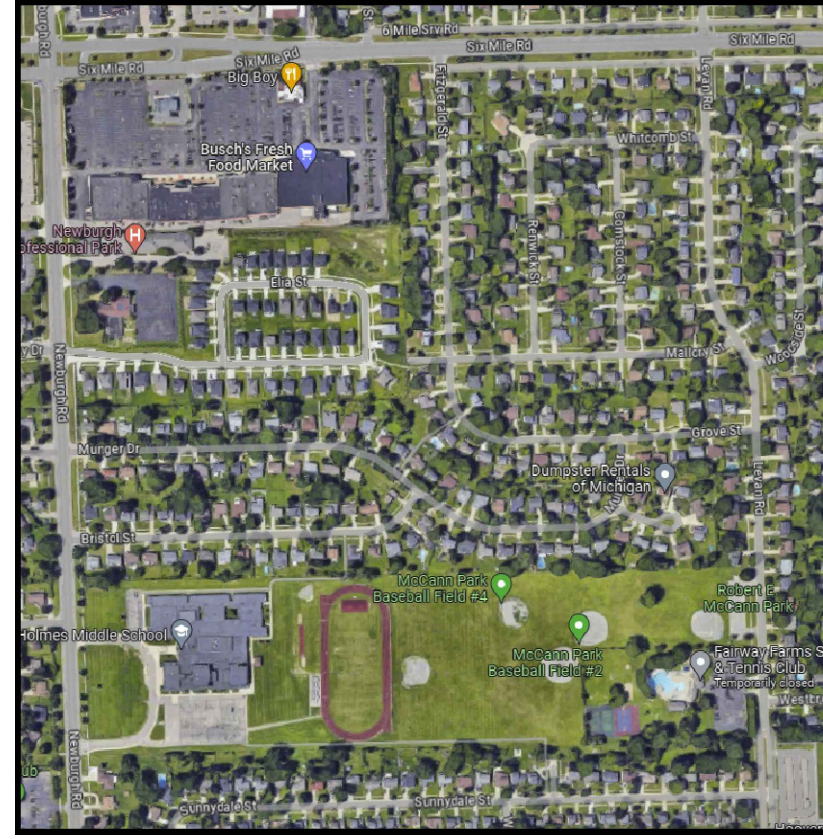


LIVONIA PUBLIC SCHOOLS - HOLMES

2023 WOODSHOP/ART ROOM AC REPLACEMENTS



LOCATION MAP



PROJECT ADDRESS

HOLMES MIDDLE SCHOOL
16200 NEWBURGH RD.
LIVONIA, MI 48154

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

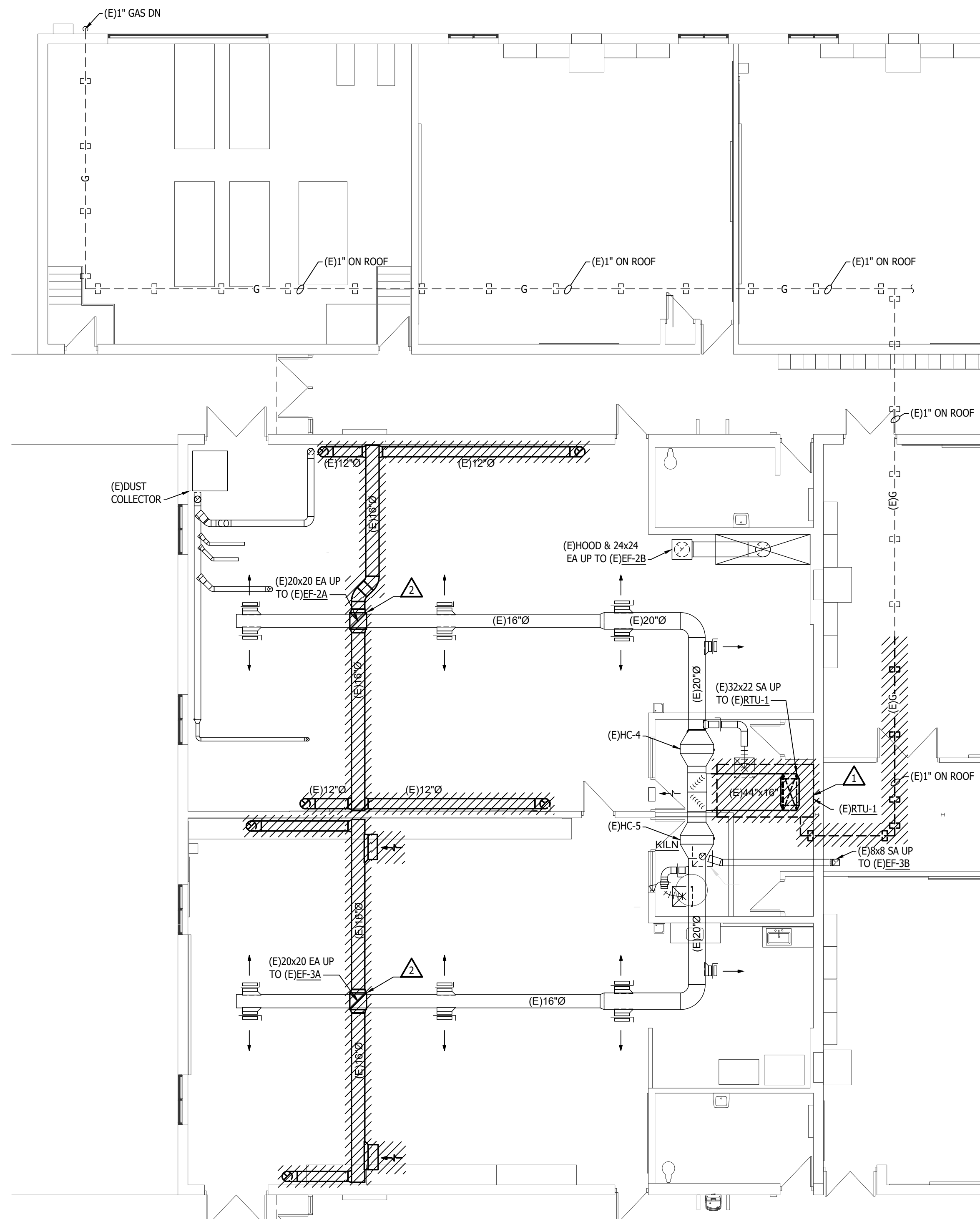
ELECTRICAL DRAWING INDEX

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

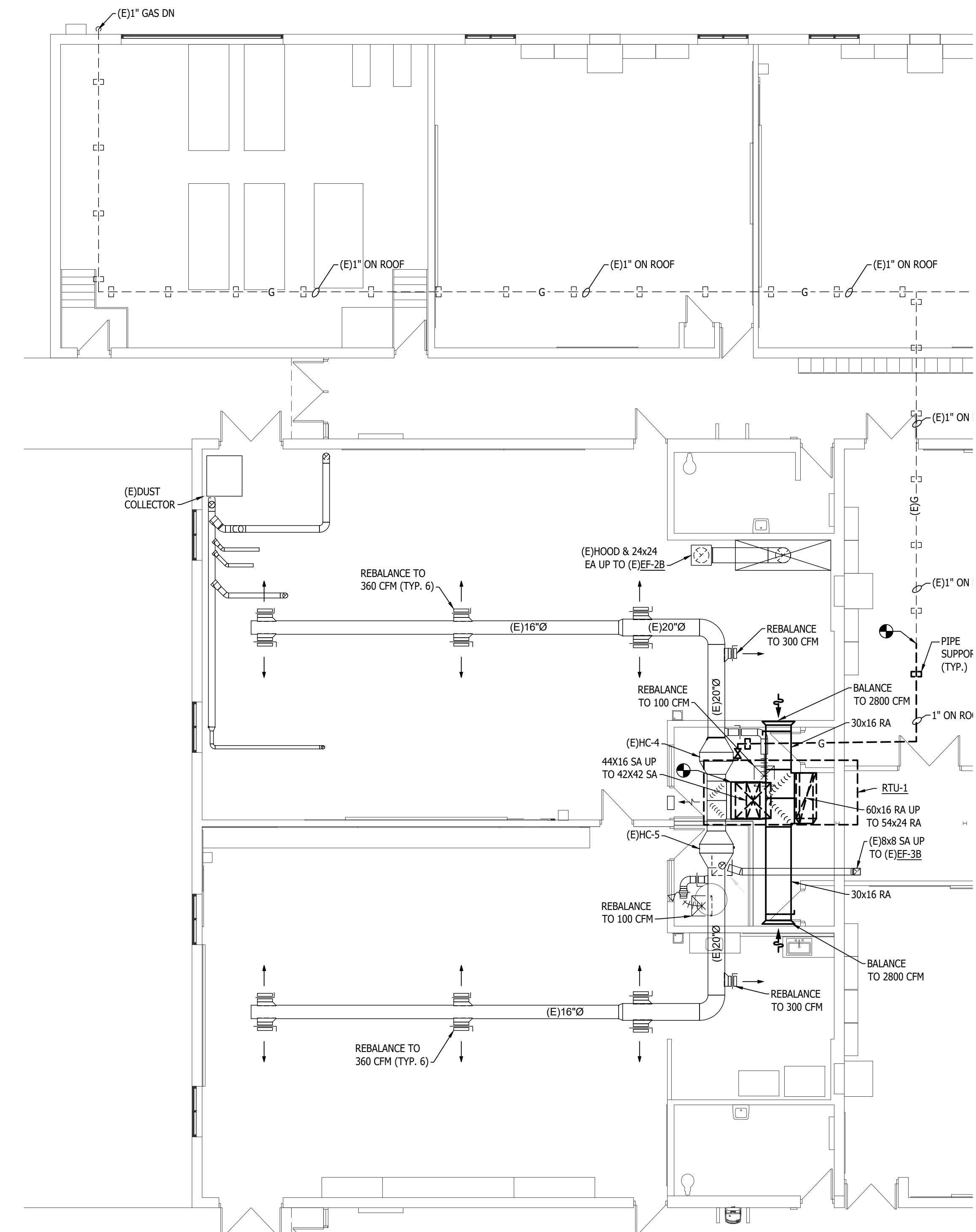
STRUCTURAL DRAWING INDEX

SHEET #	DESCRIPTION
S100	ROOF FRAMING PLAN

CONSTRUCTION: 10/16/2023



MECHANICAL DEMOLITION PLAN
1/8" = 1'-0"



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

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 COMPLETE WITH ALL RELATED ITEMS INCLUDING HANGARS, 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 ROOF TOP UNIT COMPLETE INCLUDING ALL CONTROLS, AND ACCESSORIES. PREPARE DUCTWORK AND GAS PIPING FOR NEW CONNECTION.
2	REMOVE ROOF MOUNTED EXHAUST FAN COMPLETE INCLUDING ALL CONTROLS AND ACCESSORIES. CAP CURB AND SEAL WEATHER TIGHT.

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.

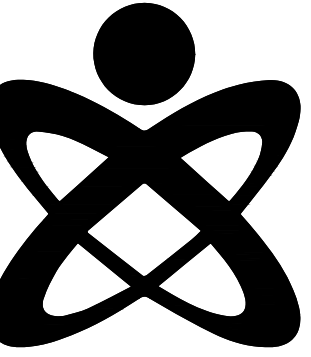
NEW WORK KEYED NOTES	
1	xxx
2	xxx

10/16/2023

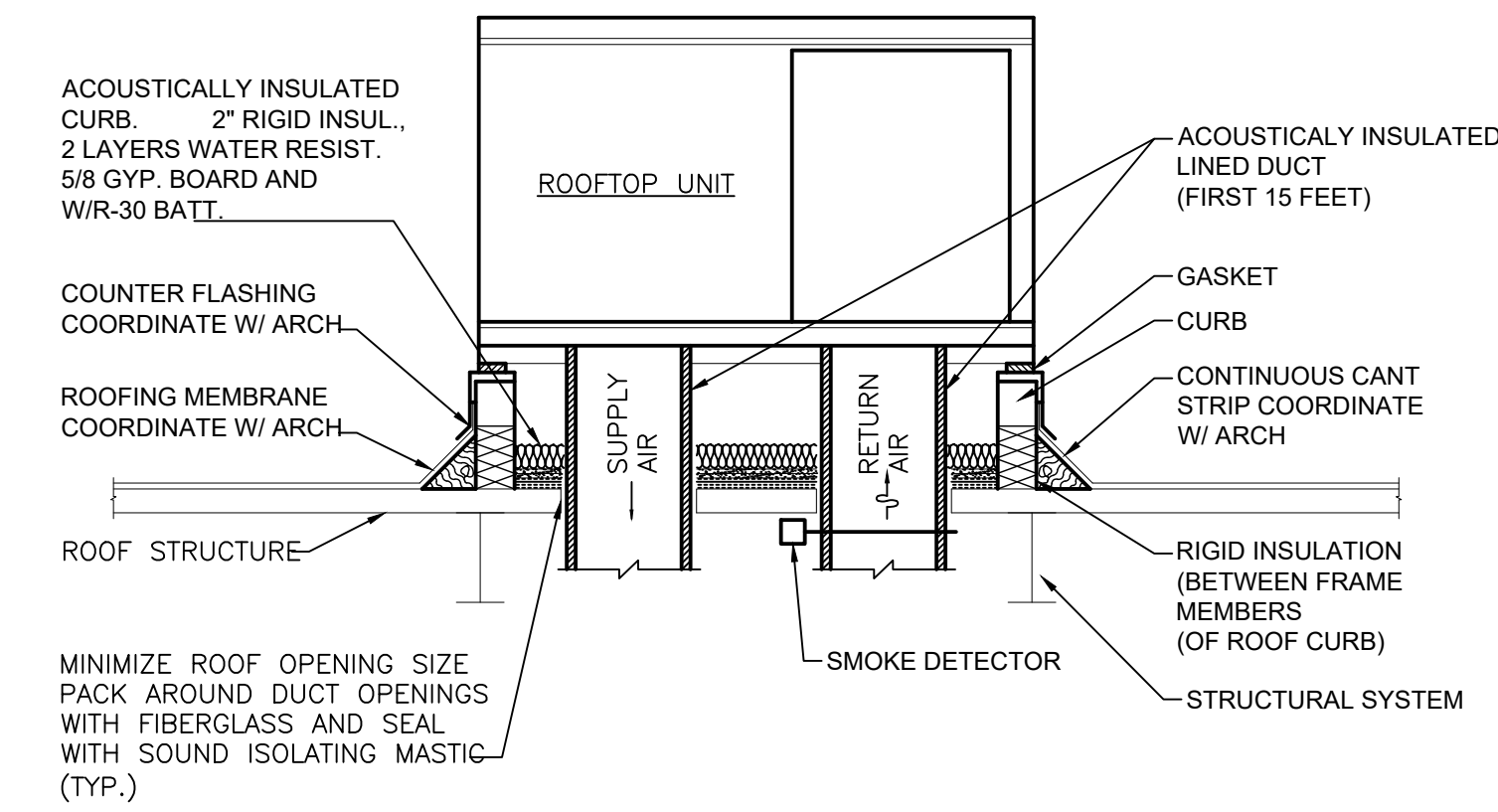
ISSUANCE:
BIDS

DRAWN: TDD
APPROVED: MPH

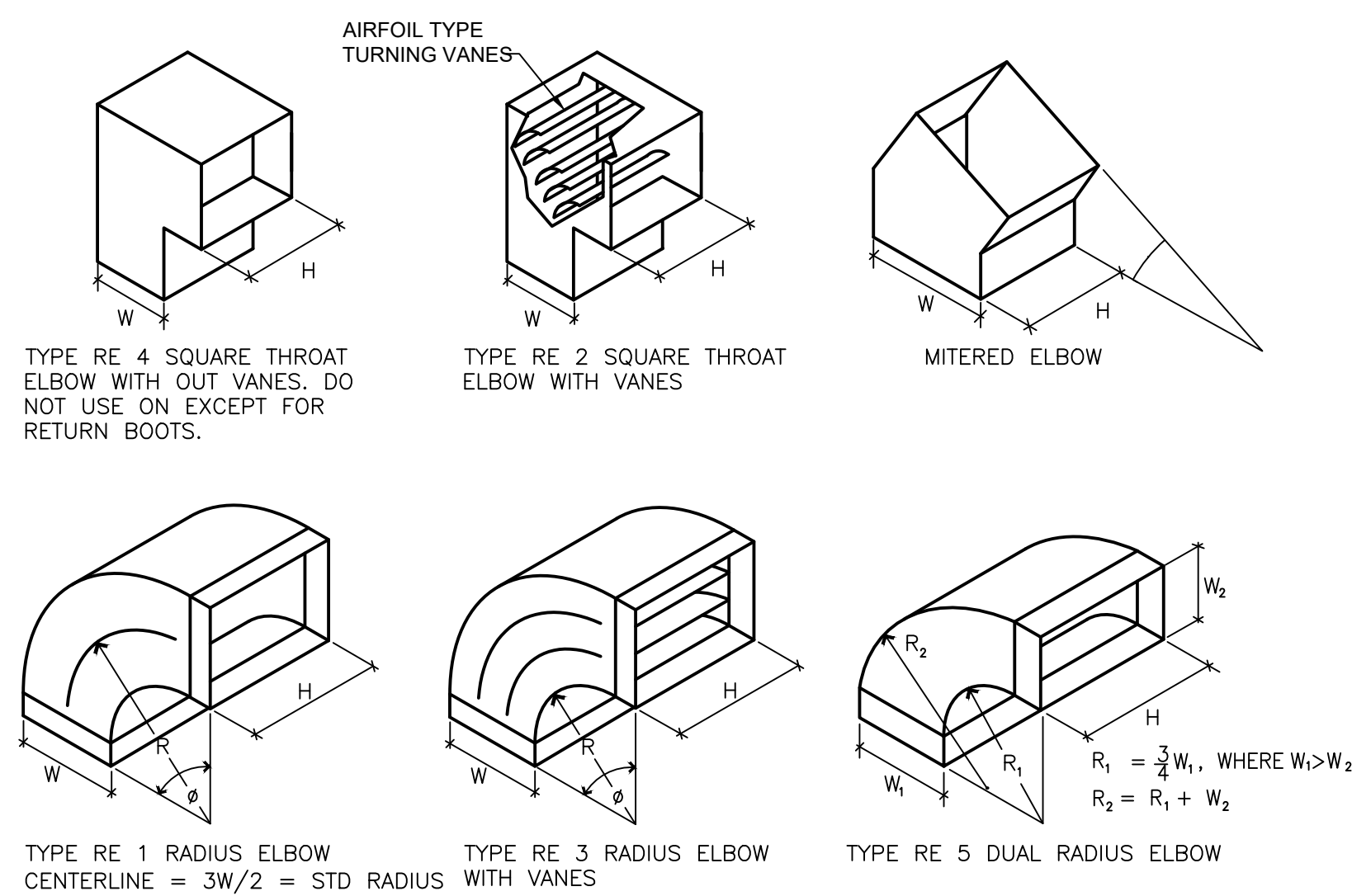
**MECHANICAL
DEMOLITION AND
NEW WORK PLANS**



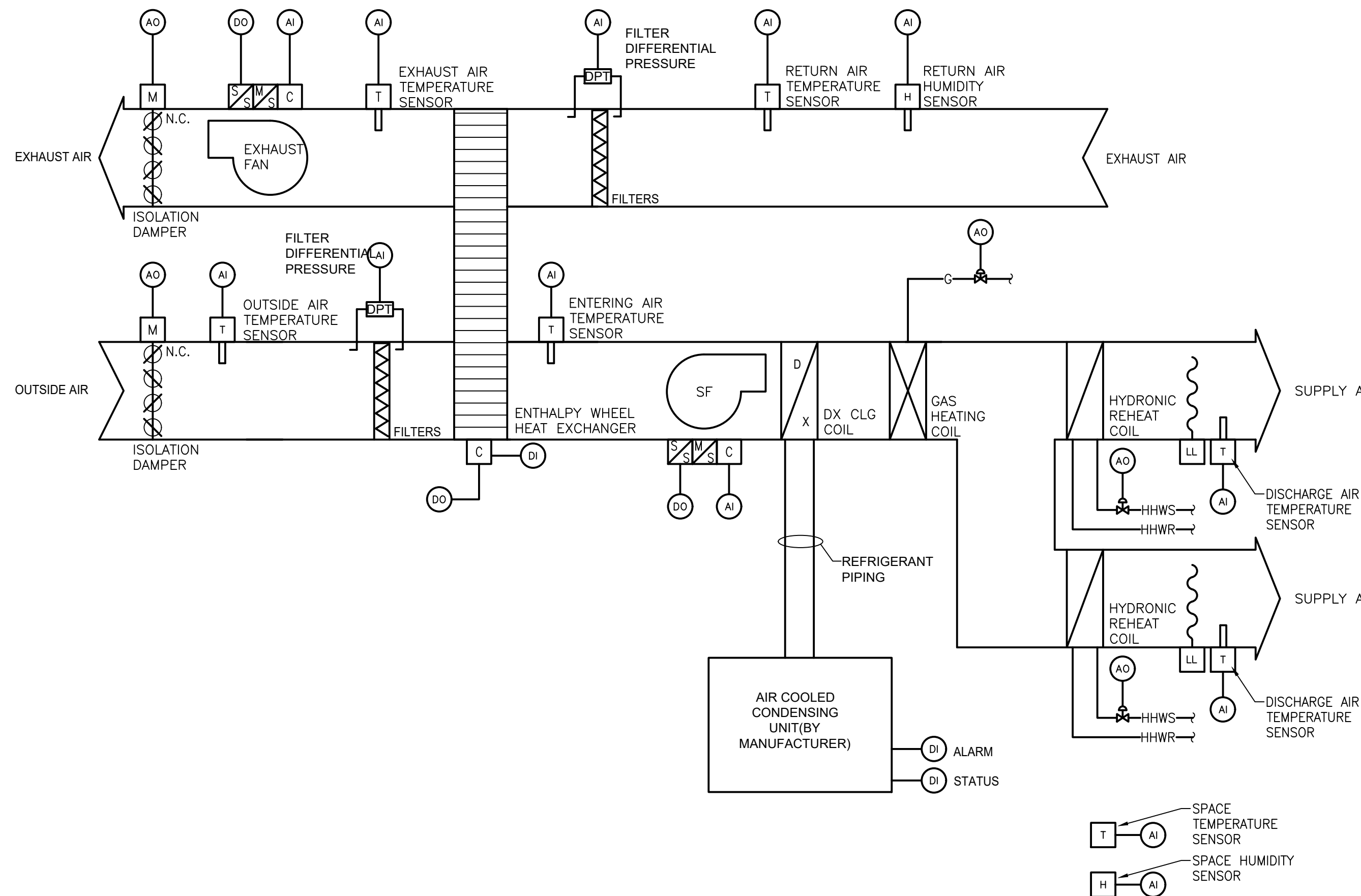
CLIENT:
LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI 48154
PROJECT:
**HOLMES ELEMENTARY
WOODSHOP AC
REPLACEMENT**



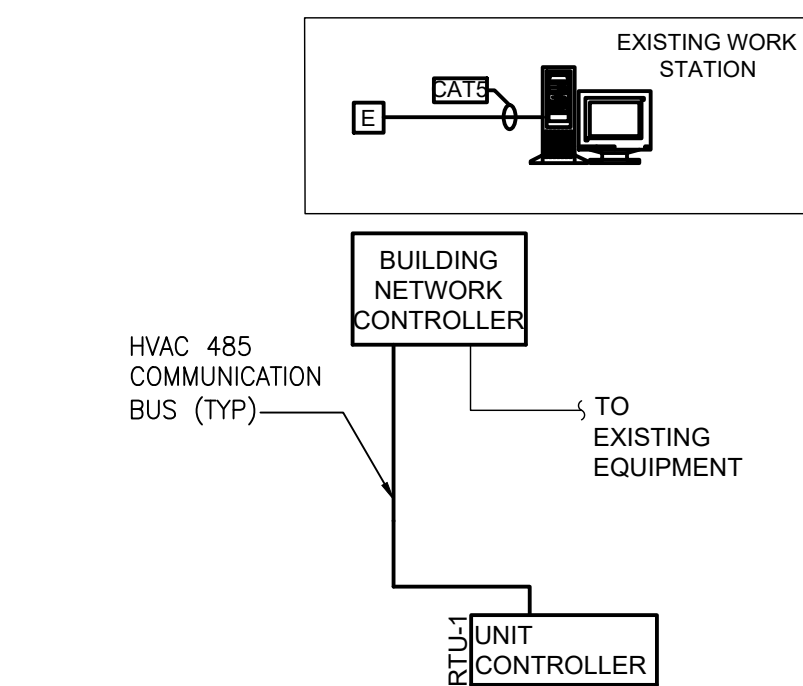
ROOFTOP UNIT - CURB MOUNTING DETAIL
NO SCALE



RECTANGULAR SHEET-METAL ELBOWS
NO SCALE



ENERGY RECOVERY WITH GAS HEAT AND HOT WATER REHEAT CONTROL DIAGRAM
NO SCALE



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.

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								FILTERS			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)	EWB (°F)	LDB (°F)	LWB (°F)	EDB (°F)	EWB (°F)	LDB (°F)	LWB (°F)	APD (IN WG)	MIN. EFFICIENCY (EER)	REFRIGERANT TYPE																				
RTU-1	1.0	5200	SWSI	DIRECT	4.94	7.5	1.0	5600	SWSI	DIRECT	3.06	4.0	95.0	75.0	80.9	67.8	75.0	62.1	80.9	67.8	-10.0	-10.0	70.0	10%	34.8	201.8	144.0	80.9	67.8	55.5	55.5	0.28	10.8	R-410A	MERV 13	600.0	480.0	MODULATING 12:1	70	47.5	41.8	460	3	4,340	18	DP5018A	

- NOTES:
1. MODEL NUMBER IS DAIKIN.
2. DUAL INPUT ENTHALPY CONTROL ECONOMIZER.
3. EXISTING CURBS
4. 2" PLEATED MEDIA ENERGY RECOVERY WHEEL FILTERS.
5. DISCONNECT SWITCH.
6. 115V SERVICE RECEPTACLE
7. REFRIGERATION COMPRESSORS SHALL BE VARIABLE SPEED OR DIGITAL.
8. ALL FANS SHALL BE ECM.
9. PROVIDE WITH REFRIGERATION CONTROLS ONLY. UNIT DDC CONTROLLER TO BE AUTOMATED LOGIC DDC FIELD INSTALLED BY TCC.
10. MODULATING GAS HEAT.

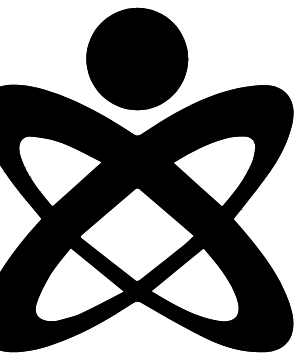
10/16/2023

ISSUANCE:
BIDS

DRAWN: TDD
APPROVED: MPH

**MECHANICAL DETAILS,
SCHEDULES, AND
TEMPERATURE
CONTROLS**

M8.00



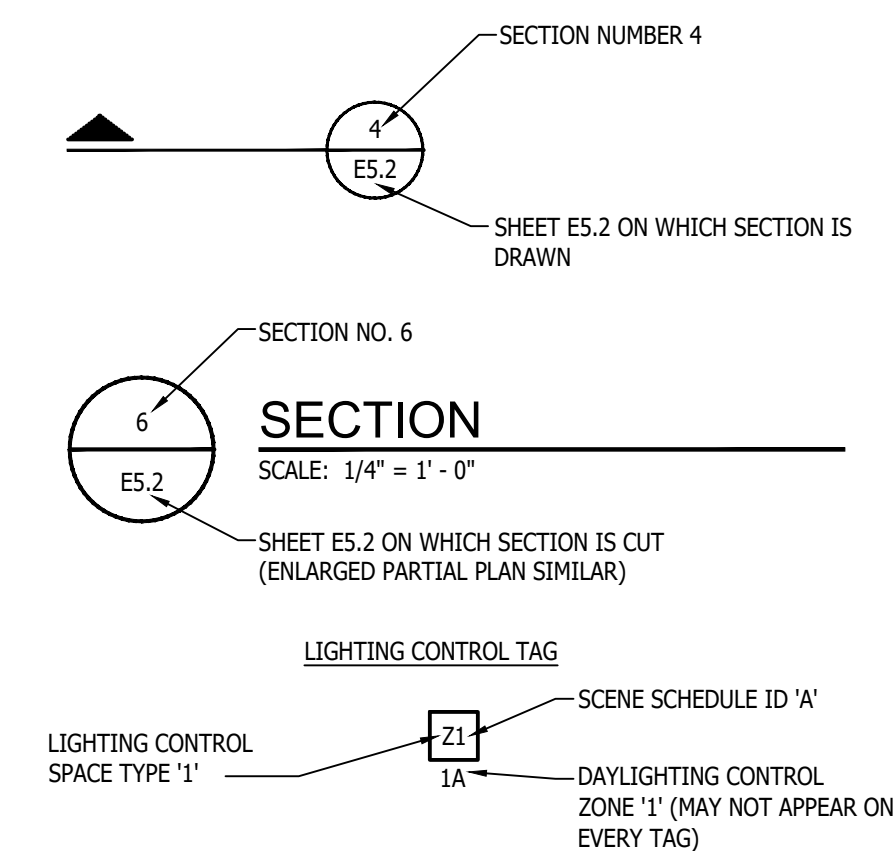
CLIENT:
LIVONIA PUBLIC SCHOOLS
15125 FARMINGTON RD.
LIVONIA, MI 48154

PROJECT:
**HOLMES ELEMENTARY
WOODSHOP AC
REPLACEMENT**

DRAWING INDEX	
SHT. NO.	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
EP1.00	ELECTRICAL POWER DEMOLITION AND NEW WORK PLANS
ES.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
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

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
\$o	OCCUPANCY SENSOR SWITCH
\$v	VACANCY SENSOR SWITCH
\$D	LOW VOLTAGE DIMMER SWITCH
\$VD	VACANCY DIMMER SENSOR SWITCH
Ⓢ	CEILING MOUNTED OCCUPANCY SENSOR
Ⓢ	CEILING MOUNTED VACANCY SENSOR
\$3	SWITCH THREE-WAY
\$x	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
\$H	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 - QUADRUPLX 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

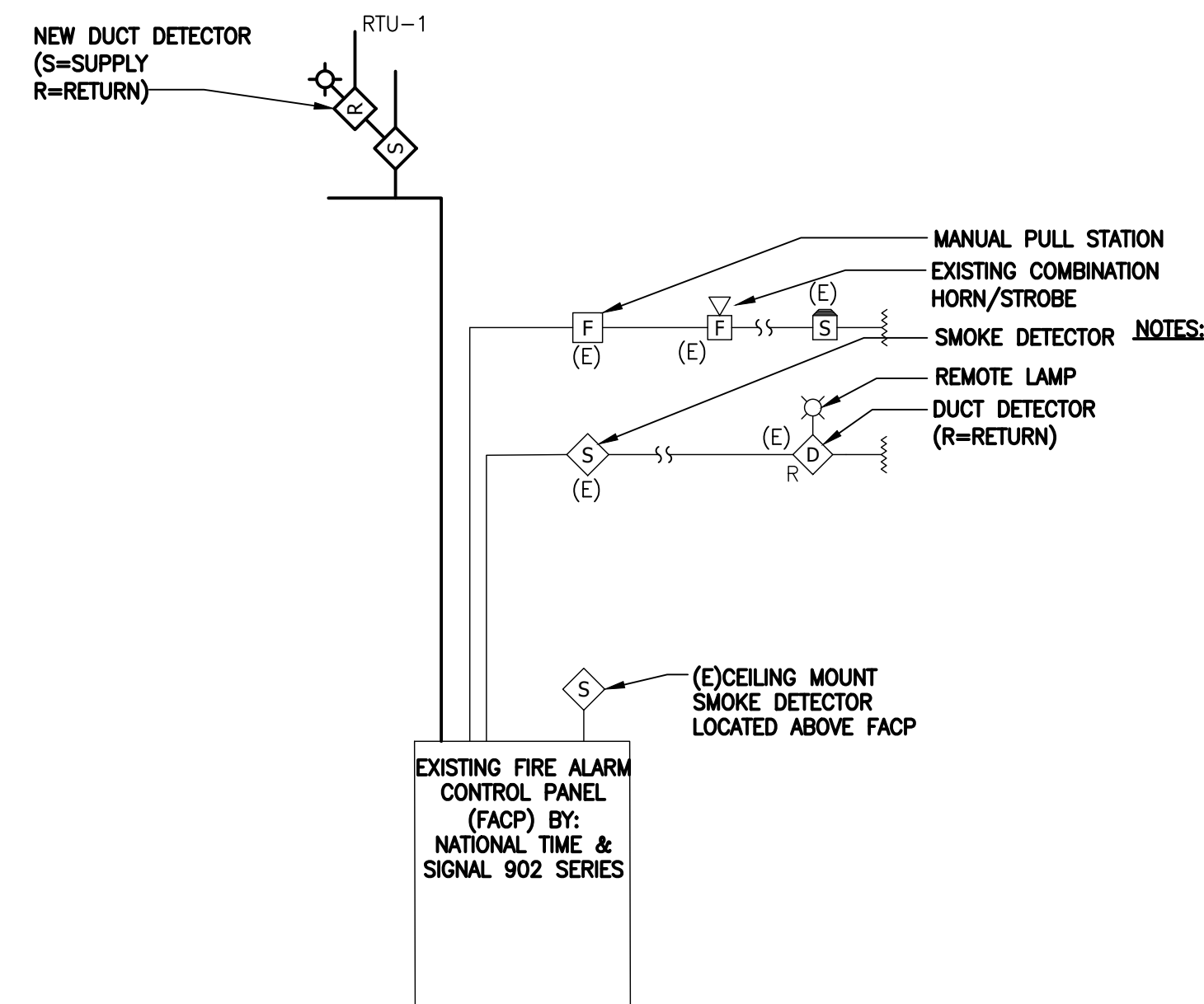
SYMBOL	DESCRIPTION
	CAMERA
	CARD READER
	COMMUNICATIONS DEVICE - 6' ABOVE COUNTER
	COMMUNICATIONS DEVICE - FLOOR
	COMMUNICATIONS DEVICE - WALL
	MAGNETIC DOOR HOLDER
	PUSH BUTTON
	SPEAKER
	WALL CLOCK - SINGLE FACE
	WALL CLOCK - DOUBLE FACE
	WALL CLOCK AND SPEAKER UNIT

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

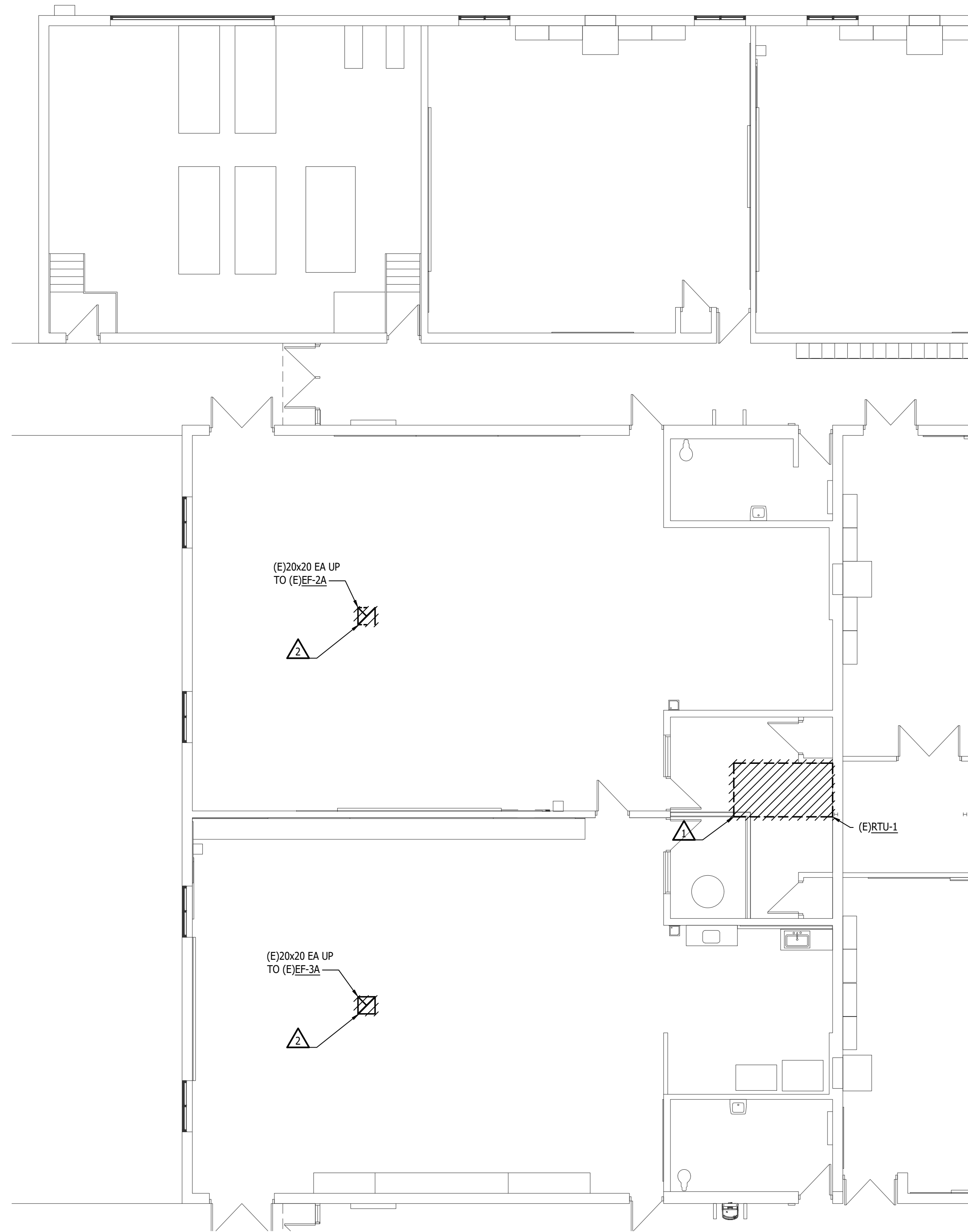
SYMBOL	DESCRIPTION
	DETECTION DEVICE
	DETECTION DEVICE - DUCT MOUNTED
	DETECTION DEVICE - FLOW SWITCH
	DETECTION DEVICE - TAMPER SWITCH
	FIRE ALARM ANNUCIATOR PANEL
	FIRE ALARM CONTROL PANEL
	FIRE DEPARTMENT COMMUNICATION OUTLET
	MANUAL DEVICE - PULL STATION
	NOTIFICATION DEVICE - WALL MOUNTED
	NOTIFICATION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

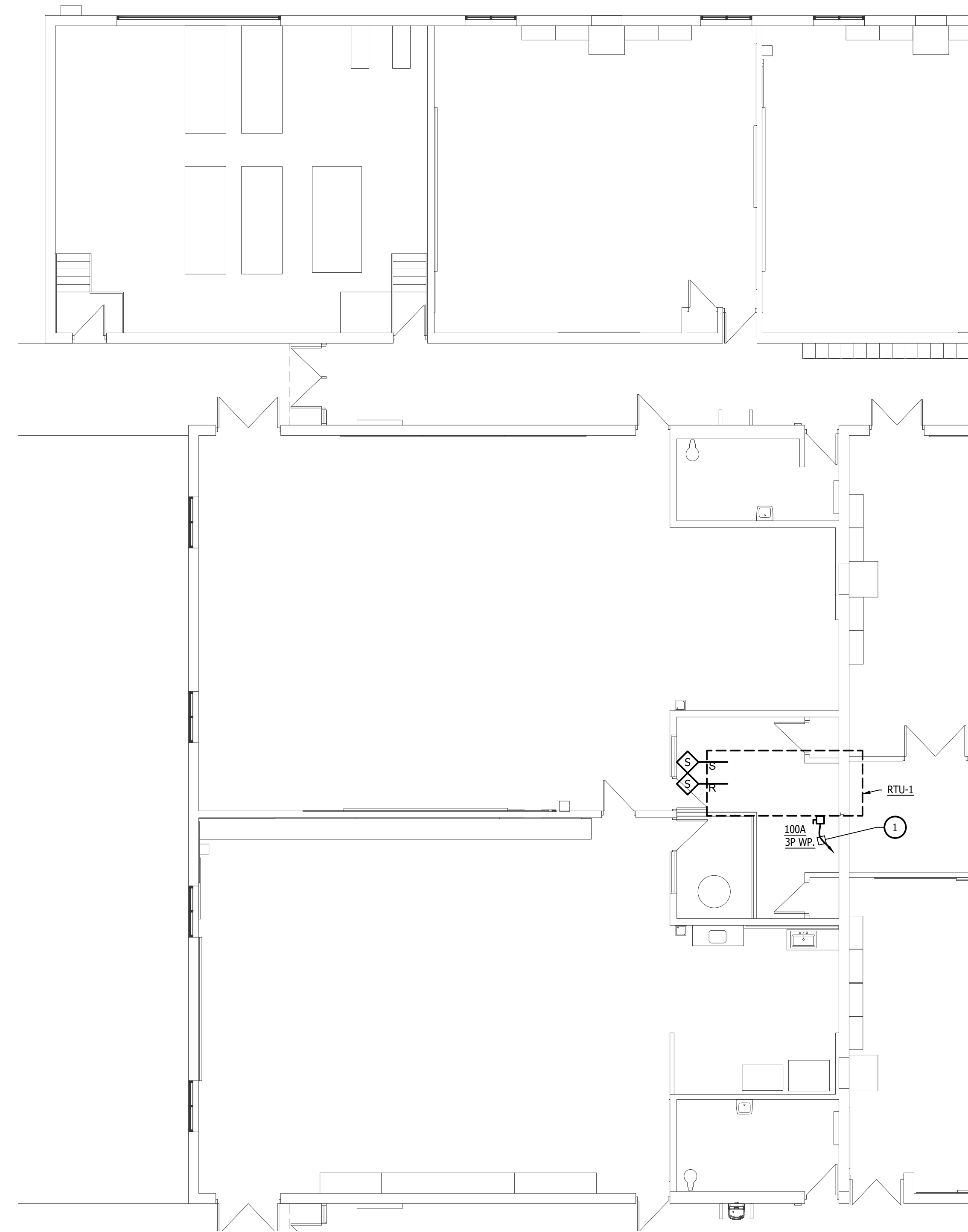


- FOR FIRE ALARM EQUIPMENT SPECIFICATION AND ADDITIONAL REQUIREMENTS, SEE SPECIFICATIONS.
- ALL DUCT DETECTORS SHALL BE WIRED TO ACTIVATE ALARM SYSTEM AND SHUT DOWN FAN. PROVIDE INDICATOR LIGHT WHERE SMOKE DETECTORS ARE INSTALLED IN CONCEALED LOCATIONS OR ARE MORE THAN 10FT. ABOVE THE FINISHED FLOOR.
- 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 APPLANCE 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



ELECTRICAL POWER DEMOLITION PLAN
1/8" = 1'-0"



ELECTRICAL POWER NEW WORK PLAN
1/8" = 1'-0"

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 COMPLETE WITH ALL RELATED ITEMS INCLUDING HANGARS, 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	RTU BEING REMOVED BY MECHANICAL TRADES. EC. TO DISCONNECT AND MAKE SAFE. REMOVE DISCONNECT SWITCH, CONDUIT AND WIRING BACK TO SOURCE. UPDATE SWITCH PLACARD ON SWITCHBOARD TO READ AS "SPARE". REMOVE SMOKE DETECTOR AND CONDUIT BACK TO SOURCE.
2	EXHAUST FANS BEING REMOVED BY MECHANICAL TRADES. EC. TO DISCONNECT AND MAKE SAFE. REMOVE DISCONNECT SWITCH, CONDUIT AND WIRING BACK TO SOURCE. UPDATE BREAKER TO READ AS "SPARE".

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 RTU-1 ON ROOF, PROVIDE 3P 100A WP SWITCH, RUN NEW WIRING AND CONDUIT TO EXISTING MDP. REFER TO ONE LINE FOR SIZES

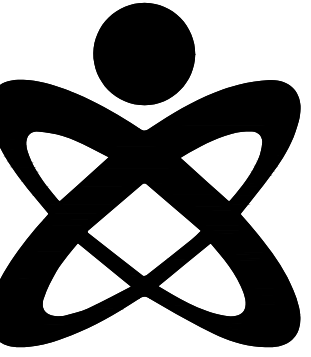
10/16/2023

ISSUANCE:
BIDS

DRAWN: RDL
APPROVED: FAA

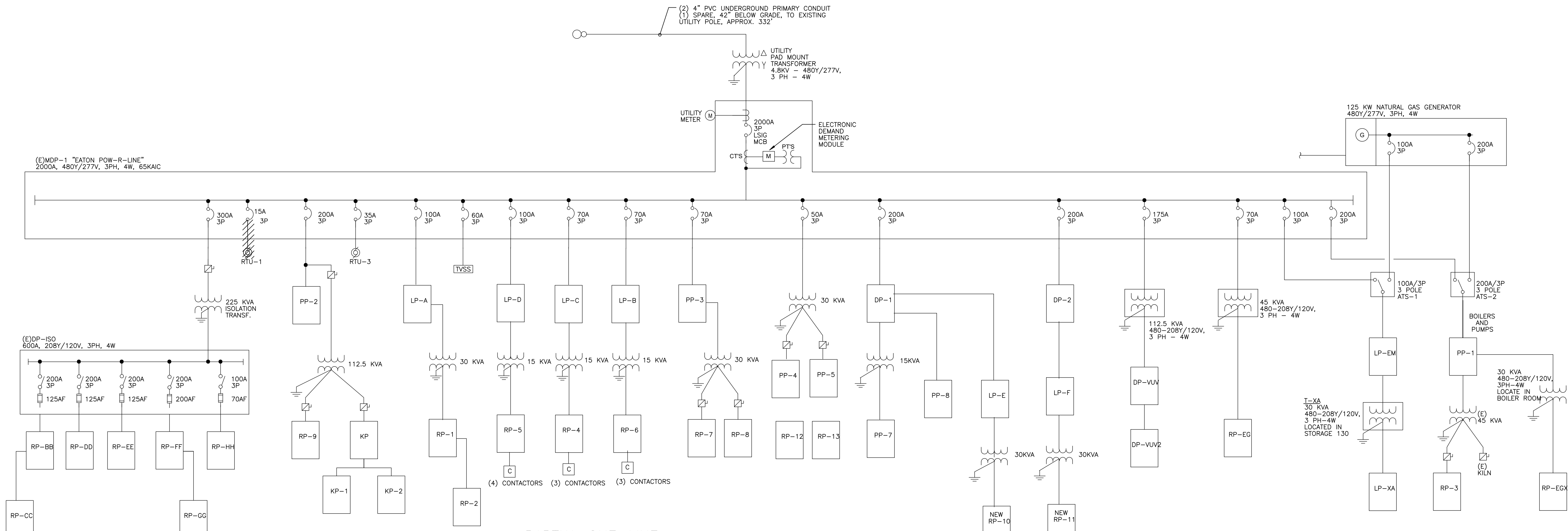
**ELECTRICAL POWER
DEMOLITION AND NEW
WORK PLANS**

EP1.00



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

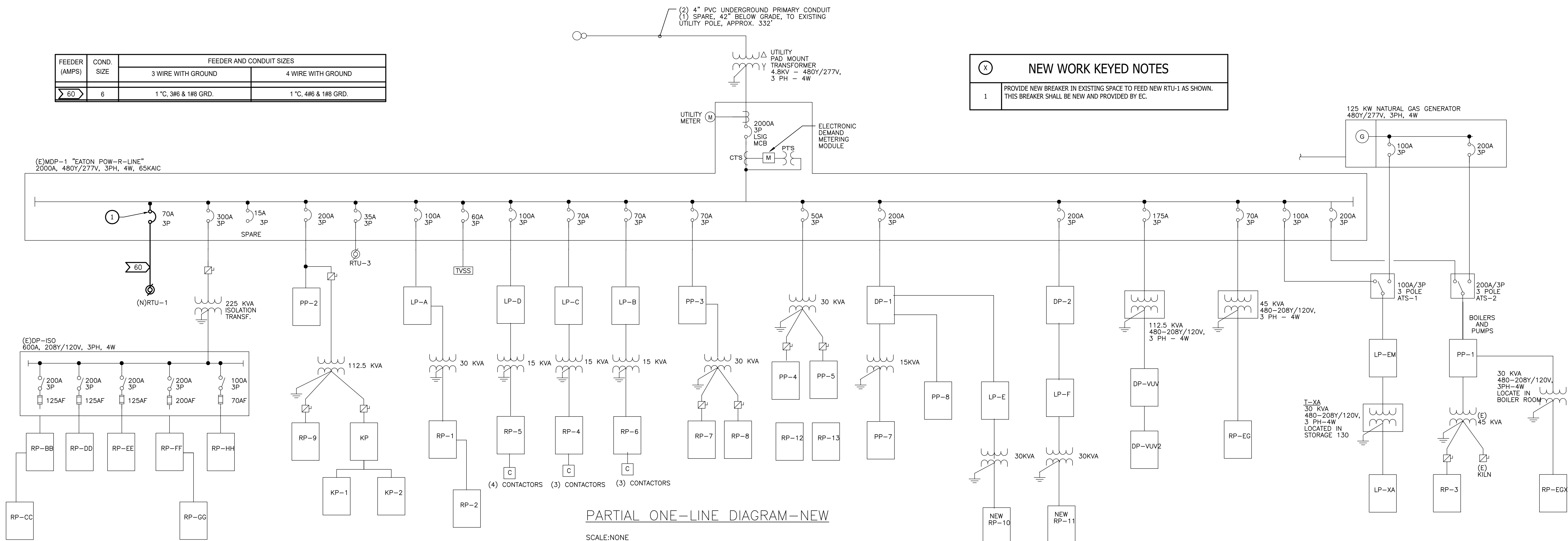
PROJECT:
**HOLMES ELEMENTARY
WOODSHOP AC
REPLACEMENT**



PARTIAL ONE-LINE
DIAGRAM - EXISTING/DEMOLITION
SCALE: NONE

FEEDER (AMPS)	COND. SIZE	FEEDER AND CONDUIT SIZES	
		3 WIRE WITH GROUND	4 WIRE WITH GROUND
60	6	1" C, 3#6 & 1#8 GRD.	1" C, 4#6 & 1#8 GRD.

NEW WORK KEYED NOTES	
1	PROVIDE NEW BREAKER IN EXISTING SPACE TO FEED NEW RTU-1 AS SHOWN. THIS BREAKER SHALL BE NEW AND PROVIDED BY EC.



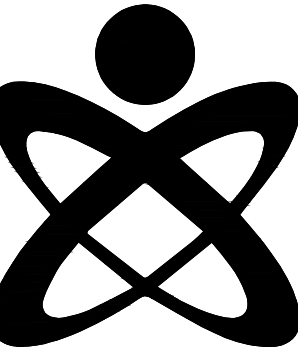
PARTIAL ONE-LINE DIAGRAM - NEW
SCALE: NONE

10/16/2023

ISSUANCE:
BIDS

DRAWN: RDL
APPROVED: FAA

ELECTRICAL DETAILS,
SCHEDULES, AND
DIAGRAMS



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

PROJECT:
HOLMES ELEMENTARY
WOODSHOP AC
REPLACEMENT

Shymanski &
Associates, L.L.C.
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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.

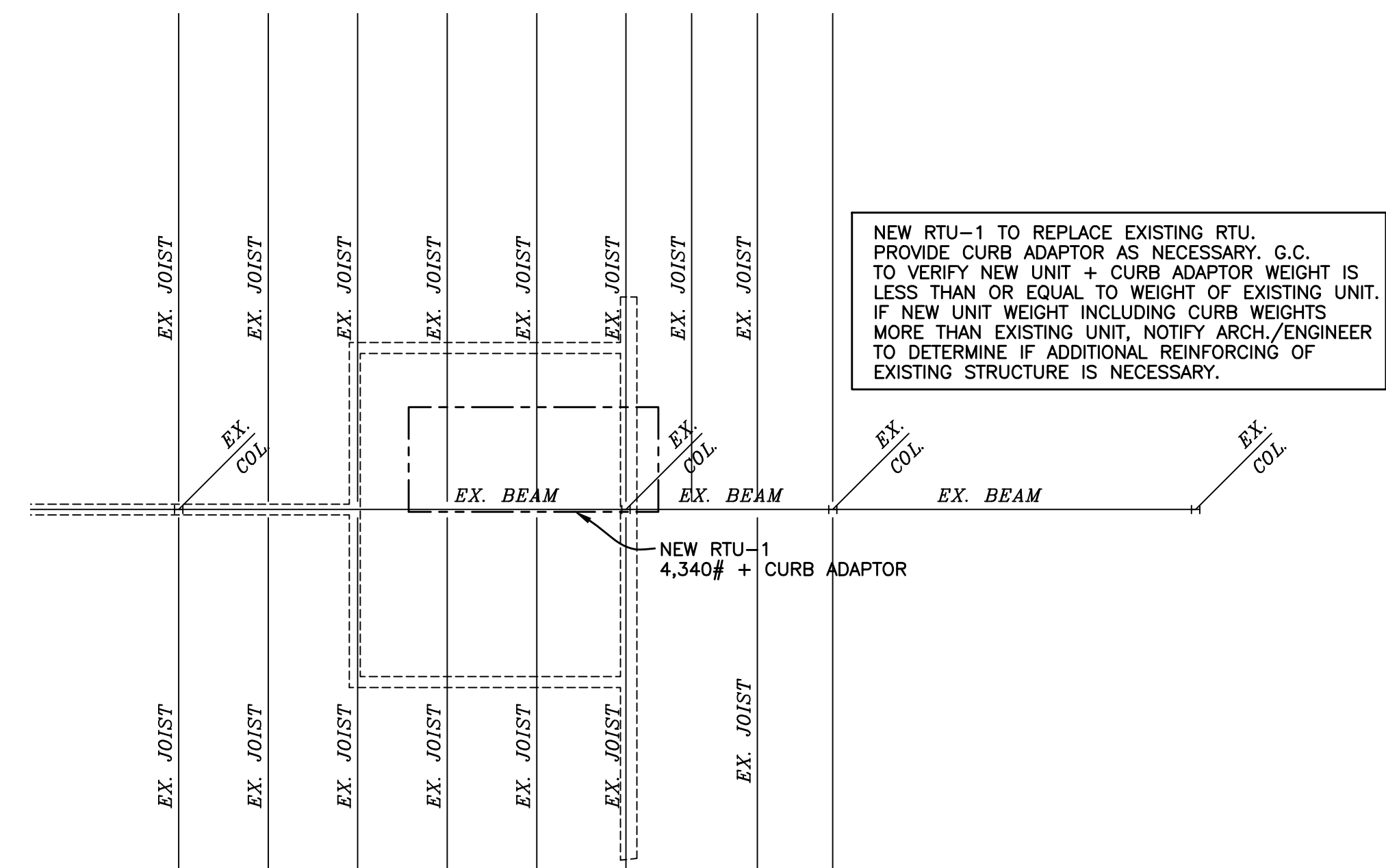
STRUCTURAL STEEL

- 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.

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 1604.5 ASCE Table 1.5-1

SNOW LOADS/ROOF LIVE LOADS		
SNOW CRITERIA		CODE REFERENCE
GROUND SNOW LOAD	$P_g = 20$ PSF	NBC FIG. 1608.2 ASCE FIG. 7-1
FLAT ROOF SNOW LOAD	$P_f = 20$ PSF (MINIMUM)	ASCE Sec. 7-3
EXPOSURE FACTOR	$C_e = 1.0$	ASCE Table 7-2
IMPORTANCE FACTOR	$I = 1.1$	ASCE Table 1.5-2
THERMAL FACTOR	$C_t = 1.0$	ASCE Table 7-3
ROOF LIVE LOADS	$L_f = 20$ 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
WINDS 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



10/16/2023

ISSUANCE:
BIDS

DRAWN: DD
APPROVED: TS

ROOF
FRAMING PLAN AT NEW UNIT
SCALE: 1/8" = 1'-0" VERIFY LOCATION IN THE FIELD

ROOF FRAMING
PLAN

S100