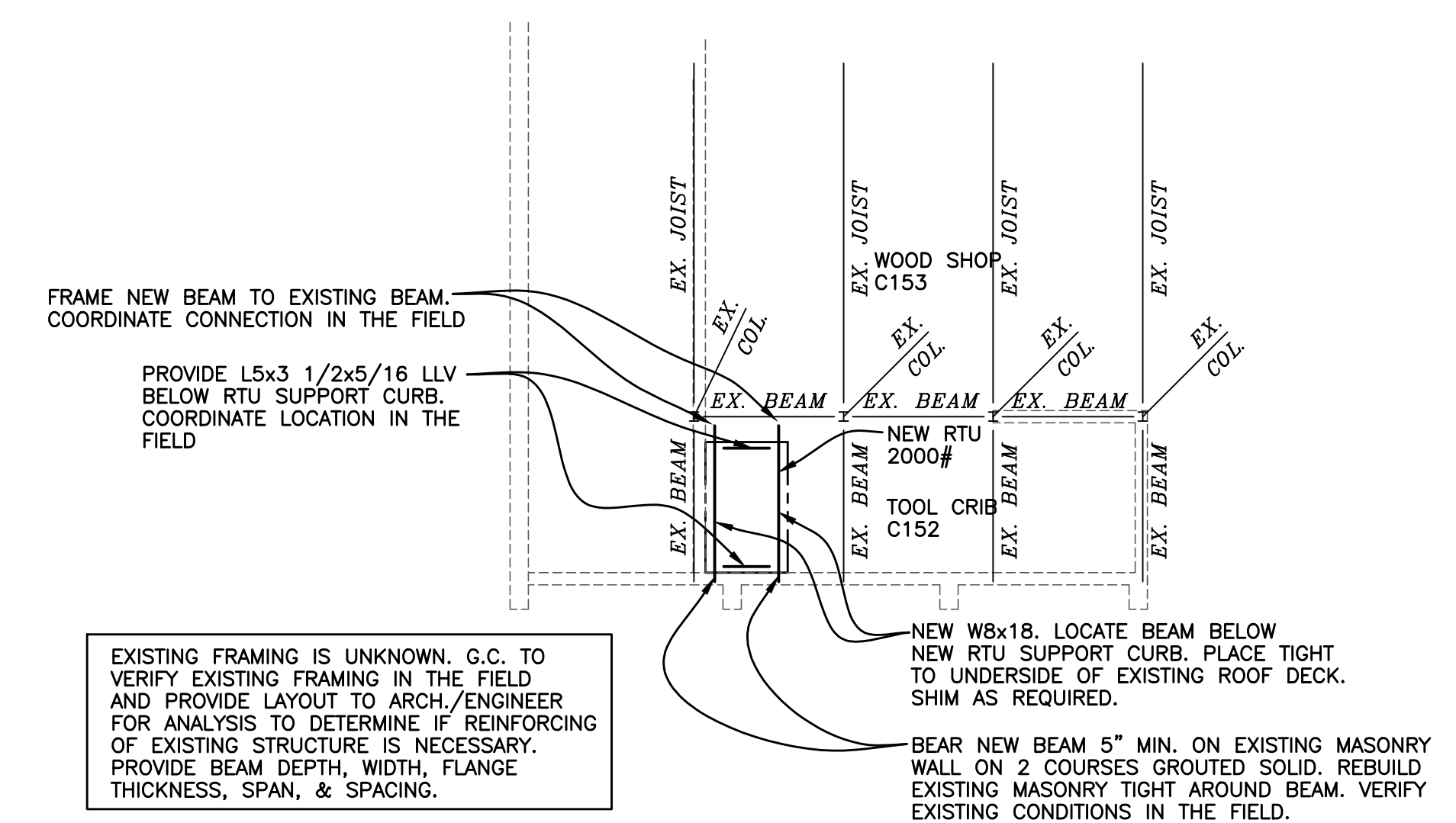


1
S100
TYPICAL DETAIL AT MECHANICAL UNIT SUPPORT
SCALE : 3/4" = 1'-0"

DESIGN CRITERIA		
CODE: NBC 2015 THE STRUCTURE IS DESIGNED FOR THE FOLLOWING LIVE LOADS, IN ADDITION TO THE LATERAL LOADS, SUPER-IMPOSED DEAD LOADS, & SELF-WEIGHT OF THE STRUCTURE, WHERE APPLICABLE LIVE LOADS ARE REDUCED IN ACCORDANCE WITH THE PROVISIONS OF THE BUILDING CODE.		
A. AMERICAN CONCRETE INSTITUTE BUILDING CODE (ACI-318).		
B. MANUAL OF STEEL CONSTRUCTION BY AMERICAN INSTITUTE OF STEEL CONSTRUCTION (LATEST EDITION).		
C. LATEST MASONRY STANDARDS JOINT COMMITTEE (MSJC) BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES (TMS 402/ACI 530/ASCE 5) AND SPECIFICATIONS FOR MASONRY STRUCTURES (TMS 402/ACI 530.1/ASCE 6)		
D. AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC) STANDARDS AND SPECIFICATIONS.		
E. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS) AS PUBLISHED BY AMERICAN FOREST AND PAPER ASSOCIATION.		
		CODE REFERENCE
BUILDING OCCUPANCY CATEGORY	III	NBC-Table 1004.5 ASCE Table 1.0-1

SNOW LOADS/ROOF LIVE LOADS		
SNOW CRITERIA		CODE REFERENCE
GROUND SNOW LOAD	Pg = 20 PSF	NBC FIG. 1609.2 ASCE FIG. 7-1
FLAT ROOF SNOW LOAD	Pf = 20 PSF (MINIMUM)	ASCE Sec. 7-3
EXPOSURE FACTOR	Ce = 1.0	ASCE Table 7-2
IMPORTANCE FACTOR	I = 1.1	ASCE Table 1.5-2
THERMAL FACTOR	Ct = 1.0	ASCE Table 7-3
ROOF LIVE LOADS	Lf = 20 PSF	ASCE Table 4-1

WIND LOADS		
WIND CRITERIA		CODE REFERENCE
BASIC WIND SPEED (3 SEC. GUST)	V = 120 MPH	ASCE FIG. 26.5-1A, 26.5-1B, 26.5-1C
RISK FACTOR	III	ASCE Table 1.5-1
EXPOSURE CATEGORY	B	ASCE Sec. 26.7.3
INTERNAL PRESSURE COEFFICIENT	± 0.18 (ENCLOSED)	ASCE TABLE 26.11-1
MFRS ANALYSIS PROCEDURE	DIRECTIONAL PROCEDURE	ASCE CHAP. 27
COMPONENTS AND CLADDING	± 33 PSF MINIMUM ULTIMATE AND PER CODE REQUIREMENTS BASED ON ABOVE INFORMATION	ASCE Sec. 30.2.2



ROOF FRAMING PLAN AT NEW UNIT
SCALE: 1/8" = 1'-0"

10/16/2023

ISSUANCE:
BIDS

DRAWN: DD
APPROVED: TS

ROOF FRAMING
PLAN

S100