

LIVONIA PUBLIC SCHOOLS - FRANKLIN HIGH SCHOOL WOODSHOP / SCENE SHOP AC REPLACEMENTS



LOCATION MAP



PROJECT ADDRESS

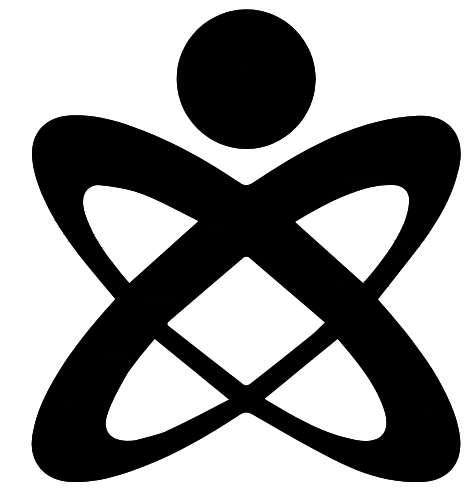
FRANKLIN HIGH SCHOOL
31000 JOY ROAD
LIVONIA, MI 48150



OWNER NAME AND ADDRESS

LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI 48154

MEP ENGINEERS



UNIFIED BUILDING
SYSTEMS ENGINEERING
69 S. GRATIOT AVE.
MT. CLEMENS, MI 48043
UBS PROJECT 001.24.01 - FK



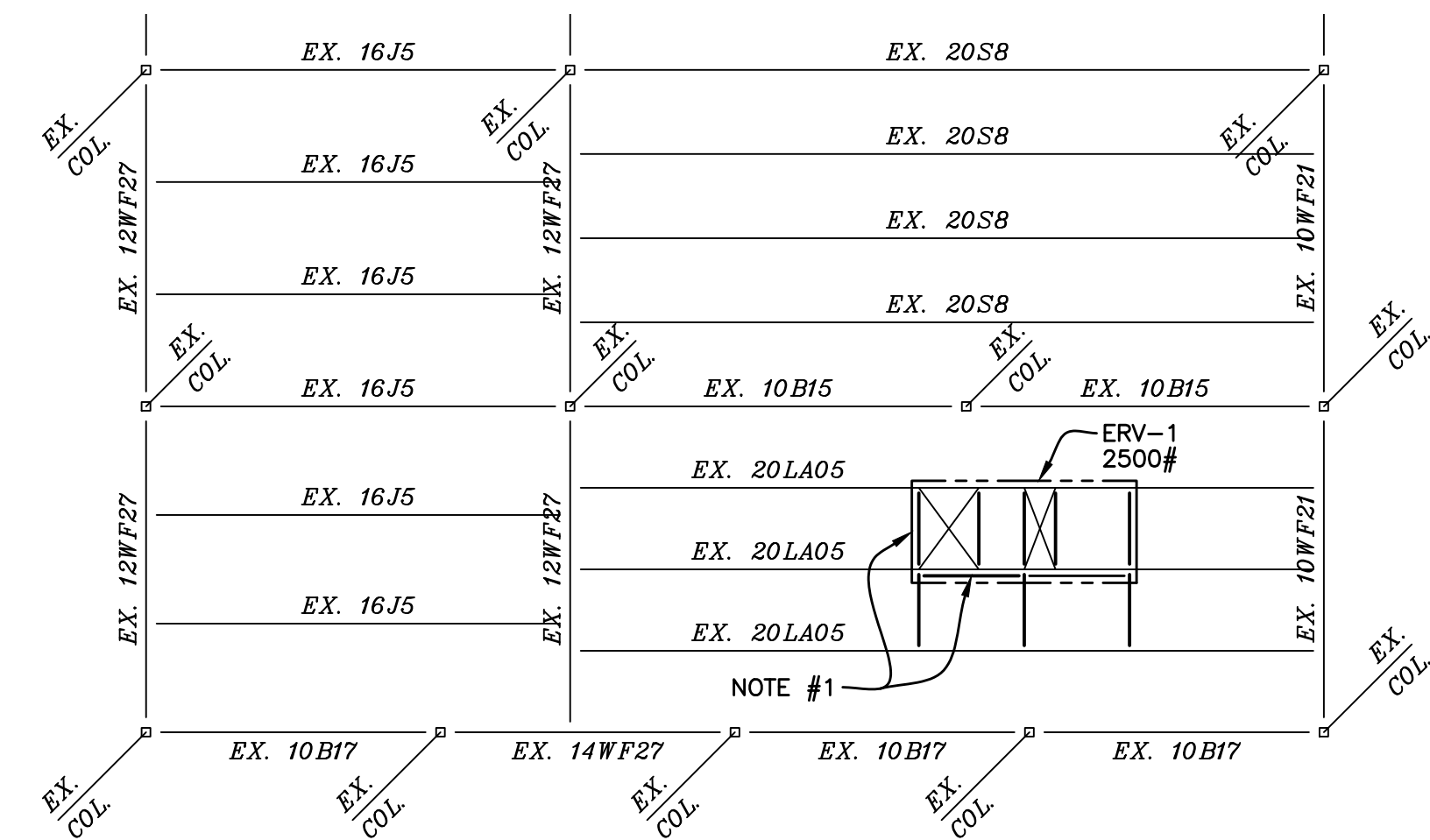
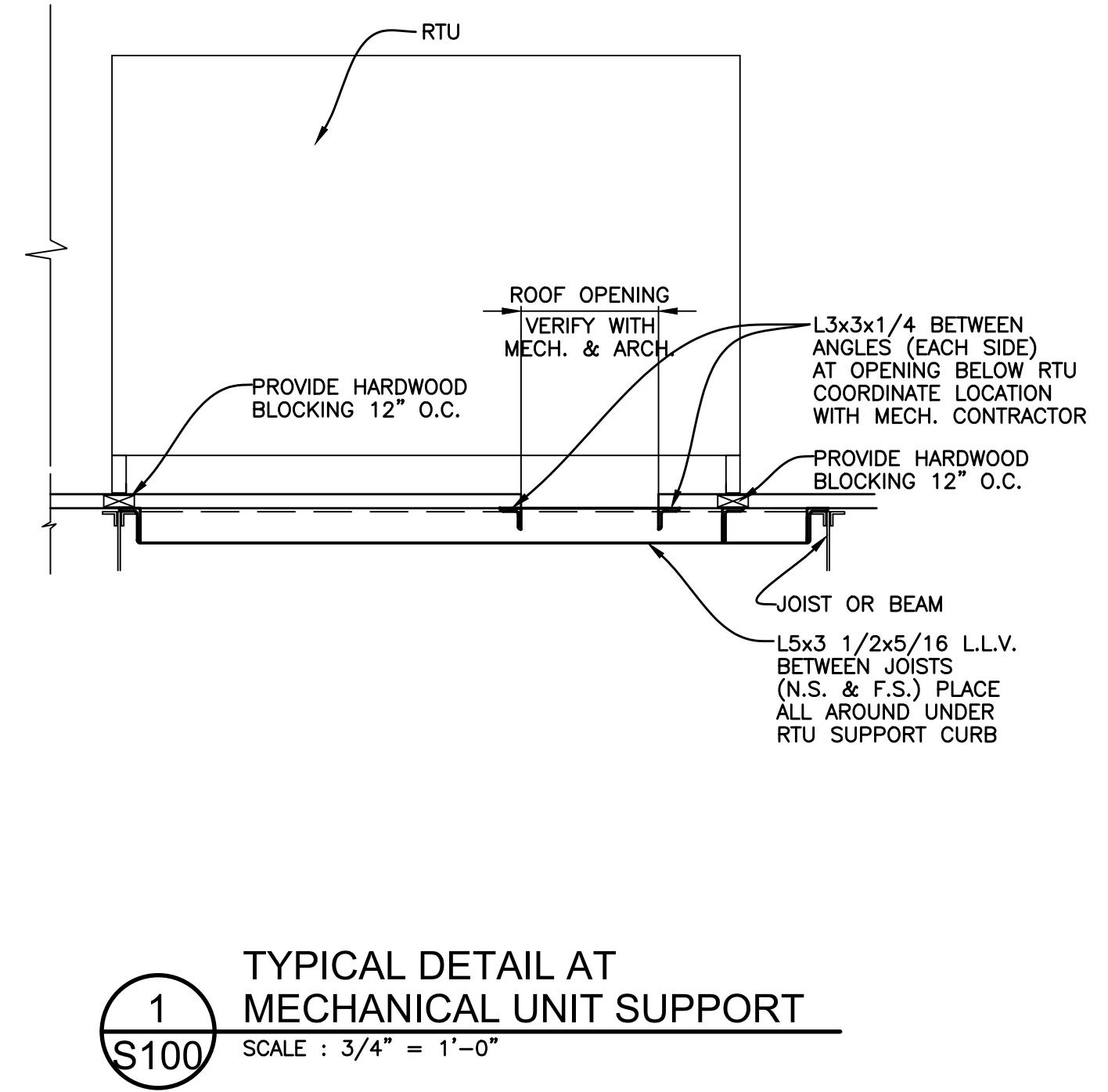
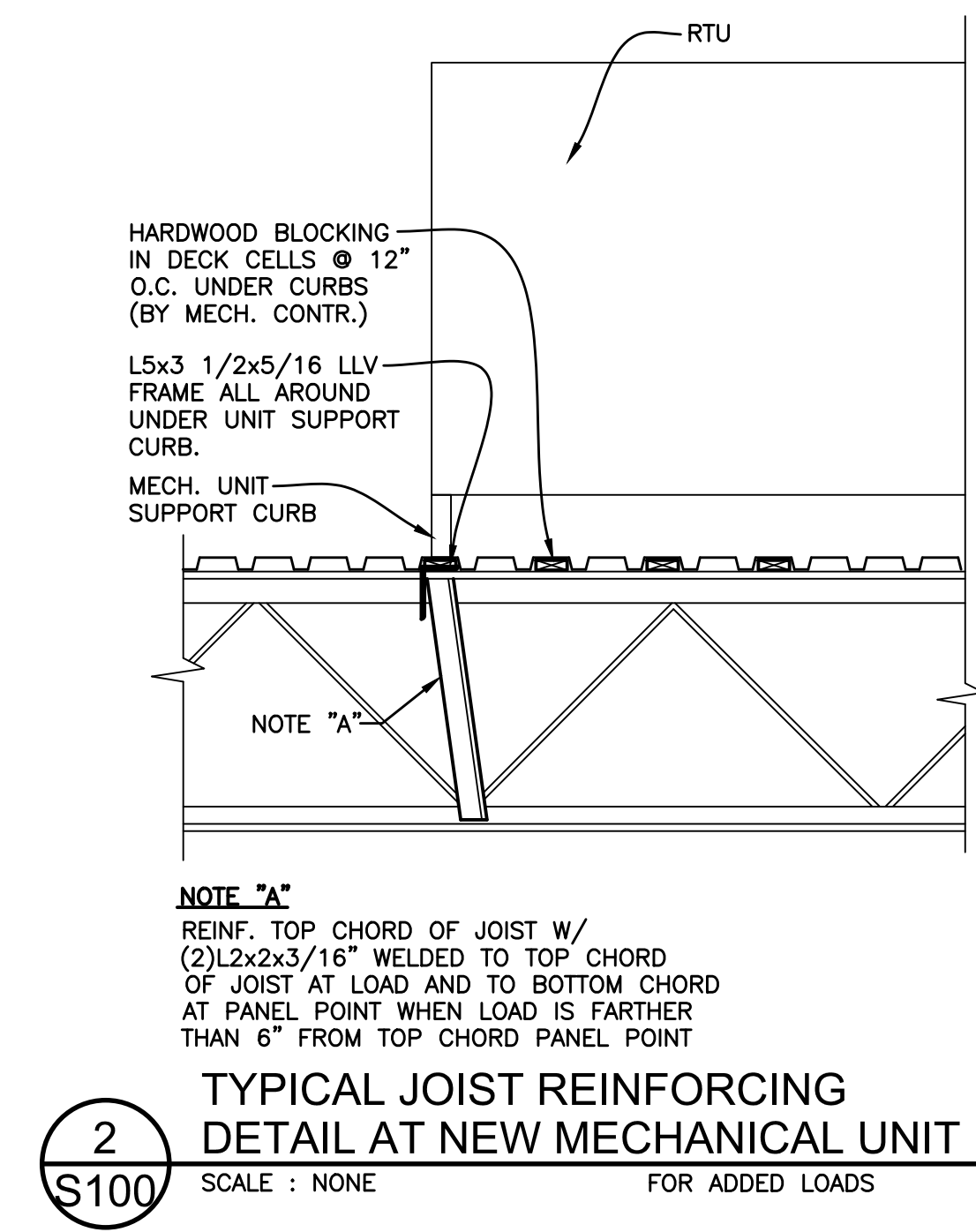
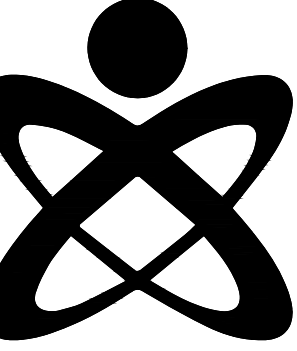
PROJECT SHEET INDEX

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SHT NO	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
EP1.00	ELECTRICAL POWER DEMOLITION AND NEW WORK PLANS
E5.00	ELECTRICAL DETAILS, SCHEDULES, AND DIAGRAMS

BID SET: 11/15/2024



PARTIAL
ROOF FRAMING PLAN

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

NOTE #1: PROVIDE L4x3 1/2x5/16 LLV ALL AROUND BELOW NEW RTU SUPPORT CURB. COORDINATE LOCATION OF RTU WITH MECH. CONTRACTOR. SEE 1 & 2/S100

11/15/2024

ISSUANCE:
BIDS

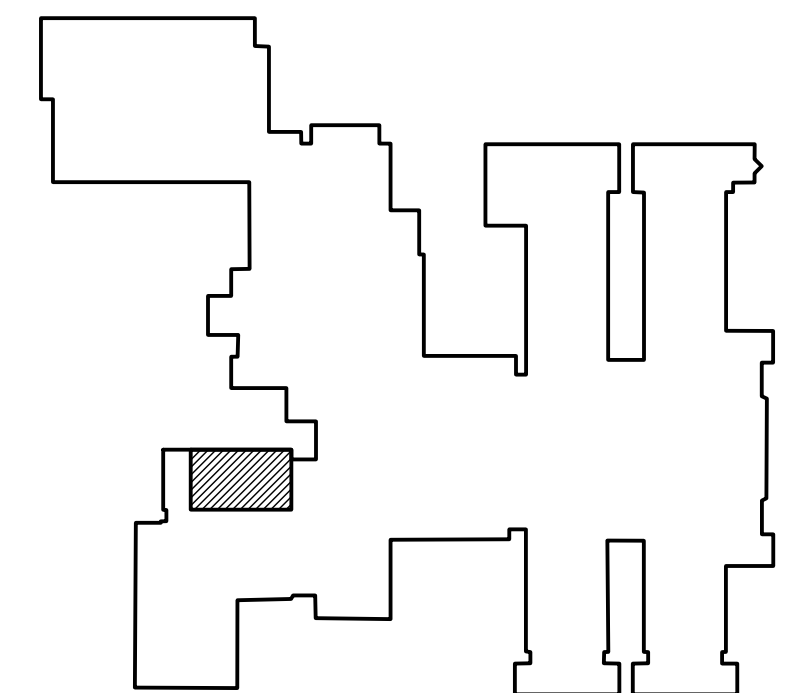
DRAWN: RC
APPROVED: TS

ROOF FRAMING
PLAN

S100



KEY PLAN



11/15/2024

ISSUANCE:
BIDS

DRAWN: CEM
APPROVED: TDD

MECHANICAL
DEMOLITION
AND NEW
WORK PLANS

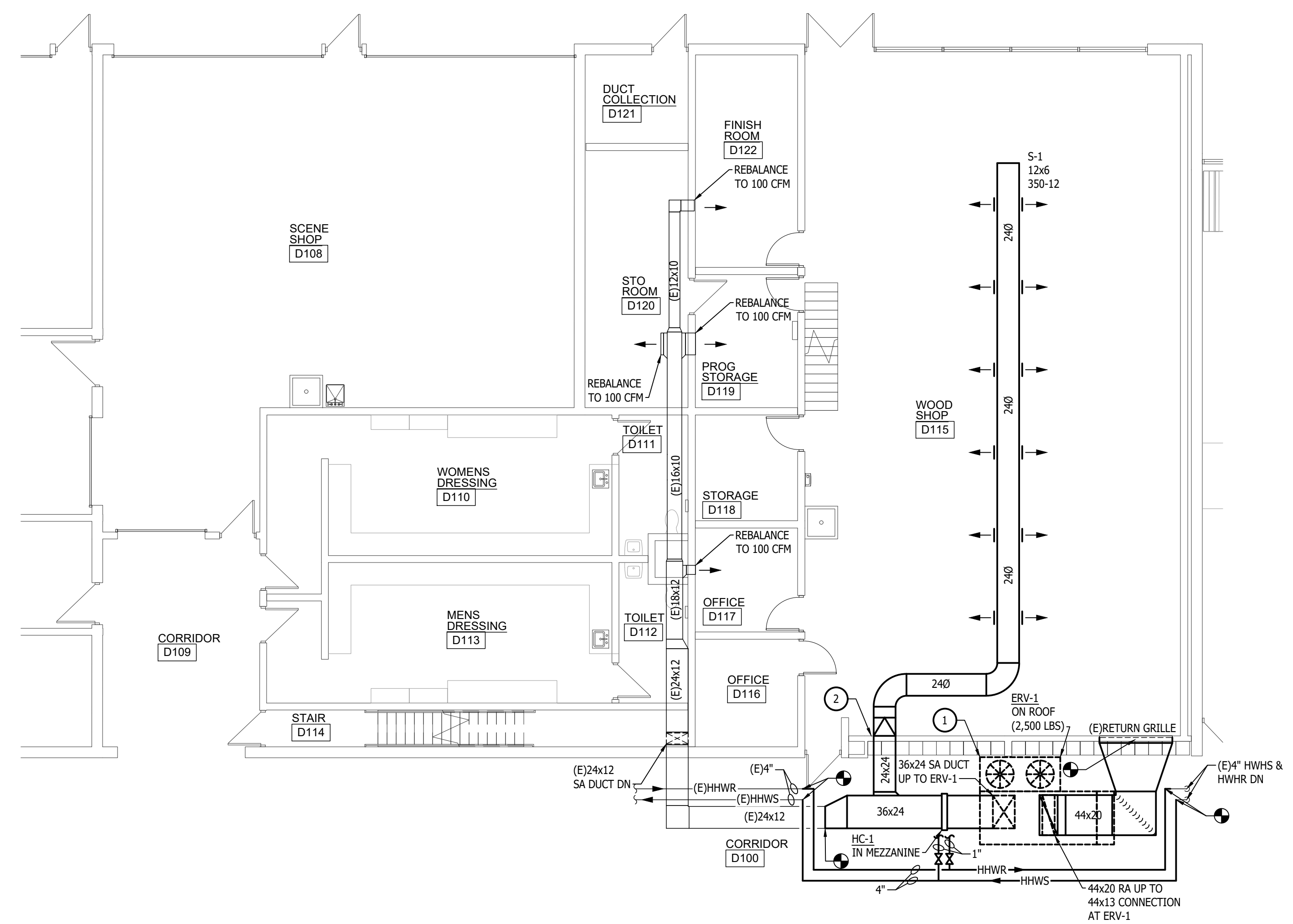
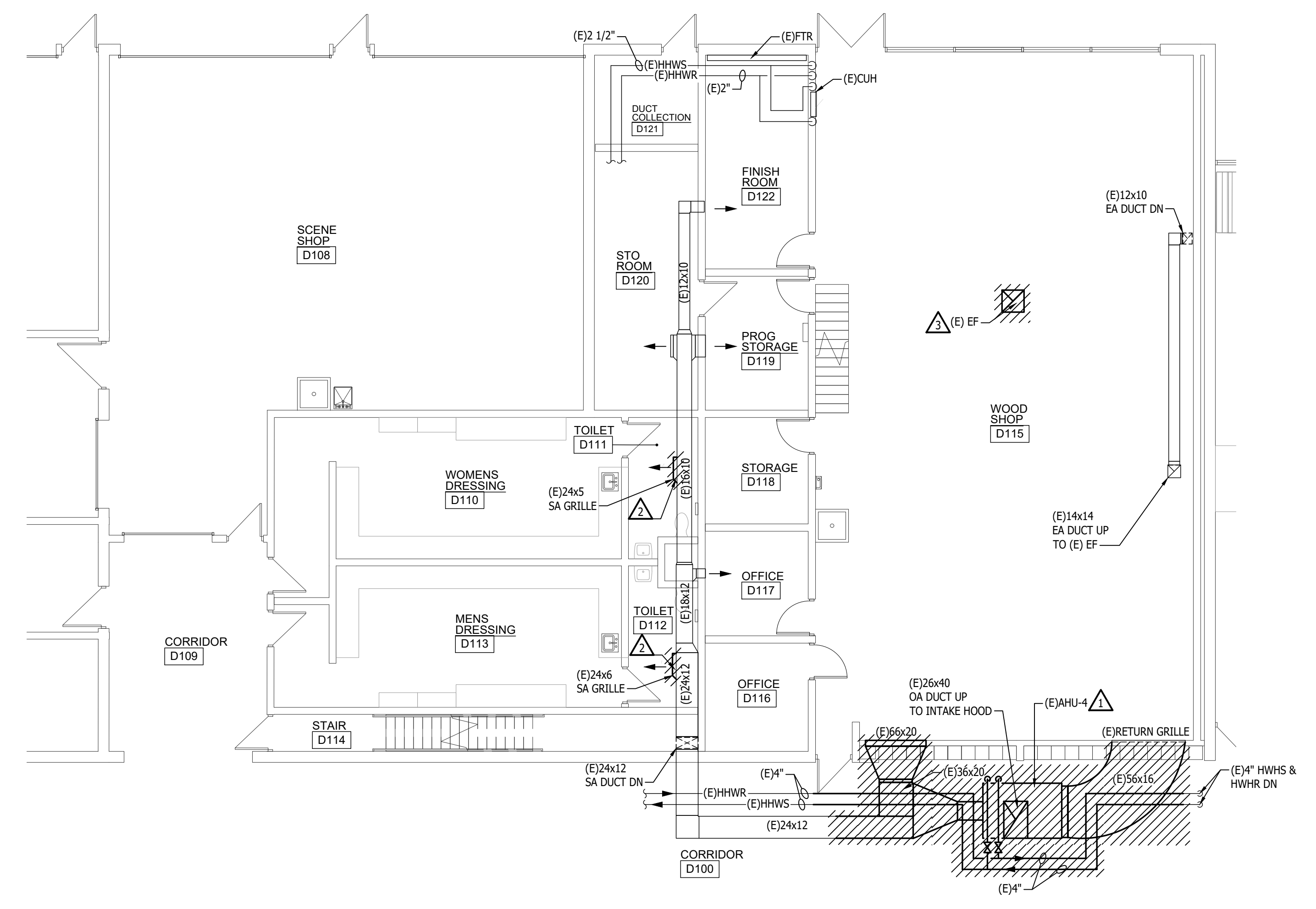
M1.00

GENERAL DEMOLITION NOTES	
A	THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE DETERMINED BY THE NEW WORK.
B	ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
C	PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY DESIGN PROFESSIONAL OF ANY INTERFERENCES OR DISCREPANCIES.
D	ALL ITEMS INDICATED WITH CROSS-HATCHING SHALL BE REMOVED COMPLETELY WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTS.
E	THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER-PROVIDED EQUIPMENT.
F	VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITIONS OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK.
G	ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
H	ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT WORK PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.

DEMOLITION KEYED NOTES	
1	REMOVE AIR HANDLING UNIT ON MEZZANINE ABOVE CORRIDOR COMPLETE. INCLUDING ALL CONTROLS, DUCTWORK, HEATING HOT WATER COIL, INTAKE HOOD AND ACCESSORIES. SEAL ROOF OPENING WEATHER TIGHT.
2	REMOVE SUPPLY AIR GRILLE COMPLETE AND CAP DUCT MAIN. CONTRACTOR TO COMPLETE WORK THRU EXISTING CEILING GRID. RE-INSTALL CEILING TILES WHEN COMPLETE.
3	REMOVE EXHAUST FAN COMPLETE. INCLUDING ALL DUCTWORK, CONTROLS AND ACCESSORIES COMPLETE. CAP OPENING AND SEAL WEATHER TIGHT.

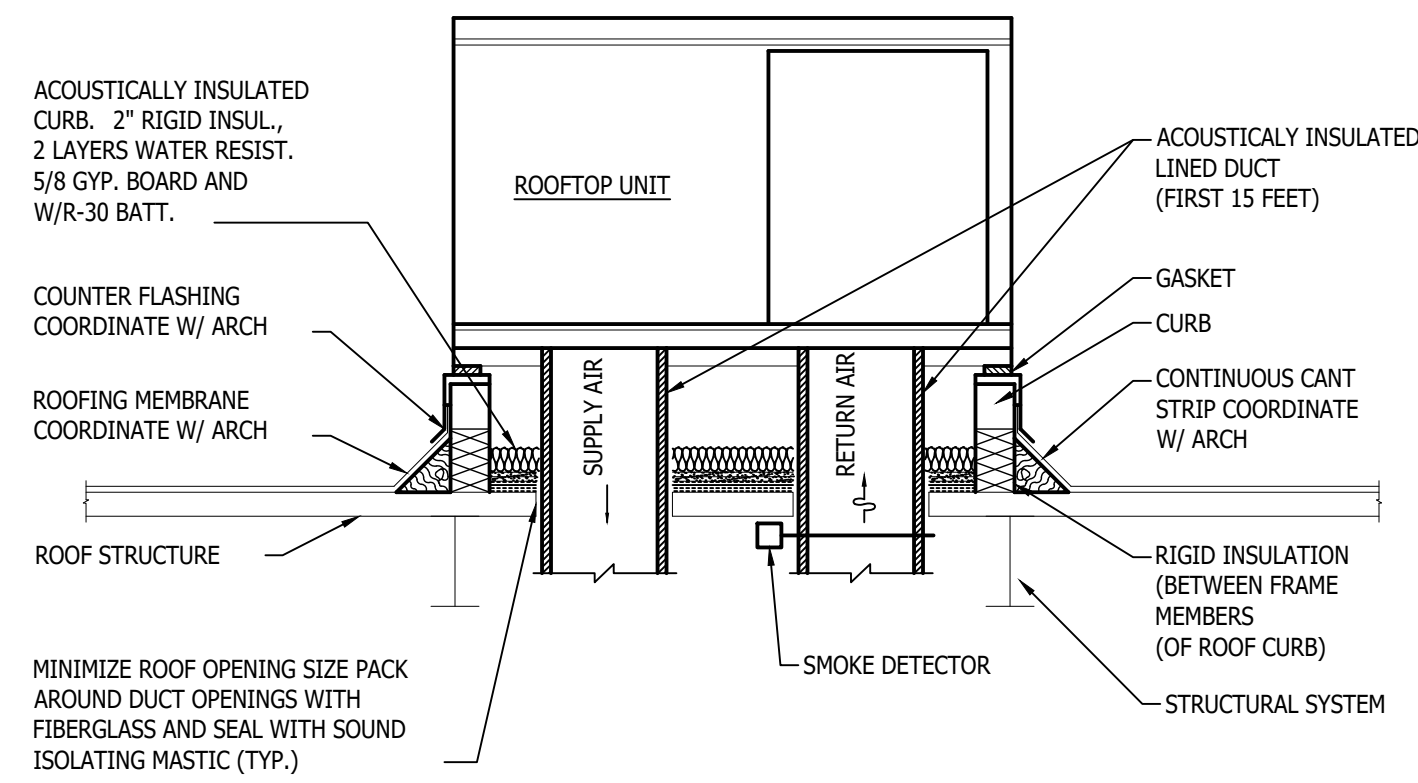
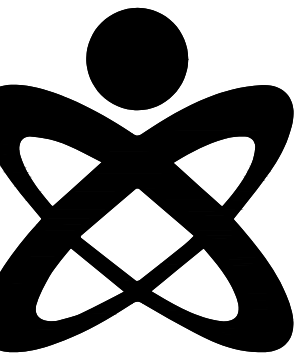
NEW WORK KEYED NOTES	
1	INSTALL PACKAGED ENERGY RECOVERY UNIT. PROVIDE NEW 18" CURB IN A LOCATION TO MEET MANUFACTURERS CLEARANCE REQUIREMENTS AND LOCAL CODES AS REQUIRED. SEAL ALL OPENINGS WEATHER TIGHT. COORDINATE NEW ROOF PENETRATIONS. BALANCE SYSTEM TO MEET AIRFLOW SHOWN ON DRAWING.
2	INFILL OPENING AROUND NEW DUCTWORK AS REQUIRED.

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 INDEMNIFY, 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.



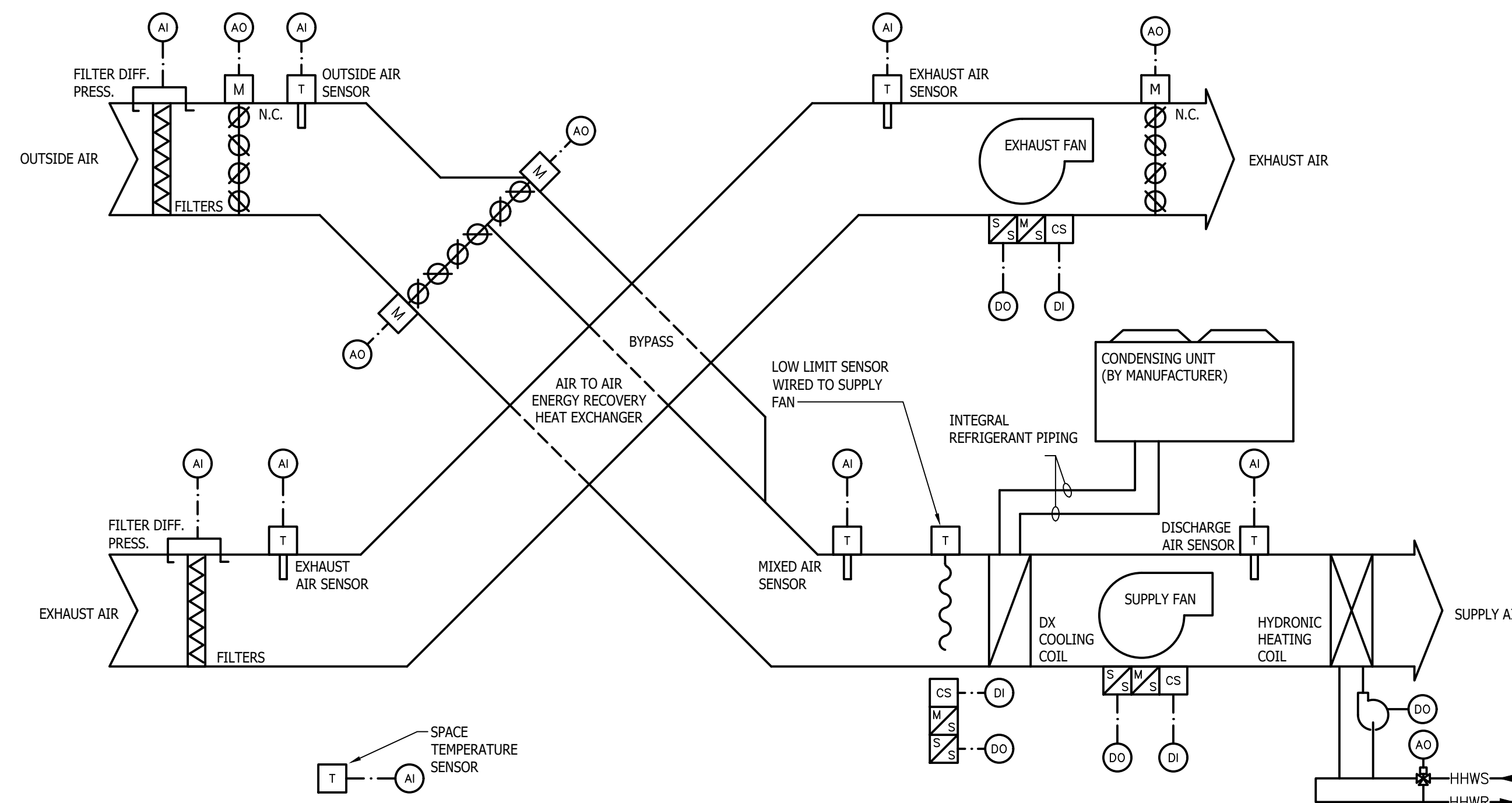
MECHANICAL DEMOLITION PLAN - SCENE SHOP & WOOD SHOP
SCALE: 1/8" = 1'-0"

MECHANICAL NEW WORK PLAN - SCENE SHOP & WOOD SHOP
SCALE: 1/8" = 1'-0"



ROOFTOP UNIT - CURB MOUNTING DETAIL

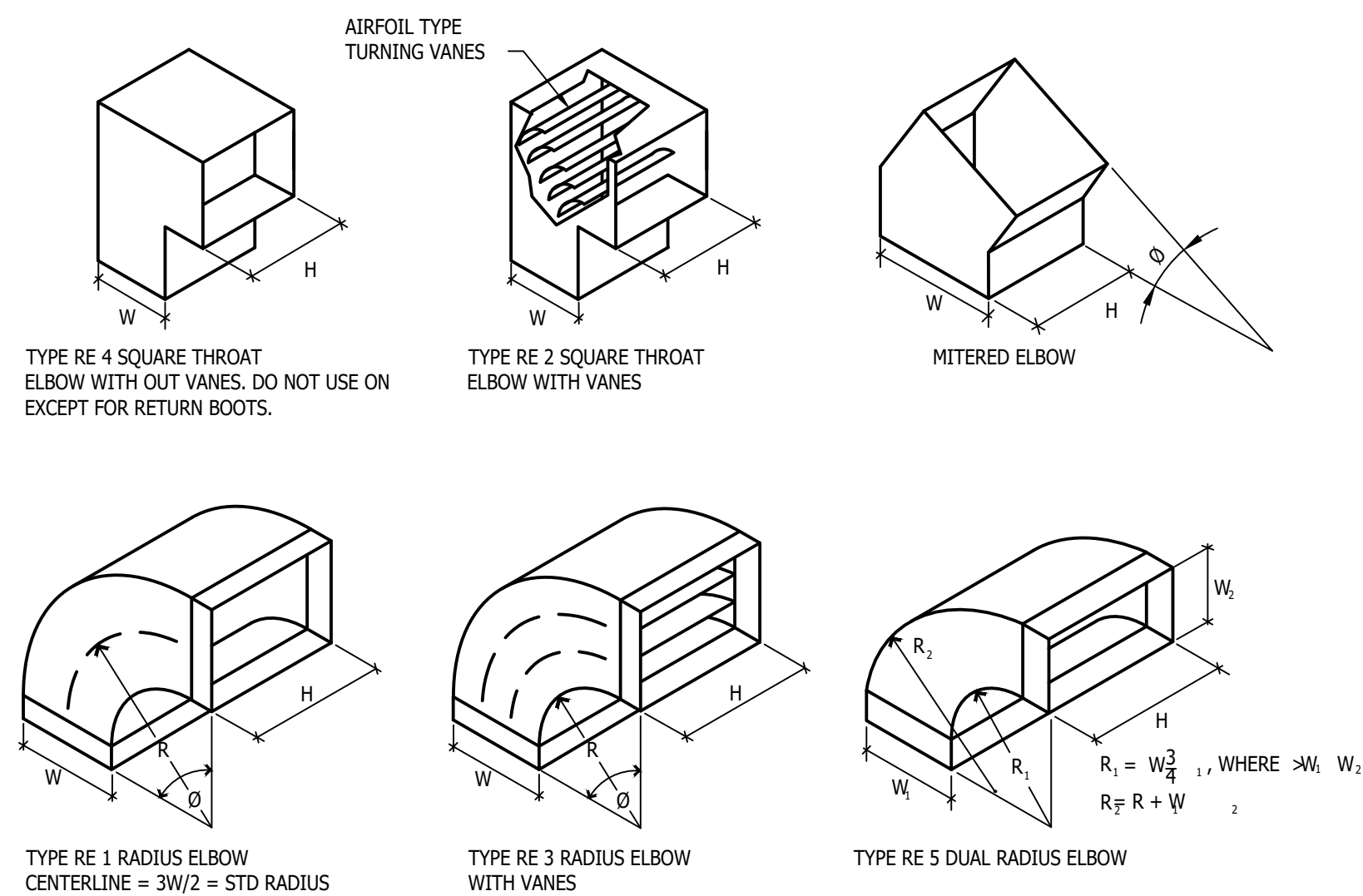
NO SCALE



ENERGY RECOVERY UNIT CONTROL DIAGRAM

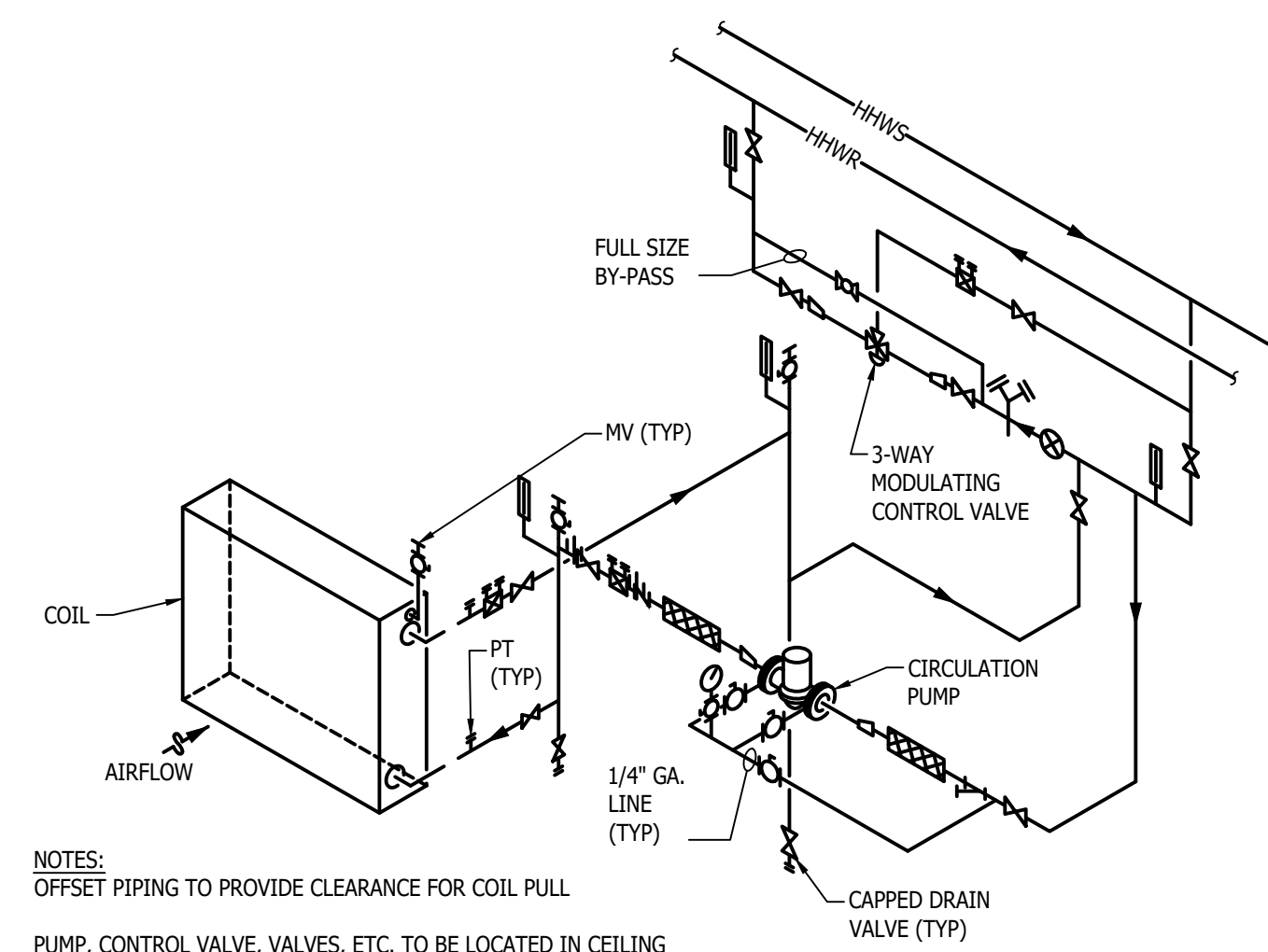
ENERGY RECOVERY UNIT SEQUENCE OF OPERATIONS:
ALL SETPOINTS AND TIME INTERVALS SHALL BE ADJUSTABLE BY THE SYSTEM OPERATOR.

- WITH THE SUPPLY AND EXHAUST FANS' HAND/OFF/AUTO SWITCH IN THE "AUTO" POSITION, THE SUPPLY FAN SHALL BE AUTOMATICALLY STARTED AND STOPPED WITH THE DDC SYSTEM OCCUPANCY SCHEDULE.
- OCCUPIED MODE: WHEN THE DDC SYSTEM ENERGIZES THE SUPPLY FAN IT SHALL RUN CONTINUOUSLY. THE EXHAUST FAN SHALL BE INTERLOCKED WITH THE SUPPLY FAN. THE SUPPLY AND EXHAUST FANS WILL PROVE FLOW TO THE DDC SYSTEM WITH THEIR CURRENT SENSING SWITCH. IF THE FAN FAILS, THE SYSTEM WILL BE DE-ENERGIZED AND AN ALARM WILL BE SENT TO THE DDC SYSTEM.
- THE DISCHARGE AIR TEMPERATURE SENSOR SHALL MODULATE THE DX STAGES OF COOLING AND THE HEATING COIL CONTROL VALVE TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SETPOINT. THE SPACE TEMPERATURE SENSORS SHALL MODULATE THE TEMPERING COIL CONTROL VALVE TO MAINTAIN SPACE TEMPERATURE SETPOINT.
- UNOCCUPIED MODE: IF ANY SPACE TEMPERATURE SENSORS DROPS BELOW 60°F, THE SUPPLY FAN SHALL BE ENERGIZED AND THE HEATING COIL CONTROL VALVE SHALL OPEN FULLY. AFTER ALL OF THE SPACES HAVE REACHED 63°F (ADJ), THE UNIT SHALL BE DE-ENERGIZED.
- THE ENERGY RECOVERY VENTILATOR PACKAGED DEFROST CONTROLLER SHALL MODULATE THE FACE AND BYPASS DAMPERS AS REQUIRED TO PREVENT FROSTING OF THE HEAT EXCHANGER. THE CONTROLLER ALSO ACTS AS AN AIR ECONOMIZER THAT WILL BYPASS AIR AROUND THE HEAT EXCHANGER AT THE APPROPRIATE TIMES.
- THE DDC SYSTEM SHALL MONITOR THE DIFFERENTIAL PRESSURE ACROSS THE FILTERS. AN ALARM SHALL BE SENT TO THE DDC SYSTEM WHEN THE HIGH LIMIT SETPOINT IS REACHED (1.25" W.G.).
- IF THE FREEZE-STAT SETPOINT IS REACHED (35°F OR BELOW), THEN THE SUPPLY FAN SHALL BE DE-ENERGIZED. CIRCULATION PUMP SHALL BE ENERGIZED. IF THE DUCT MOUNTED SMOKE DETECTORS DETECT SMOKE, THEN THE SUPPLY FAN SHALL BE DE-ENERGIZED.
- WHEN THE SUPPLY FAN IS DE-ENERGIZED, THE OUTSIDE AND RELIEF DAMPERS SHALL BE CLOSED. THE RETURN AIR DAMPER SHALL BE OPEN.
- WHENEVER THE OUTSIDE AIR TEMPERATURE IS BELOW 40°F, THE HEATING COIL CIRCULATION PUMP SHALL BE ENERGIZED AND RUN CONTINUOUSLY. THE PUMP SHALL PROVE FLOW TO THE DDC SYSTEM WITH ITS CURRENT SWITCH. IF THE PUMP FAILS, AN ALARM SHALL BE SENT TO DDC.
- THE BUILDING DDC SYSTEM SHALL MONITOR AND GRAPHICALLY SHOW THE FOLLOWING POINTS: EXHAUST AIR TEMPERATURE, DISCHARGE AIR TEMPERATURE (BOTH UNIT AND TEMPERING COIL), ROOM TEMPERATURE, ROOM TEMPERATURE SET POINT, STAGES OF COOLING, HEATING COIL VALVE POSITION, SUPPLY FAN STATUS, EXHAUST FAN STATUS, MIXED AIR TEMPERATURE, FILTER PRESSURE DIFFERENTIAL.

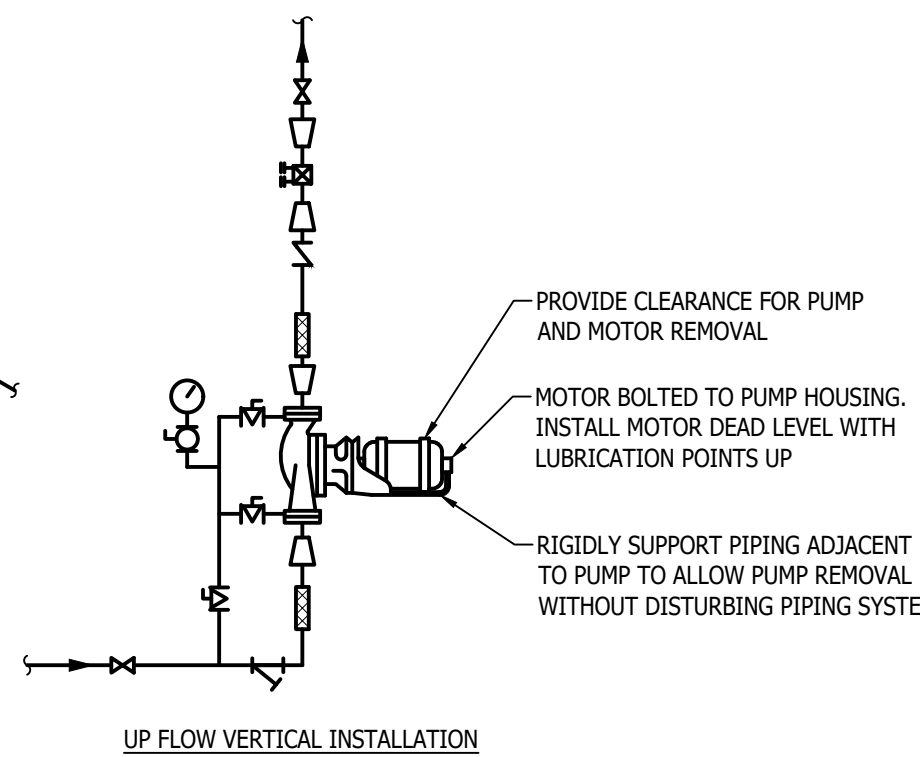


RECTANGULAR SHEET-METAL ELBOWS

NO SCALE



HEATING COIL WITH CIRCULATION PUMP PIPING DIAGRAM

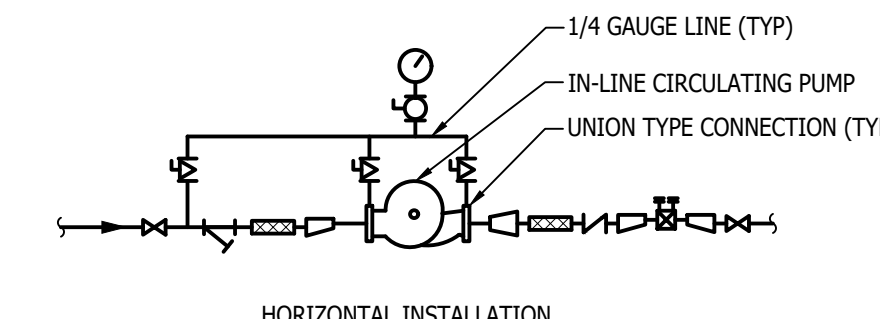


IN-LINE CIRCULATING PUMP PIPING DIAGRAM

NO SCALE

NOTES:

- PUMP SHALL BE SUPPORTED INDEPENDENTLY FROM PIPING.
- PROVIDE WITH FLEXIBLE CONNECTION FOR PUMPS WITH MOTORS 1/2 HORSEPOWER AND GREATER.



HORIZONTAL INSTALLATION

GRILLE, REGISTER AND DIFFUSER SCHEDULE							
UNIT ID	FACE SIZE	NECK SIZE	MOUNTING	FINISH	MATERIAL	PRICE/ MODEL NO.	REMARKS
S-1	NECK+2"	SEE PLANS	DUCT	STEEL	STEEL	SDG	

PUMP SCHEDULE															
UNIT ID	SYSTEM SERVED	TYPE	FLOW (GPM)	HEAD (FT)	MIN % EFF	DISCONNECT				STARTER		MANUFACTURER/ MODEL NO.	REMARKS		
						BHP	HP	VOLTS	PHASE	FURN. BY	INST. BY			TYPE	FURN. BY
CP-1	HEATING HOT WATER	INLINE	14	20	-	-	0.5	120	1	MC	MC	DIV 26	MC	BELL AND GOSSETT / E-60-ECM 1x1x5.25	

NOTES:

- PERFORMANCE BASED ON WATER, UNLESS OTHERWISE INDICATED.
- PUMPS SHALL BE NON-OVERLOADING.

HEATING HOT WATER COIL SCHEDULE																	
UNIT ID	SYSTEM SERVED	MIN NO. OF ROWS	CAPACITY MBH	AIR			MIN FACE AREA (SQ FT)	FINNED DIMENSIONS (HEIGHT X LENGTH) (IN.)	WATER			CONTROL VALVE WPD (FT HD)	CONTROL VALVE CONFIGURATION	MODEL NO.	REMARKS		
				AIRFLOW CFM	EDB °F	LDB °F			MAX APD (IN WG)	FLOW (GPM)	EWT °F					LWT °F	MAX WPD (FT HD)
HC-1	ERV-1	2	132.6	4,600	63.2	89.8	0.28	6.00	24x36	6.7	160	120	8.8	5	2-WAY	WB-3624-07B-2CA-R	

NOTES:

- MODEL NUMBERS ARE CAPITAL COIL & AIR UNLESS OTHERWISE NOTED.
- COIL SELECTION BASED ON 0.00025 FOULING FACTOR.
- CONTROL BY ERV CONTROL PANEL, VALVE PROVIDED BY TCC.
- CONTROL BE SPACE THERMOSTAT.

PACKAGED ROOFTOP ENERGY RECOVERY UNIT SCHEDULE - (DX - HGR)																																																	
UNIT ID	SUPPLY FAN					EXHAUST FAN					ENTHALPY WHEEL - SUMMER					ENTHALPY WHEEL - WINTER					POST ENTHALPY WHEEL CONDITIONING					HOT GAS RE-HEAT COIL		FILTERS		ELECTRICAL		DISCONNECT		CURB HEIGHT (IN)	MANUFACTURER/ 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					AIR		MOC	MCA	FLA	VOLTS				PHASE	FURN. BY	INST. BY										
													EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	EDB (°F)	RH	LDB (°F)	LWB (°F)	EDB (°F)	RH	LDB (°F)	LWB (°F)	APD (IN WG)	MIN. EFFICIENCY (EER)	REFRIGERANT TYPE	RE-HEAT (MBH)	EDB (°F)											LDB (°F)	PRE FILTER	FINAL FILTER							
ERV-1	1.0	4,600	SWSI	DIRECT	2.78	5.0	0.25	1,400	SWSI	DIRECT	1.52	2.0	95.0	75.0	79.3	65.9	74.0	88.09	89.3	71.7	-10.0	47.8	70.0	7.4	10.2	121.4	101.3	75.6	63.2	56.8	54.7	0.30	12.94	R-454B	72.8	55.2	69.9	2" MERV 8	4" MERV 13	35	31	29	460	3	MC	MC	18	AACN / RNA-011-B-A-3-GAADC-00000-00-0FEAH-K CK-00000-ABJBG-EC-CB08-00-EO-0-ANO-EO -N000-00-000-B00A00-C00A0B-000000B	

NOTES:

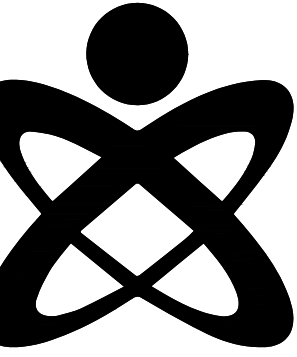
- MODEL NUMBER IS AACN.
- DUAL INPUT ENTHALPY CONTROL ECONOMIZER.
- 2" PLEATED MEDIA ENERGY RECOVERY WHEEL FILTERS.
- DISCONNECT SWITCH.
- 115V SERVICE RECEPTACLE
- REFRIGERATION COMPRESSORS SHALL BE VARIABLE SPEED OR DIGITAL.
- ALL FANS SHALL BE ECM.
- PROVIDE WITH REFRIGERATION CONTROLS ONLY. UNIT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

11/15/2024

ISSUANCE:
BIDS

DRAWN: CEM
APPROVED: TDD

MECHANICAL DETAILS,
SCHEDULES, AND
TEMPERATURE
CONTROLS



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

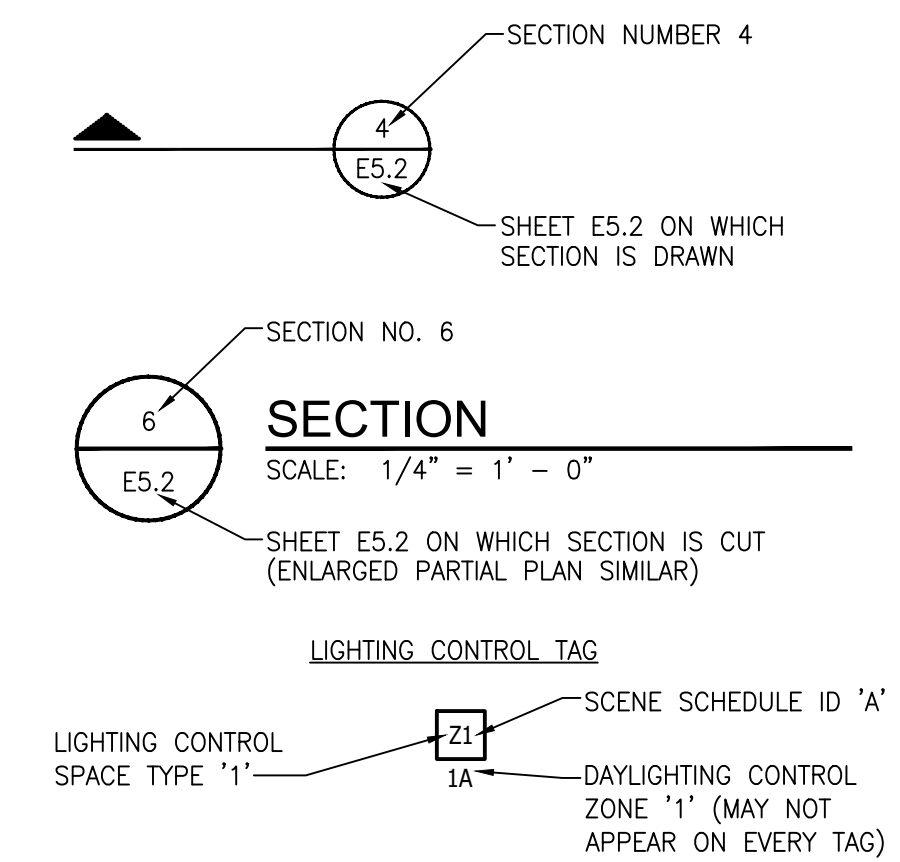
PROJECT:
**FRANKLIN HIGH SCHOOL
WOOD SHOP / SCENE
SHOP - AC REPLACEMENT**



DRAWING INDEX	
SHT NO	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
EPI.00	ELECTRICAL POWER DEMOLITION AND NEW WORK PLANS
E5.00	ELECTRICAL DETAILS, SCHEDULES, AND DIAGRAMS

DRAWING NOTATION

SYMBOL	DESCRIPTION
LA	LIGHTING FIXTURE TAG
①	CONSTRUCTION KEY NOTE NUMBER 1
①	DEMOLITION KEY NOTE NUMBER 1
①	FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE ON THIS SHEET)
EF-1	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
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8
2023	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

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
SPD	SURGE PROTECTION DEVICE
TC	TIME CLOCK
T	TRANSFORMER (REFER TO SCHEDULES FOR INFO)
VSD	VARIABLE SPEED DRIVE

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

AUXILIARY SYST. SYMBOL LIST

SYMBOL	DESCRIPTION
□	CAMERA
CR	CARD READER
▼	COMMUNICATIONS DEVICE – 6" ABOVE COUNTER
▼	COMMUNICATIONS DEVICE – FLOOR
▼	COMMUNICATIONS DEVICE – WALL
DH	MAGNETIC DOOR HOLDER
□	PUSH BUTTON
S	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
FAA	FIRE ALARM ANNUCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
∇FD	FIRE DEPARTMENT COMMUNICATION OUTLET
F	MANUAL DEVICE – PULL STATION
F	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
GFCI/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 Ⓧ	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

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 SCENCE
○	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
\$o	OCCUPANCY SENSOR SWITCH
\$v	VACANCY SENSOR SWITCH
\$D	LOW VOLTAGE DIMMER SWITCH
\$vo	VACANCY DIMMER SENSOR SWITCH
Ⓧ	CEILING MOUNTED OCCUPANCY SENSOR
Ⓧ	CEILING MOUNTED VACANCY SENSOR
\$3	SWITCH THREE-WAY
\$k	SINGLE POLE KEY SWITCH

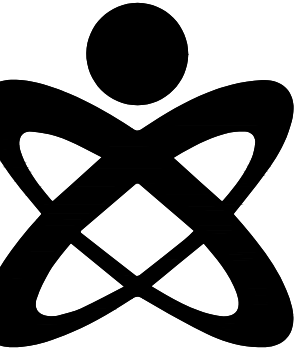
11/15/2024

ISSUANCE:
BIDS

DRAWN: RDL
APPROVED: MPH

ELECTRICAL
GENERAL
INFORMATION

E0.00

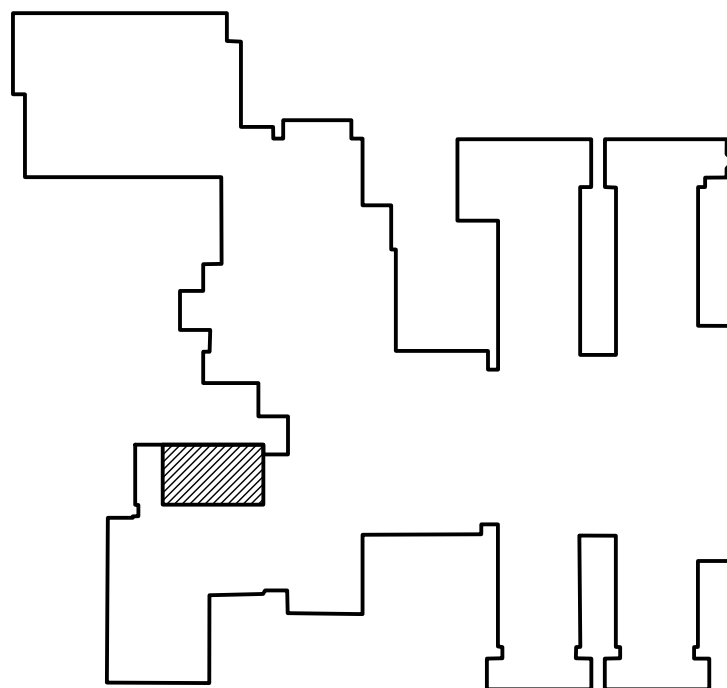


CLIENT:
LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI 48154

PROJECT:
**FRANKLIN HIGH SCHOOL
WOOD SHOP / SCENE
SHOP - AC REPLACEMENT**



KEY PLAN



11/15/2024

ISSUANCE:
BIDS

DRAWN: RDL
APPROVED: MPH

**ELECTRICAL POWER
DEMOLITION AND
NEW WORK PLANS**

EP1.00

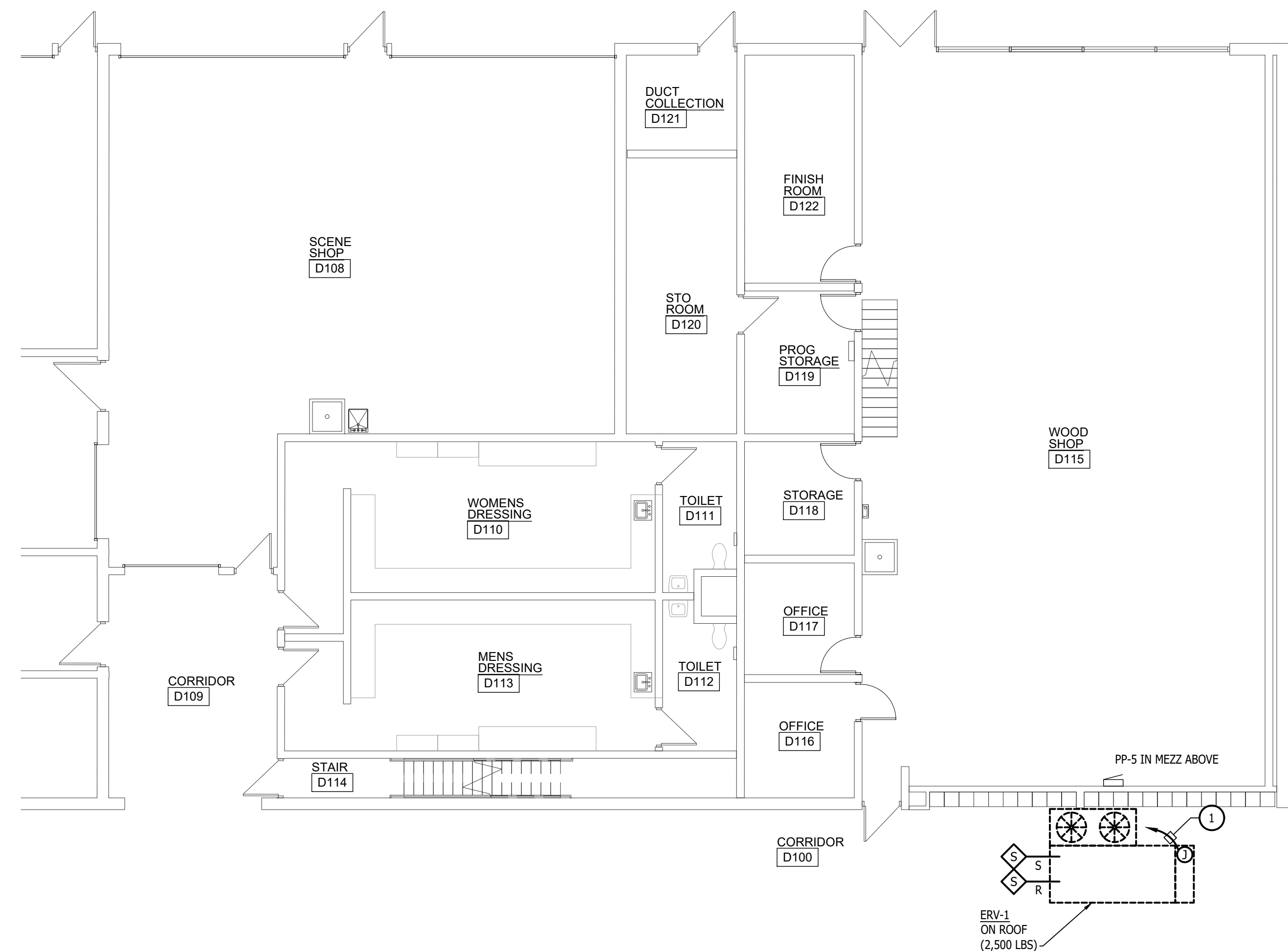
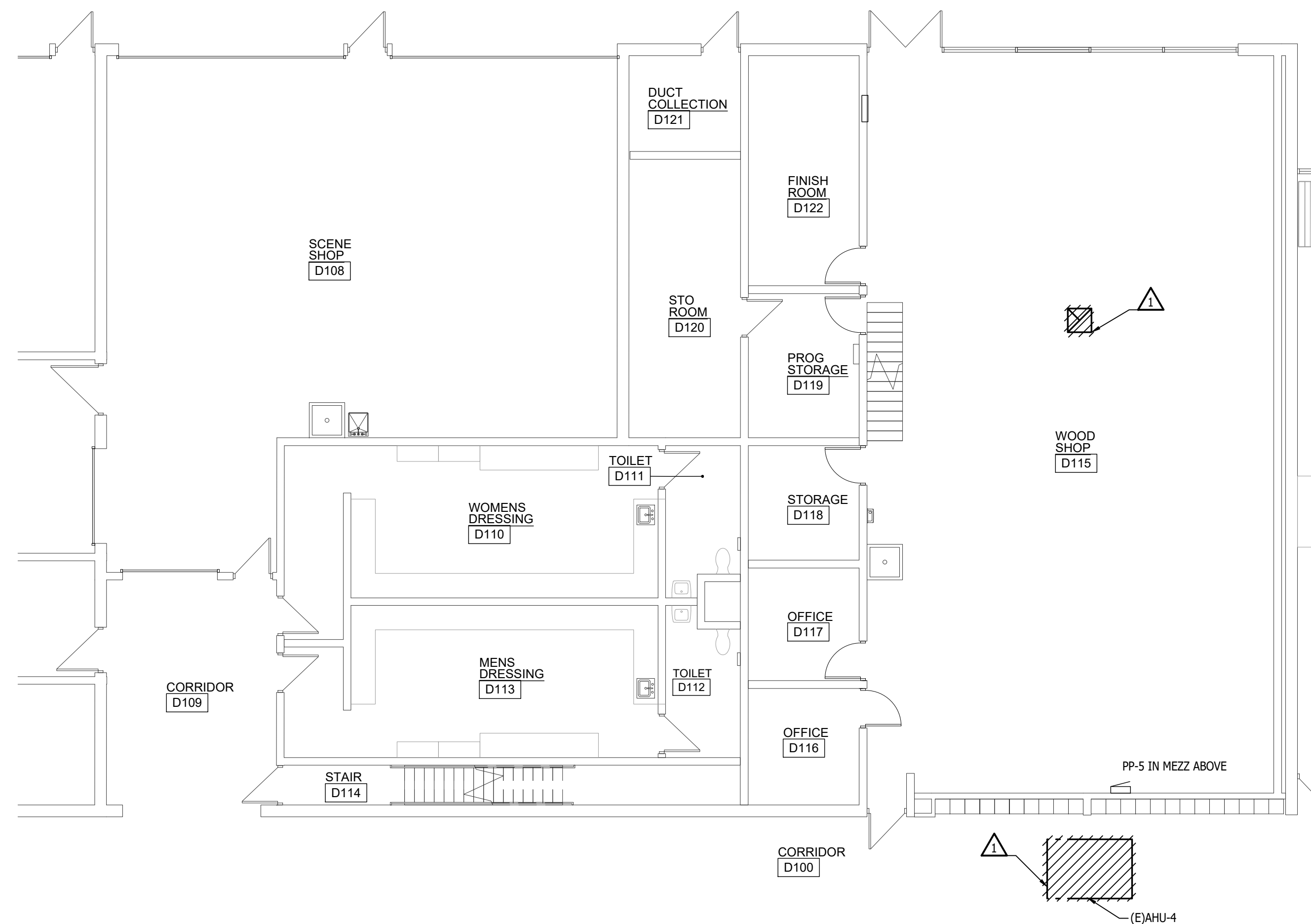
GENERAL DEMOLITION NOTES	
A	THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE DETERMINED BY THE NEW WORK.
B	ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
C	PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY DESIGN PROFESSIONAL OF ANY INTERFERENCES OR DISCREPANCIES.
D	ALL ITEMS INDICATED WITH CROSS-HATCHING SHALL BE REMOVED COMPLETELY WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
E	THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER-PROVIDED EQUIPMENT.
F	VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITIONS OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING ANY WORK.
G	ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
H	ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT WORK PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.

DEMOLITION KEYED NOTES	
1	MECHANICAL EQUIPMENT TO BE REMOVED COMPLETE BY MECHANICAL TRADES. EC TO DISCONNECT AND MAKE SAFE. REMOVE SWITCH, TAKE CONDUIT AND WIRING BACK TO SOURCE. MARK BREAKER AS SPARE AND UPDATE PANEL SCHEDULE.

PLUMBING GENERAL NOTES	
A	THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE DETERMINED BY THE NEW WORK.
B	ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
C	PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY DESIGN PROFESSIONAL OF ANY INTERFERENCES OR DISCREPANCIES.
D	ALL ITEMS INDICATED WITH CROSS-HATCHING SHALL BE REMOVED COMPLETELY WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
E	THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER-PROVIDED EQUIPMENT.
F	VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITIONS OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING ANY WORK.
G	ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
H	ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT WORK PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
J	INSTALL ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS NOTED OTHERWISE. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
K	PROVIDE "IN-LINE" WATERLESS PRIMER TRAP SEAL PROTECTION ON ALL FLOOR DRAINS AND TRAPS SUBJECT TO EVAPORATION.
L	AT EACH CONNECTION OF GAS SUPPLY TO EQUIPMENT, PROVIDE A PIPE UNION, GAS SHUT OFF VALVE, TEE, AND 6" LONG DIRT LEG WITH CAP.
M	THE CEILING SPACE IS USED AS A RETURN AIR PLENUM. NO PLASTIC MATERIALS INCLUDING PVC PIPING, CONDUIT WIRING, ETC. SHALL BE USED. ALL MATERIALS TO BE USED ARE TO BE PLENUM RATED.

NEW WORK KEYED NOTES	
1	ERV-1 BEING INSTALLED BY MECHANICAL TRADES, ELECTRICAL CONTRACTOR SHALL PROVIDE NEW WIRING AND FEEDER. RUN 3#8&1#10G IN 3/4" C TO EXISTING SPARE SWITCH IN PP-1. REFER TO PANEL SCHEDULES ON E5.00

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 INDEMNIFY, 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.



CLIENT:
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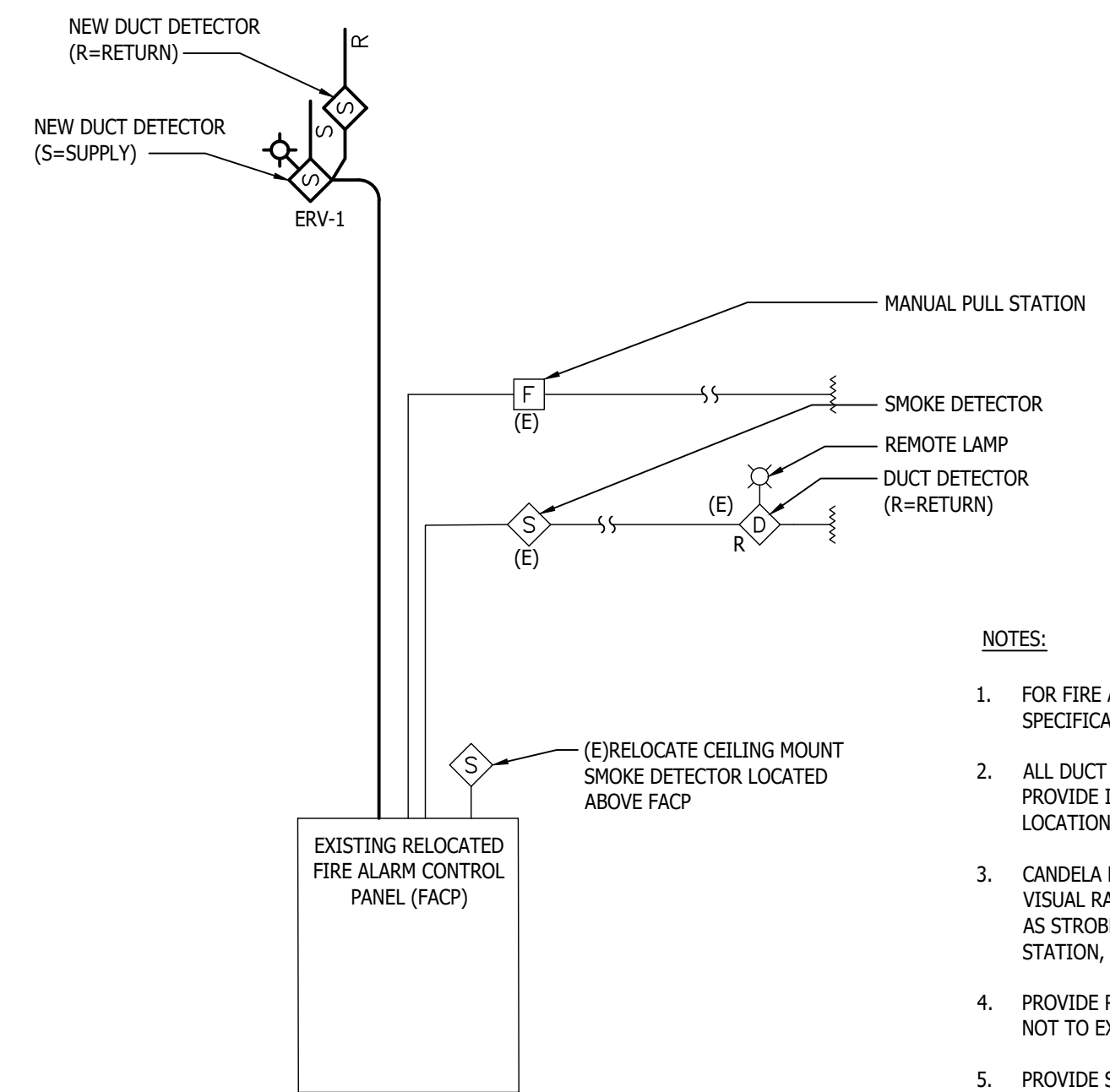
PROJECT:
**FRANKLIN HIGH SCHOOL
WOOD SHOP / SCENE
SHOP - AC REPLACEMENT**



Panel Designation: (E)PP-5		Main MLO		P-P Voltage: 480															
Panel Location: MEZZ		Building: 400		P-N Voltage: 277															
Feeder Size: EXISTING		Ground Bus: STANDARD		Phase: 3															
Mounting: SURFACE		Wire: 4																	
Remarks	Light Load	Recept Load	Cont Load	Assoc Load	Neutral 100%			Min SC Interrupting Rating			EXISTING	Remarks							
					OC Prof	OC A	OC B	OC C	OC Prof	OC Load			OC Recept	OC Light					
ERV-2				4244	30	1	X	3						(E) - AIR COMP MEZZ					
(E) - AIR HANDLER				2544	30	3	X	4						(E) - AIR HANDLER<OFF>					
(E) - EXISTING				2122	30	7	X	8						(E) - SPARE					
(E) - AIR COMP				2122	30	9	X	10						(E) - AHU-3					
(E) - GARAGE RTU				2491	30	13	X	14						(E) - EXISTING					
(E) - SPARE				2491	30	17	X	18						(E) - A/C RM 519<OFF>					
(E) - TRANS				4366	40	19	X	20						(E) - AHU-3					
				4366	40	31	X	32						(E) - EXISTING					
				4366	40	33	X	34						(E) - AHU-3					
				10782	40	37	X	38						(E) - AHU-3					
				10782	40	39	X	40						(E) - AHU-3					
				31832	400	37	X	38						(E) - AHU-3					
				31832	400	39	X	40						(E) - AHU-3					
				31832	400	41	X	42						(E) - AHU-3					
Load Description				GA	GB	GC	Total			Demand Factor				GA	GB	GC	Total		
Lighting or Continuous Load (Volts-Amps)				0	0	0	0			100				0	0	0	0		
180VA Receptacle Load (Volts-Amps)				0	0	0	0			1.00 (per 180VA)				0	0	0	0		
Amount Demand (kVA)				0	0	0	0			0.50 (per 180VA)				0	0	0	0		
Continuous Load (Volts-Amps)				0	0	0	0			100				0	0	0	0		
Non-Continuous Load (Volts-Amps)				89551	89551	89551	268653			100				89551	89551	89551	268653		
Total Load (kVA)				89551	89551	89551	268653			100% of Lighting and Recept (kVA) load plus other load				89551	89551	89551	268653		
Total Ampacity (Amps)				323.1	323.1	323.1	323.1			per NEC Article 215.2				323.1	323.1	323.1	323.1		
Minimum Feeder Size (Amps)				323.1	323.1	323.1	323.1			per NEC Article 215.2				323.1	323.1	323.1	323.1		

NEW WORK KEYED NOTES

1. PROVIDE NEW 60A 3P SWITCHED FUSED DOWN TO 35A. SWITCH SHALL MATCH EXISTING WESTINGHOUSE ELECTRIC CORPORATION BRAND.



NOTES:

- FOR FIRE ALARM EQUIPMENT SPECIFICATION AND ADDITIONAL REQUIREMENTS, SEE SPECIFICATIONS.
- ALL DUCT DETECTORS SHALL BE WIRED TO ACTIVATE ALARM SYSTEM AND SHUT DOWN FAN. PROVIDE INDICATOR LIGHT WHERE SMOKE DETECTORS ARE INSTALLED IN CONCEALED LOCATIONS OR ARE MORE THAN 10FT. ABOVE THE FINISHED FLOOR.
- CANDELA RATING ARE INTENDED TO BE 15cd UNLESS NOTED OTHERWISE. ALL AUDIO AND VISUAL RATINGS SHALL MEET OR EXCEED NFPA REQUIREMENTS. MINOR DEVIATIONS SUCH AS STROBE RATING, MISSING OF AUDIO/VISUAL UNITS, SMOKE DETECTORS UNITS, PULL STATION, ETC. (MAX OF 10) SHALL BE INCLUDED AS PART OF THIS BID.
- PROVIDE REMOTE POWER SUPPLIES AS REQUIRED FOR NOTIFICATION APPLIANCE CIRCUITS, NOT TO EXCEED 80% OF CAPACITY.
- PROVIDE SMOKE DETECTOR ABOVE EACH REMOTE POWER SUPPLY PANEL.
- PROVIDE BATTERY, CURRENT LOAD AND VOLTAGE DROP CALCULATIONS PER SPECIFICATIONS.
- SEAL AROUND ALL PIPES & CONDUITS IN MASONRY AND DRYWALL WALLS.
- ALL FIRE ALARM WIRING SHALL BE MINIMUM #14 AWG AND IN CONDUIT MIN 3/4" IN EXPOSED CEILING AREAS, CABLE IS ACCEPTABLE ABOVE LAY-IN CEILINGS IN J-HOOKS.
- FIRE ALARM CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CHARGES INVOLVED IN OBTAINING APPROVAL AND CERTIFICATION FROM STATE ELECTRICAL INSPECTOR FOR A COMPLETE SYSTEM. CERTIFIED CONTRACTOR TO PAY ALL FEES REQUIRED.
- THE ELEVATION DIAGRAM IS FOR REFERENCE PURPOSES. EXACT QUANTITIES OF DEVICES AND LOCATIONS SHALL COMPLY WITH NFPA GUIDELINES AND MEET APPROVAL OF THE STATE ELECTRICAL INSPECTOR. FIRE ALARM CONTRACTOR SHALL HAVE SHOP DRAWINGS APPROVED BY THE STATE ELECTRICAL INSPECTOR PRIOR TO COMMENCEMENT OF WORK.
- FOR FIRE ALARM SYMBOL LEGEND SEE DRAWING E000.
- PROVIDE COVER WITH SIREN FEATURE TO ALL FIRE ALARM MANUAL PULL STATION.
- FIRE ALARM VENDOR TO PROVIDE INSTALLATION DRAWINGS AS PART OF SUBMITTALS.
- THE FIRE ALARM SYSTEM SHOWN ON THE DRAWINGS AND SPECIFICATIONS ARE A PERFORMANCE SPECIFICATION SYSTEM WITH DEVICE LOCATIONS. FIRE ALARM VENDOR AND CONTRACTOR MUST PROVIDE A COMPLETE SYSTEM PER CODE.
- ALL STROBES EXISTING AND NEW SHALL BE SYNCHRONIZED.

FIRE ALARM RISER
NO SCALE

11/15/2024

ISSUANCE:
BIDS

DRAWN: RDL
APPROVED: MPH

**ELECTRICAL
DETAILS,
SCHEDULES,
AND DIAGRAMS**

E5.00