
OVERALL FLOOR PLAN
 SCALE: 3/64" = 1'-0"



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GRAYLING HIGH SCHOOL
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 PROJECT NO: _____

22.516 HS
 SHEET TITLE:
OVERALL FLOOR PLAN

A100

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22.516 HS
 SHEET TITLE:
**GYM MEZZANINE
 PLANS & DETAILS**

A101

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GENERAL FLOOR PLAN NOTES

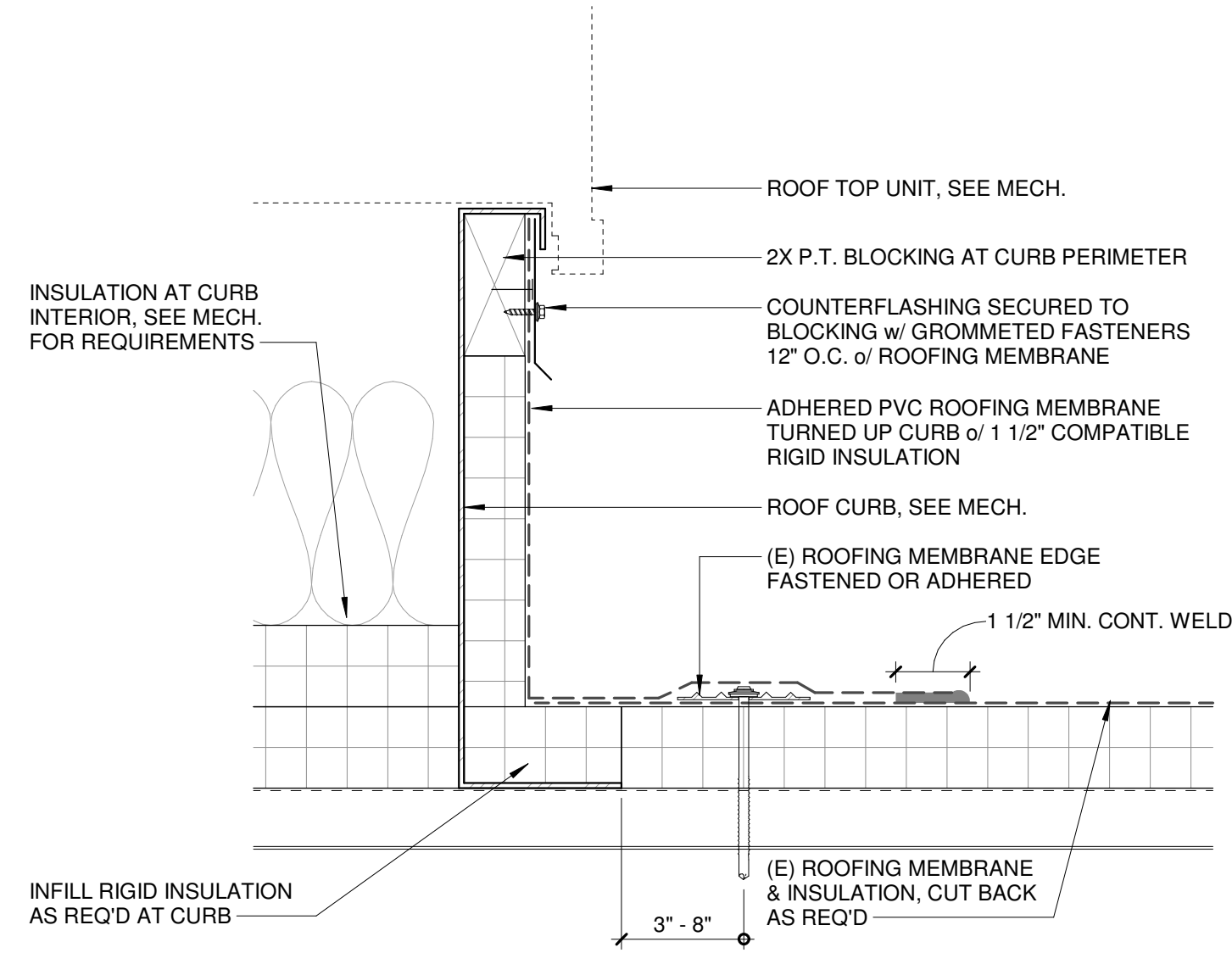
- REFER TO MECHANICAL & ELECTRICAL DRAWINGS FOR EQUIPMENT MOUNTING REQUIREMENTS

GENERAL INTERIOR FINISH NOTES

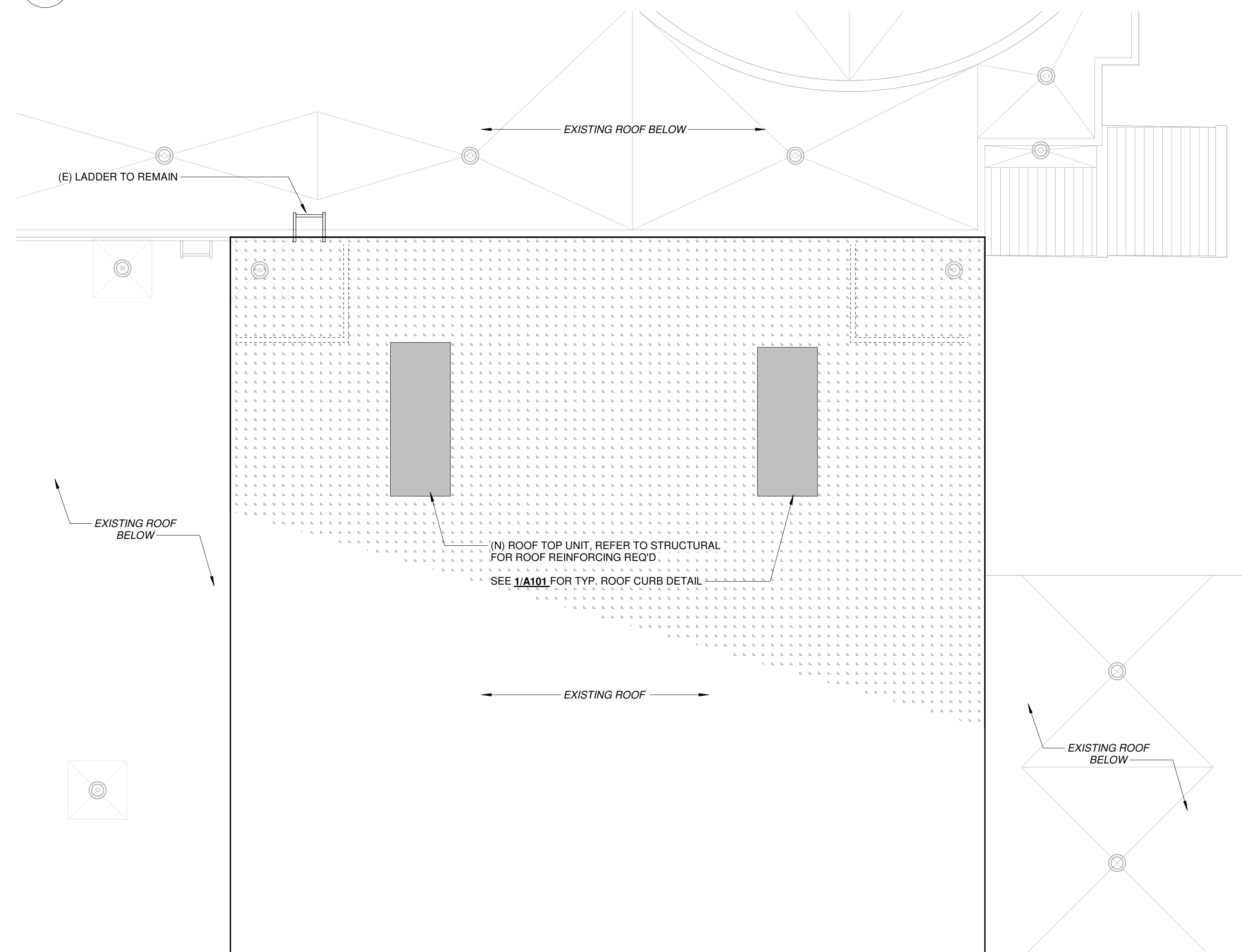
- PROVIDE INTERIOR WALL TOUCH-UP, PATCHING, & PAINTING AS REQ'D AT ALL NEW WORK LOCATIONS
- ALL FLOORING TO BE PROTECTED WHERE NEW WORK IS TO OCCUR. ANY INCIDENTAL DAMAGE TO EXISTING FLOORING DUE TO NEW CONSTRUCTION WORK WITHOUT PROPER PRECAUTIONS/PROTECTION SHALL BE RESPONSIBILITY OF CONTRACTOR TO REPAIR AT NO ADDITIONAL COST.

FLOOR PLAN KEYNOTE LEGEND

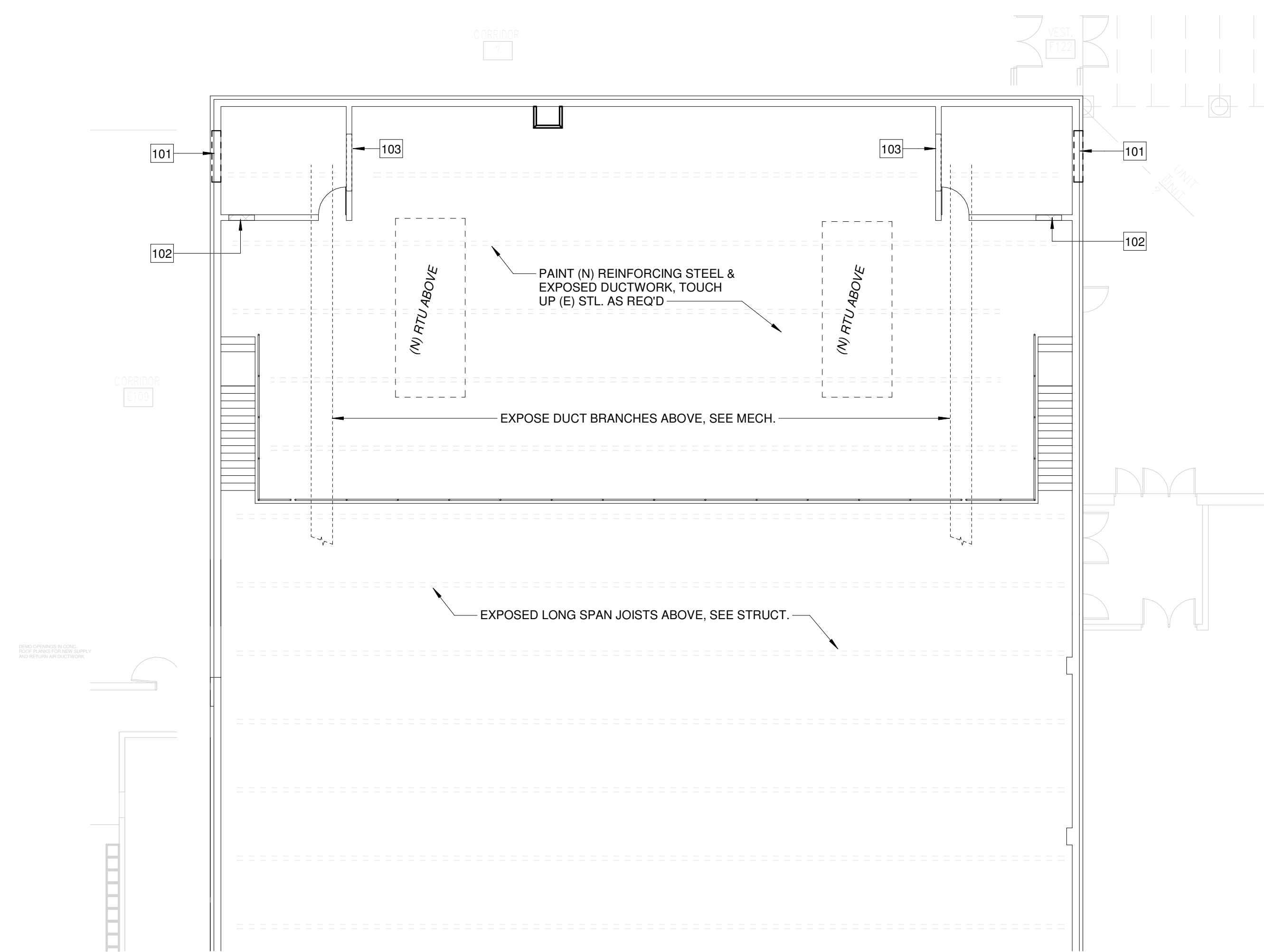
- 101 ABANDON (E) LOUVER; CAP AT INTERIOR w/ INSULATED METAL PANEL. SEE MECH. DETAILS
- 102 REMOVE (E) GRILLE & INFILL OPENING TO MATCH (E) CONSTRUCTION
- 103 (N) OPENING AT (E) WALL FOR (N) RETURN GRILLE. SEE STRUCT. & MECH



1 TYP. DETAIL AT (N) ROOF CURB
 A101 SCALE: 3" = 1'-0"



GYM ROOF PLAN
 SCALE: 3/32" = 1'-0"

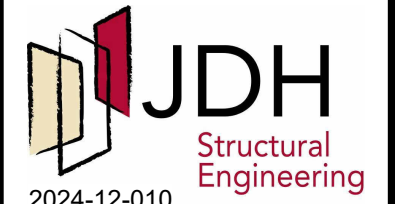


GYM MEZZANINE FLOOR PLAN
 SCALE: 3/32" = 1'-0"



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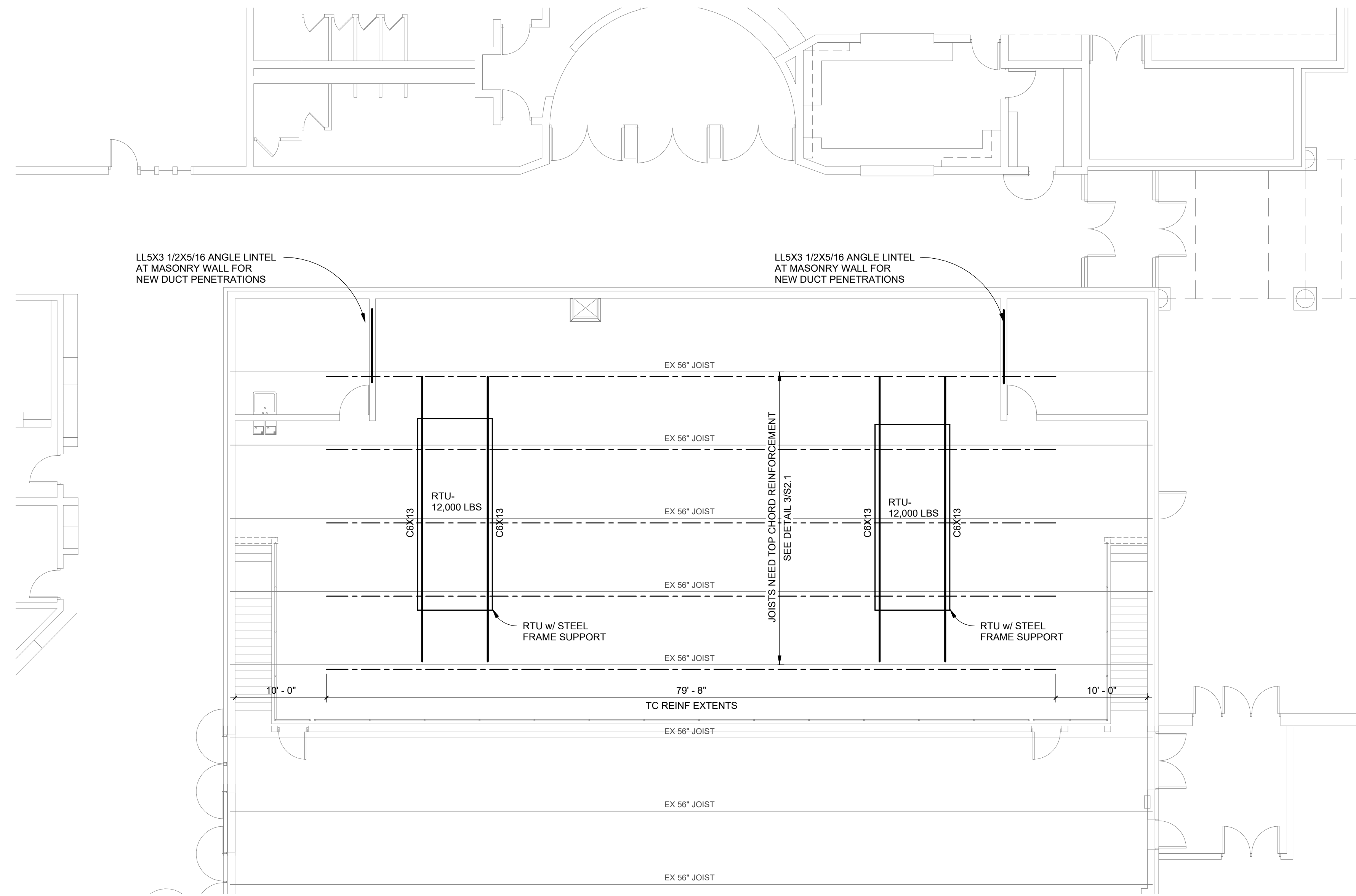
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PIC: T. NEMITZ
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 PROJECT NO:

22.516 HS
 SHEET TITLE:
ROOF FRAMING PLAN

S1.1



LL5X3 1/2X5/16 ANGLE LINTEL AT MASONRY WALL FOR NEW DUCT PENETRATIONS

LL5X3 1/2X5/16 ANGLE LINTEL AT MASONRY WALL FOR NEW DUCT PENETRATIONS

EX 56" JOIST

EX 56" JOIST

EX 56" JOIST

EX 56" JOIST

EX 56" JOIST

EX 56" JOIST

EX 56" JOIST

EX 56" JOIST

EX 56" JOIST

NOTE: FIELD VERIFY EXISTING BRIDGING FOR JOISTS THAT NEED TO BE REINFORCED. IF EXISTING BRIDGING IS MORE THAN 15'-0" OC, ADD BRIDGING AS REQUIRED SO BRIDGING IS 15'-0" OR LESS

ROOF FRAMING PLAN NOTES

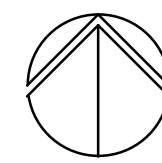
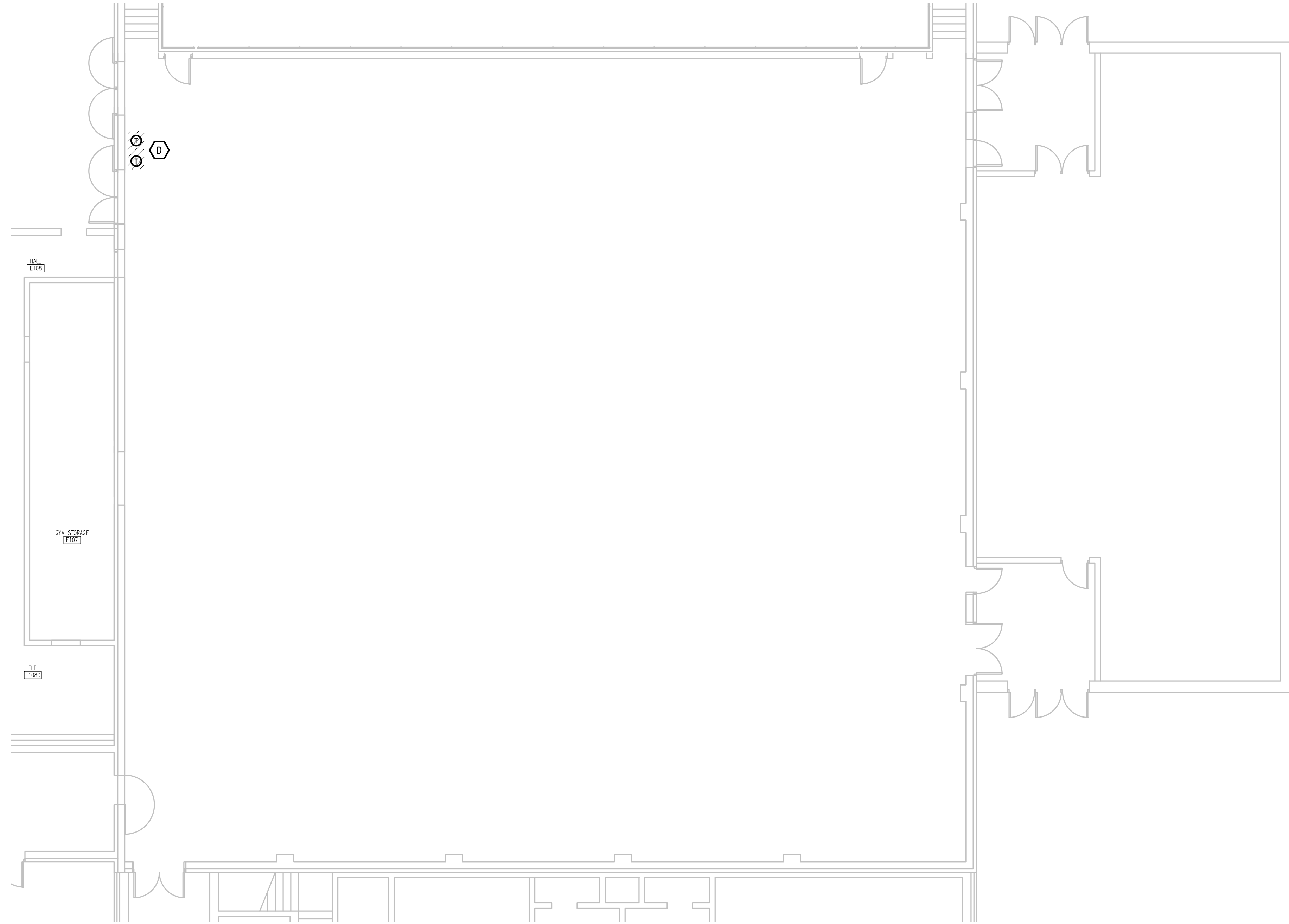
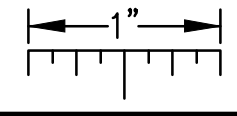
- Steel bar joists:
 - Horizontal bridging shall be welded (1/8" fillet weld) to top and bottom chord at steel bar joist.
- Roof top mechanical equipment:
 - Refer to Mechanical drawings for exact size, qty and location of mechanical equipment.
 - Mechanical equipment weight shall be as indicated on plan and/or in mechanical equipment schedules. Any deviation or discrepancy in equipment weight, location or quantity shall be reported to the architect and structural engineer.
 - Provide support framing under all mechanical unit curbs and around all roof penetrations.

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

EXISTING BUILDING NOTE:
 THIS PROJECT IS AN ADDITION AND EXTENSION OF AN EXISTING BUILDING. THE DRAWINGS REFLECT WHAT IS KNOWN ABOUT THE EXISTING BUILDING, BUT EXISTING CONDITIONS MUST BE VERIFIED BEFORE FABRICATION AND CONSTRUCTION. ABUTTING CONSTRUCTION MUST MATCH UP. VERIFY ALL SUCH CONDITIONS, AND NOTIFY A/E IF ACTUAL CONDITIONS DIFFER FROM THE CONTRACT DOCUMENTS. AN ATTEMPT HAS BEEN MADE TO ANTICIPATE CONDITIONS IN THE EXISTING STRUCTURE.

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THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



HIGH SCHOOL GYM HVAC PIPING DEMOLITION PLAN
SCALE: 1/8" = 1' - 0"

**MECHANICAL DEMOLITION
GENERAL NOTES:**

1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.

DEMOLITION KEY NOTES:

- A. DISCONNECT AND REMOVE EXISTING 1 1/2 IN HWHS AND HWHR PIPING BACK TO EXISTING 2 IN PIPING AND CAP.
- B. DISCONNECT AND REMOVE EXISTING PUMP, GATE VALVES, THREE WAY MIXING VALVE, DRAIN VALVES AND ASSOCIATED PIPING.
- C. DISCONNECT AND REMOVE EXISTING H&V UNIT AND ASSOCIATED HWHS, HWHR, AND CONTROLS.
- D. REMOVE EXISTING TEMPERATURE CONTROLS



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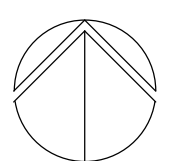
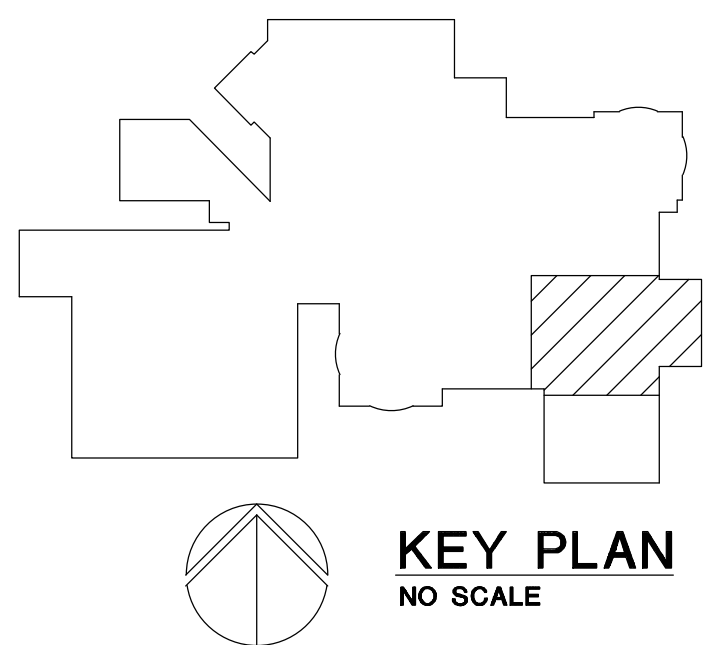


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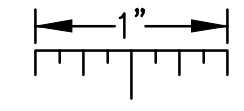
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DRAFTS:	EMW
PROJECT NO:	22.516 HS
SHEET TITLE:	HIGH SCHOOL GYM HVAC PIPING DEMOLITION PLAN
SHEET NO:	MD3.1



KEY PLAN
NO SCALE

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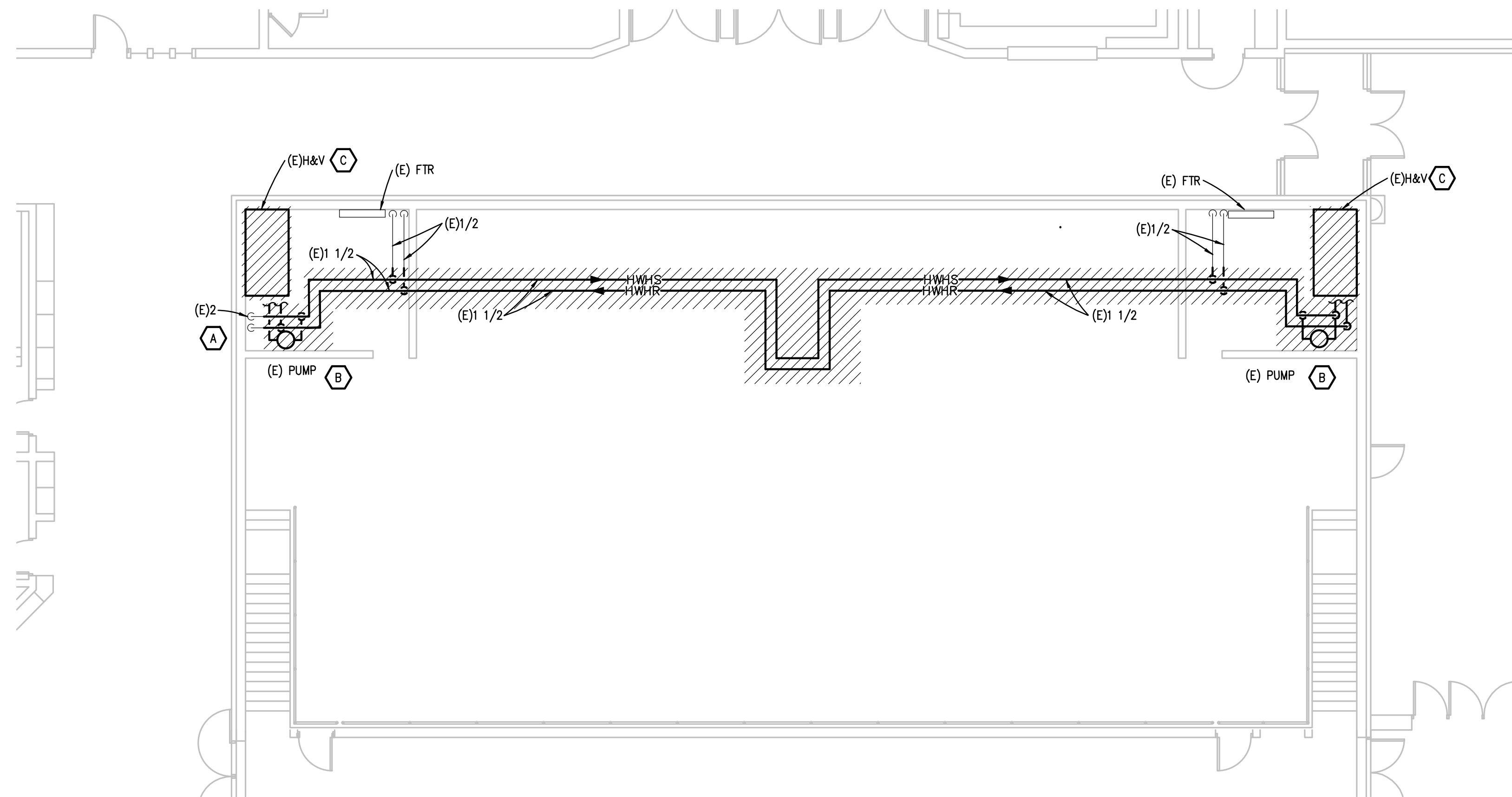


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HIGH SCHOOL GYM MEZZANINE HVAC PIPING DEMOLITION PLAN
SCALE: 1/8" = 1' - 0"



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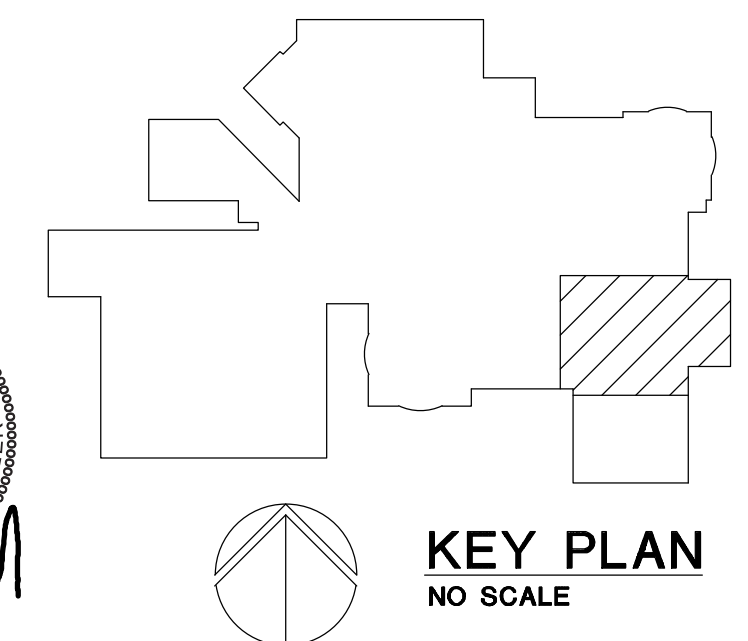
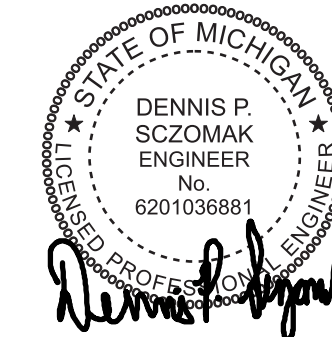


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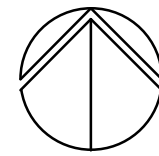
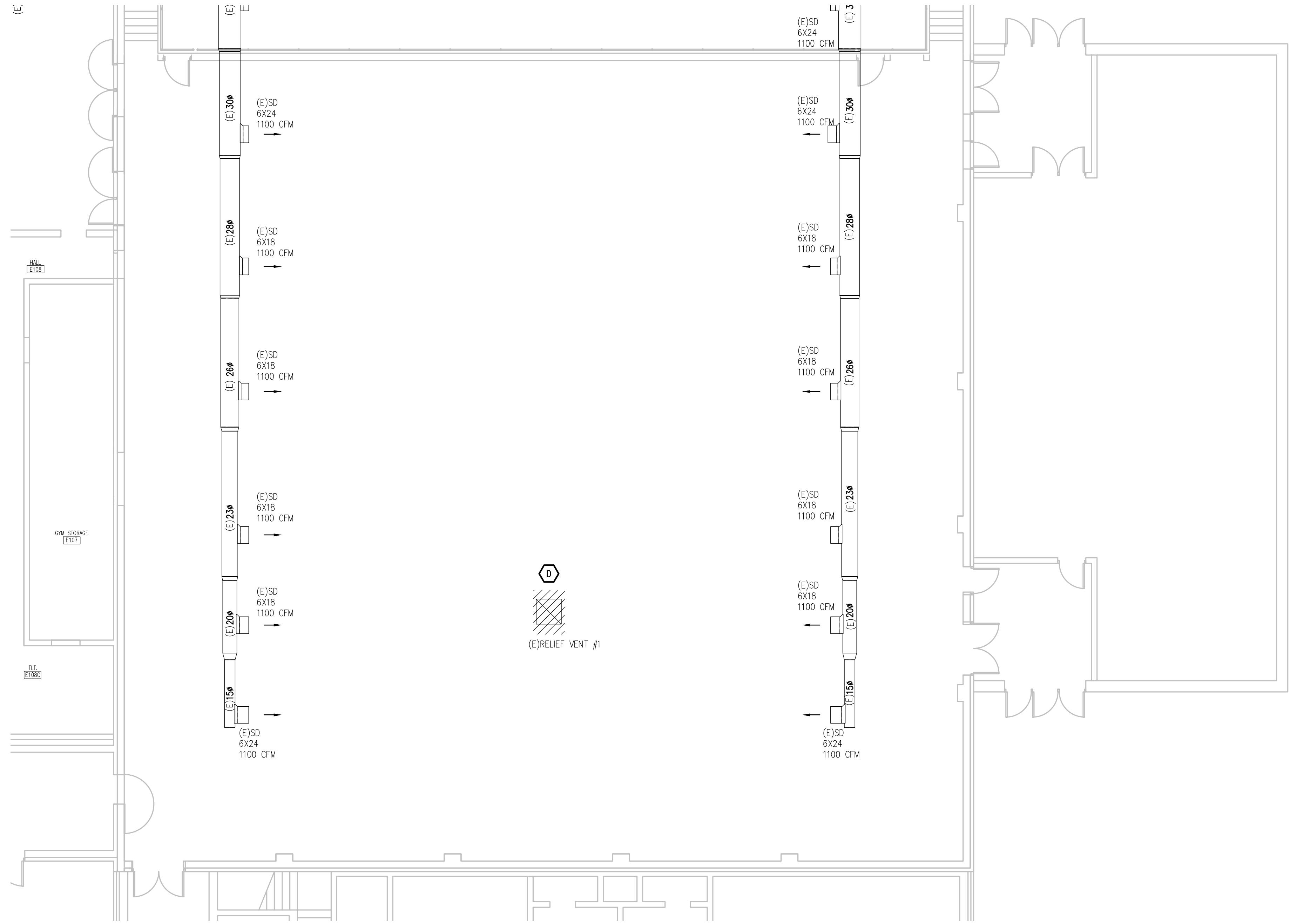
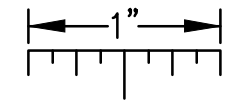
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SHEET TITLE:	HIGH SCHOOL GYM MEZZANINE HVAC PIPING DEMOLITION PLAN
SHEET NO:	MD3.2



KEY PLAN
NO SCALE

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HIGH SCHOOL GYM SHEET METAL DEMOLITION PLAN
SCALE: 1/8" = 1' - 0"

MECHANICAL DEMOLITION GENERAL NOTES:

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DEMOLITION KEY NOTES:

- A. DISCONNECT AND REMOVE DUCT TO EXISTING OUTSIDE AIR LOUVER COMPLETE. INSULATE LOUVER AS SEEN IN DETAIL ON SHEET 6.1.
- B. DISCONNECT AND REMOVE EXISTING H&V UNIT AND ASSOCIATED DUCT WORK AND CAP AT LOCATION INDICATED ON DRAWINGS.
- C. DISCONNECT AND REMOVE RETURN LOUVER AND ASSOCIATED DUCT WORK.
- D. REMOVE EXISTING RELIEF VENT AND CAP. INSULATE AS SEEN ON DETAILS ON SHEET 6.1.



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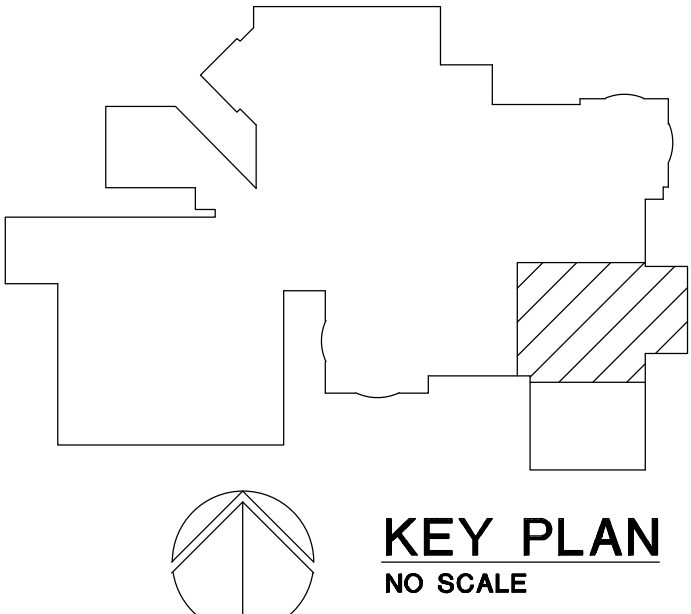
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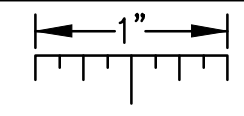
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HIGH SCHOOL GYM
SHEET METAL
DEMOLITION PLAN

SHEET NO:
MD4.1



KEY PLAN
NO SCALE

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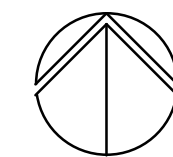
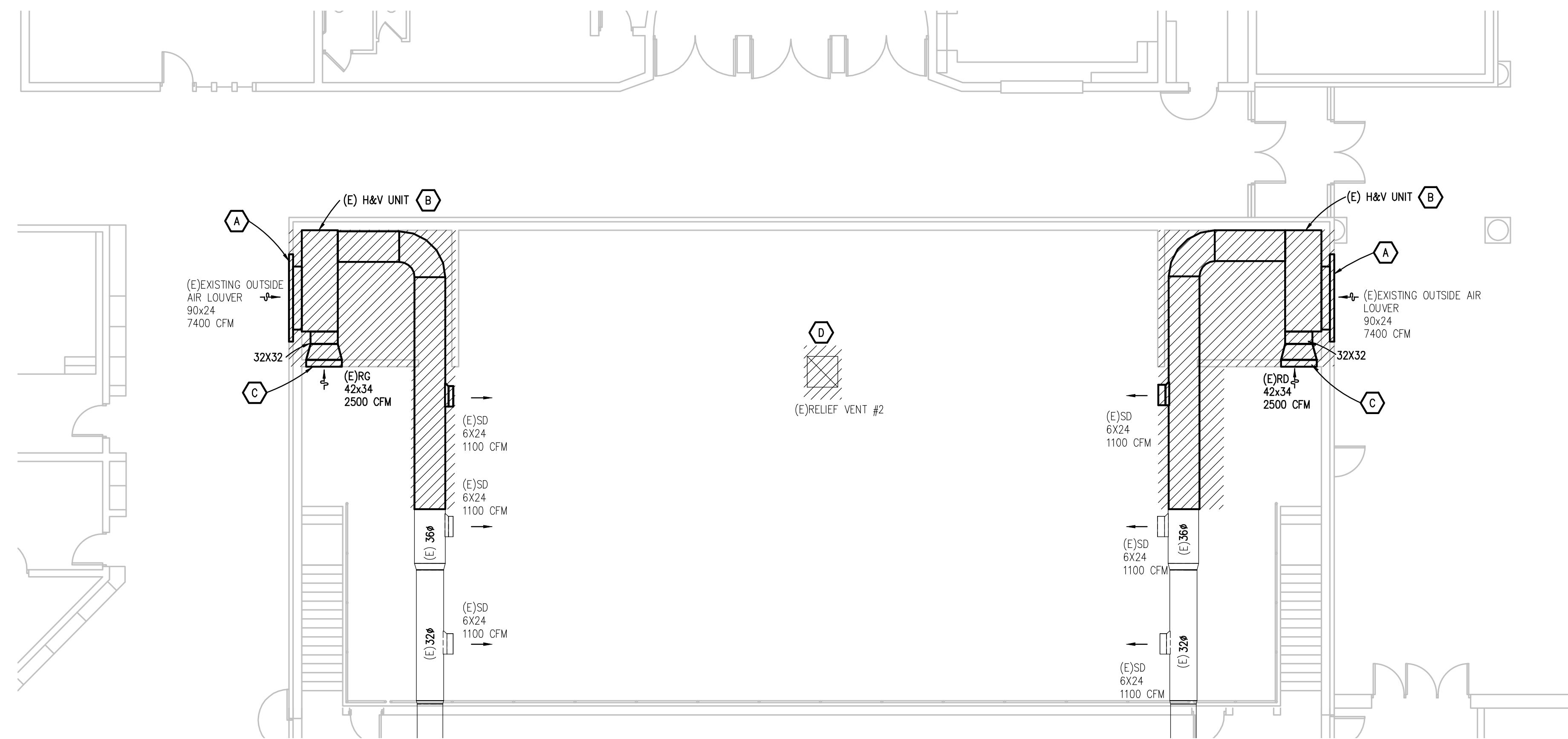
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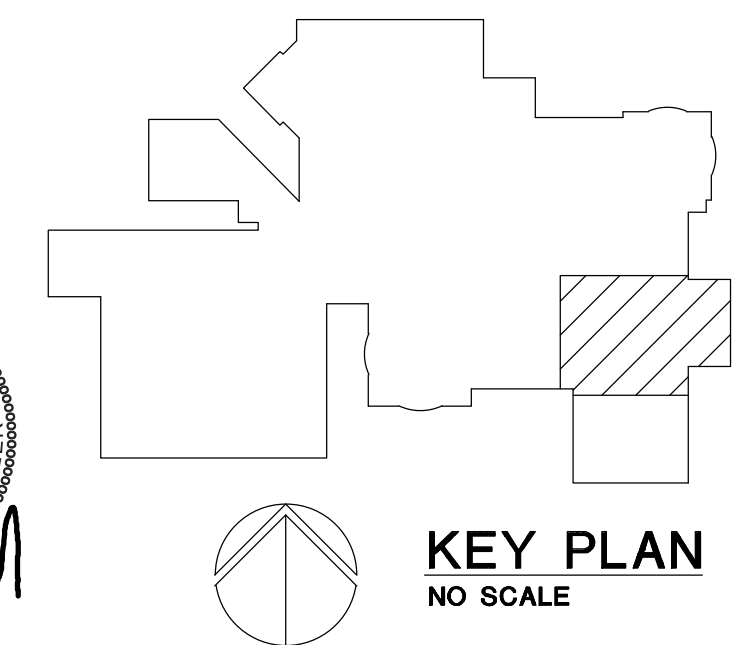
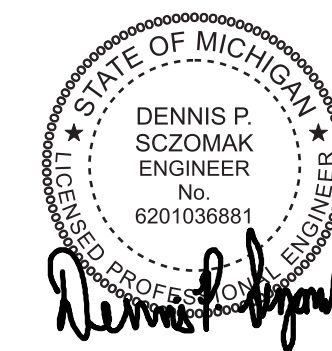
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HIGH SCHOOL GYM MEZZANINE SHEET METAL DEMOLITION PLAN
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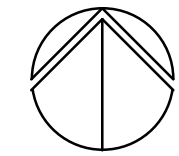
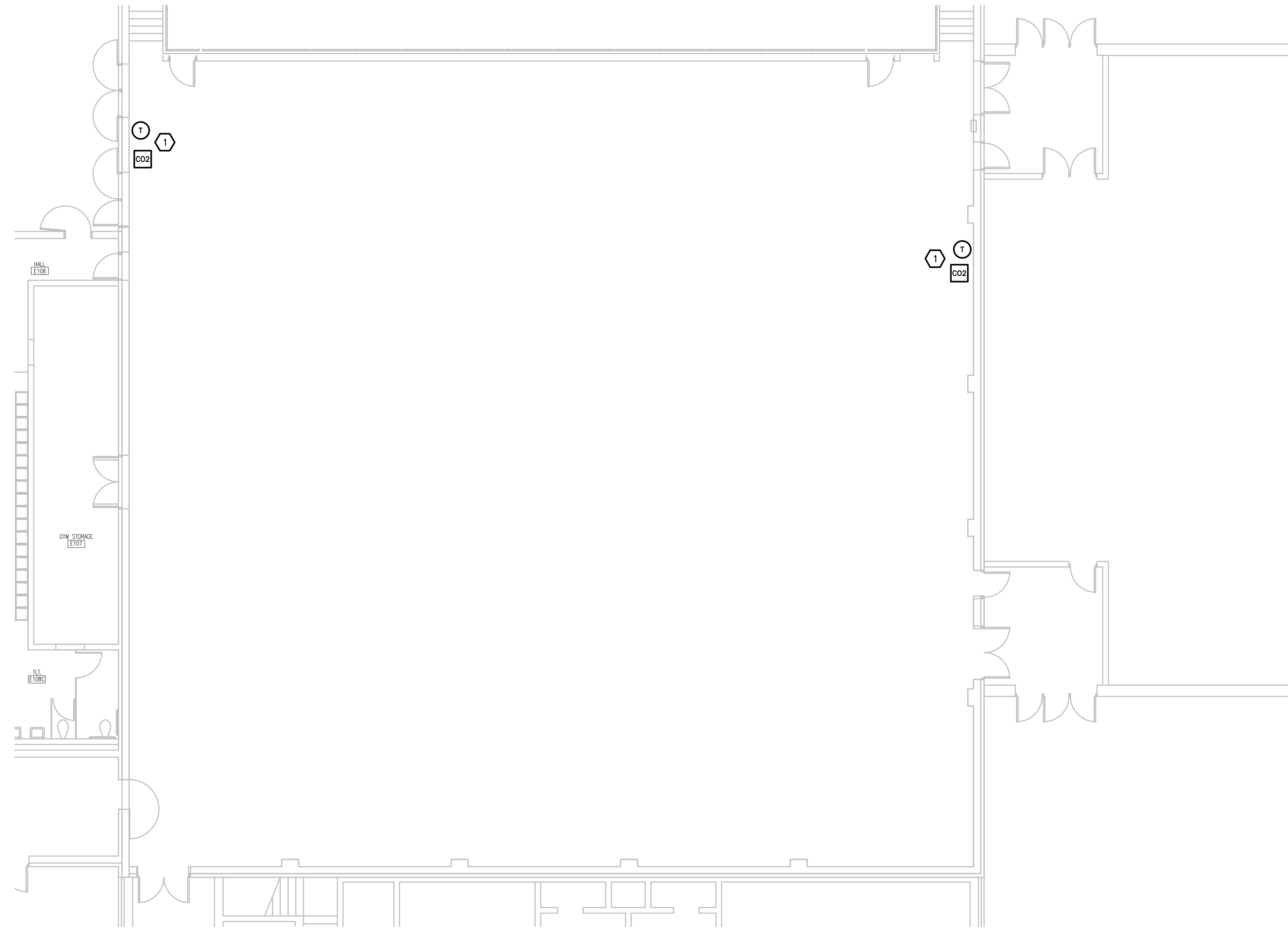
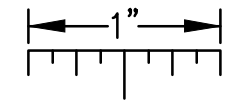
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KEY PLAN
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HIGH SCHOOL GYM HVAC PIPING PLAN
SCALE: 1/8" = 1' - 0"

HVAC PIPING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
7. COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
8. BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.
9. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

CONSTRUCTION KEY NOTES:

1. THERMOSTAT SERVING ERU-1 AND ERU-2.
2. ROUTE HWHS AND HWHR TO HEATING COIL. SEE HOT WATER HEATING COIL DETAIL ON M6.3
3. LOCATE NEW PUMPS AT A MAXIMUM OF 8' ABOVE FINISHED FLOOR TO ALLOW FOR SERVICE.
4. RELOCATE EXISTING FIRE PROTECTION LINES AND SPRINKLERS AS NEEDED FOR RENOVATION.
5. SUPPORT HVAC PIPING TO THE EXISTING JOIST.



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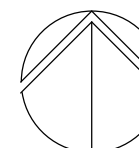
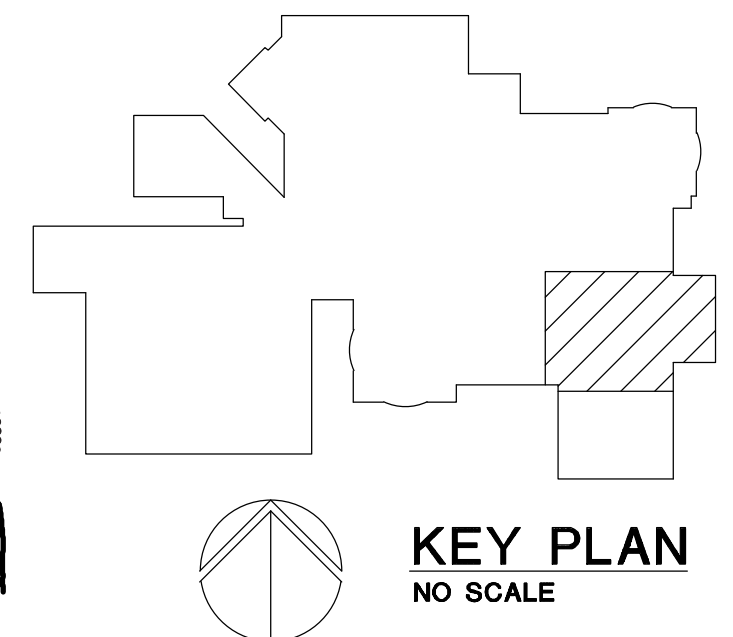
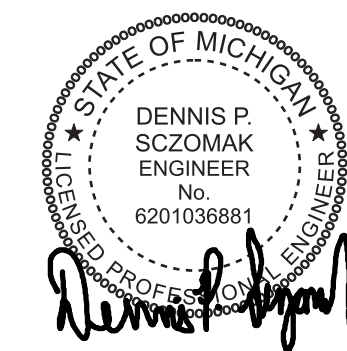
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GRAYLING HIGH SCHOOL
HVAC UPGRADES

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DATE	ISSUED FOR
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12/02/24	COORDINATION
12/06/24	50% CD
01/17/25	BID SET

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CONSULTING ENGINEERS
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Troy, Michigan 48068-3276
Tel: 248-879-5066
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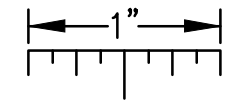
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PK:	WEK
DRAFTS:	EMW
PROJECT NO.:	22.516 HS
SHEET TITLE:	HIGH SCHOOL GYM HVAC PIPING PLAN
SHEET NO.:	M3.1



KEY PLAN
NO SCALE

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THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.

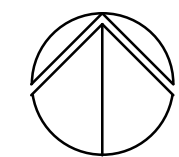
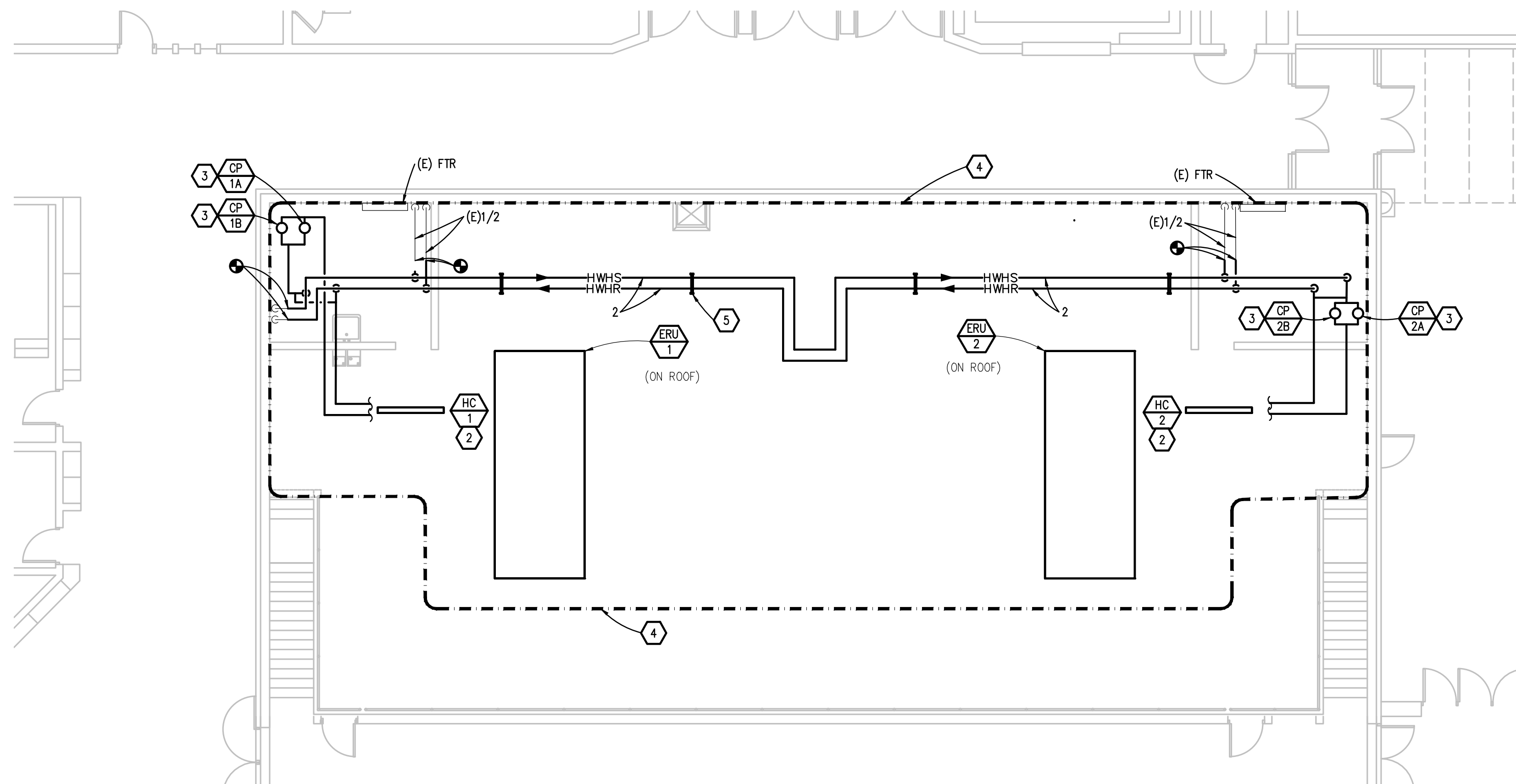


HVAC PIPING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
7. COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
8. BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.
9. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

CONSTRUCTION KEY NOTES:

1. THERMOSTAT SERVING ERU-1 AND ERU-2.
2. ROUTE HWHS AND HWHR TO HEATING COIL. SEE HOT WATER HEATING COIL DETAIL ON M6.3
3. LOCATE NEW PUMPS AT A MAXIMUM OF 8' ABOVE FINISHED FLOOR TO ALLOW FOR SERVICE.
4. RELOCATE EXISTING FIRE PROTECTION LINES AND SPRINKLERS AS NEEDED FOR RENOVATION.
5. SUPPORT HVAC PIPING TO THE EXISTING JOIST.



HIGH SCHOOL GYM MEZZANINE HVAC PIPING PLAN
SCALE: 1/8" = 1' - 0"



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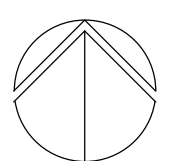
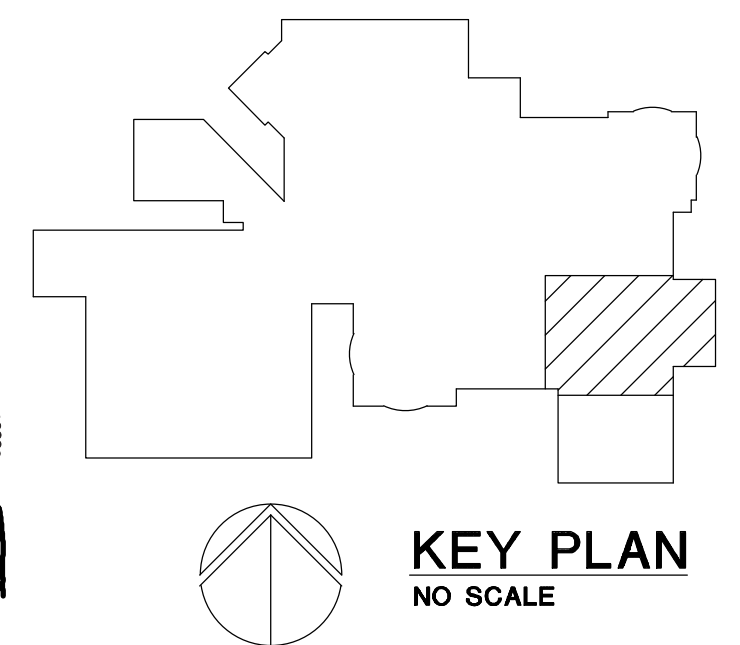
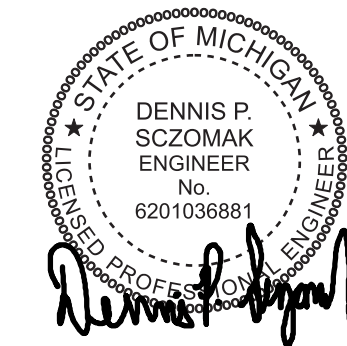
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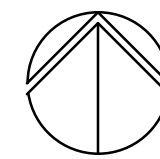
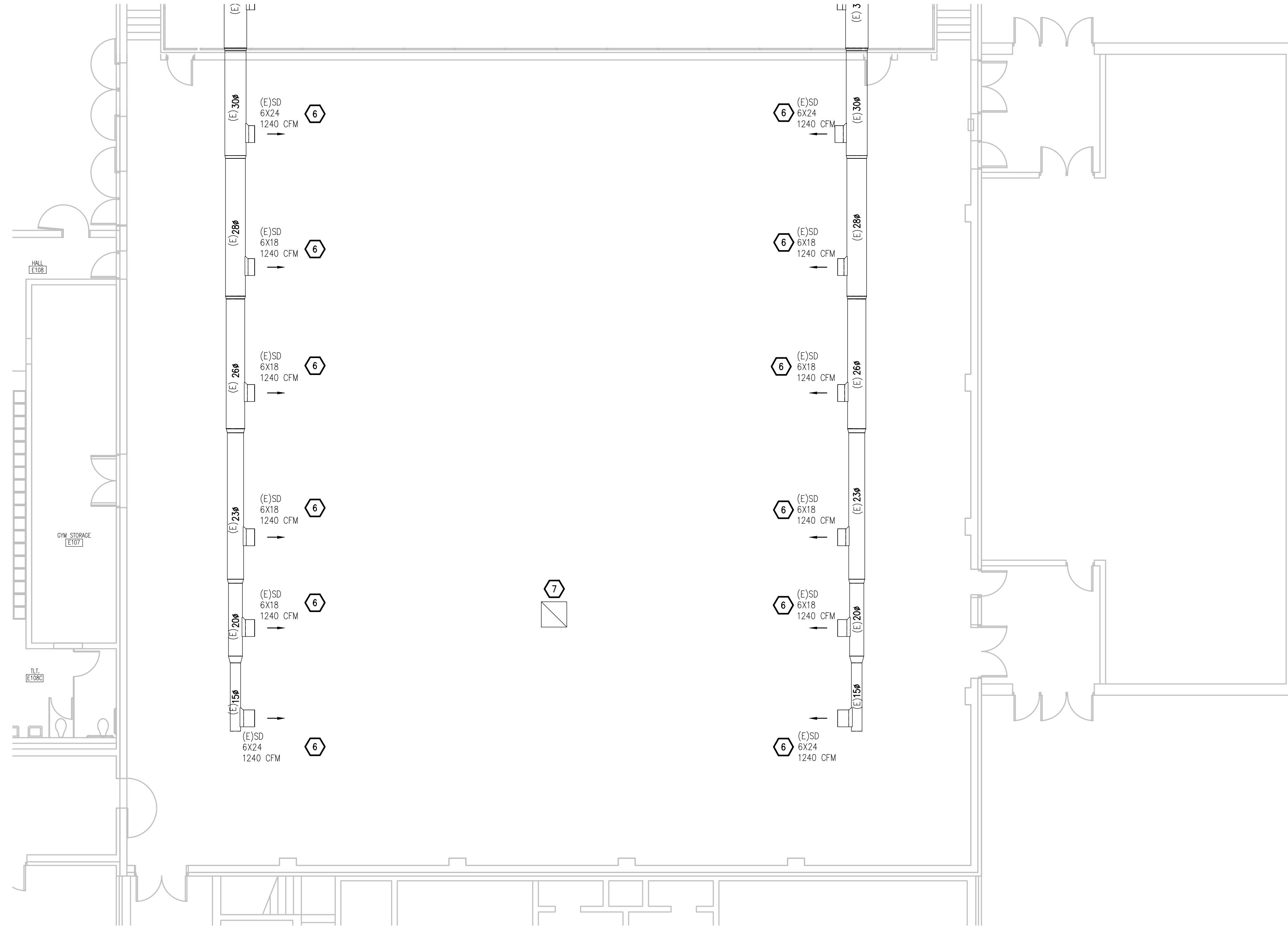
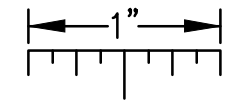
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PBA Project No.: 2024.0338

PIC:	
PK:	
DRAFTS:	
PROJECT NO:	22.516 HS
SHEET TITLE:	HIGH SCHOOL GYM MEZZANINE HVAC PIPING PLAN
SHEET NO:	M3.2



KEY PLAN
NO SCALE

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



HIGH SCHOOL GYM SHEET METAL PLAN
SCALE: 1/8" = 1' - 0"

SHEET METAL GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR DIMENSIONED LOCATION OF GRILLES, REGISTERS, AND DIFFUSERS.
7. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

CONSTRUCTION KEY NOTES:

1. PROVIDE CONDENSATE DRAIN PIPING TO THE NEAREST ROOF DRAIN AND PROVIDE HEAT TRACE.
2. RELOCATE EXISTING FIRE PROTECTION LINES AND SPRINKLERS AS NEED FOR RENOVATION.
3. ROUTE NEW SUPPLY DUCTWORK THROUGH JOIST, REWORK EXISTING CROSS BRIDGES TO ACCOMMODATE NEW DUCTWORK. PAINT NEW SUPPLY DUCTWORK TO MATCH EXISTING DUCT WORK.
4. ROUTE NEW RETURN DUCTWORK UNDER JOIST. PAINT NEW RETURN DUCT WORK TO MATCH EXISTING DUCT WORK.
5. INSULATE OUTSIDE AIR LOUVER AS SEEN ON SHEET M6.1.
6. RE-BALANCE ALL AIR DIFFUSERS TO CFM INDICATED ON DRAWINGS.
7. CAP EXISTING RELIEF VENT ON ROOF AFTER REMOVAL ON ROOF. SEE DETAIL ON SHEET M6.1.
8. STACK 48X20 RETURN GRILLES ON TOP OF EACH OTHER. TOTAL OF 5 48X20 RETURN GRILLES. ENSURE RETURN DUCT DOES NOT BLOCK EXISTING DOOR WHEN SWUNG OPEN.



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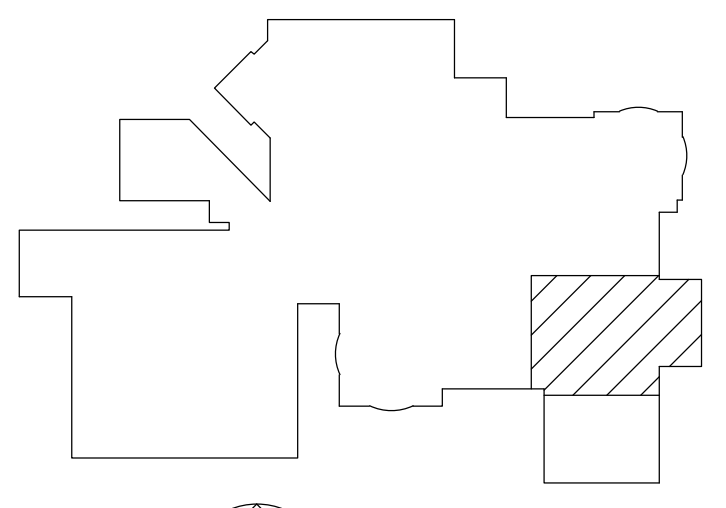
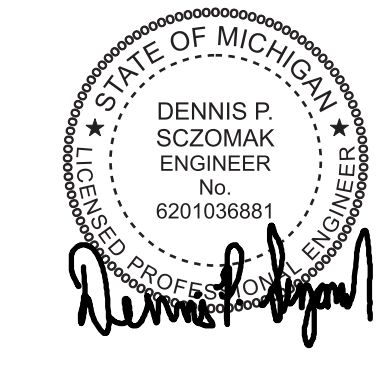
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DATE	ISSUED FOR
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PBA Project No.: 2024.0338

PIC:	WEK
PK:	WEK
DRAFTS:	EMW
PROJECT NO.:	22.516 HS
SHEET TITLE:	HIGH SCHOOL GYM SHEET METAL PLAN

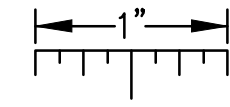
SHEET NO.: **M4.1**



KEY PLAN
NO SCALE

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THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.

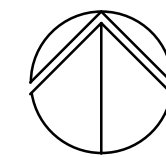
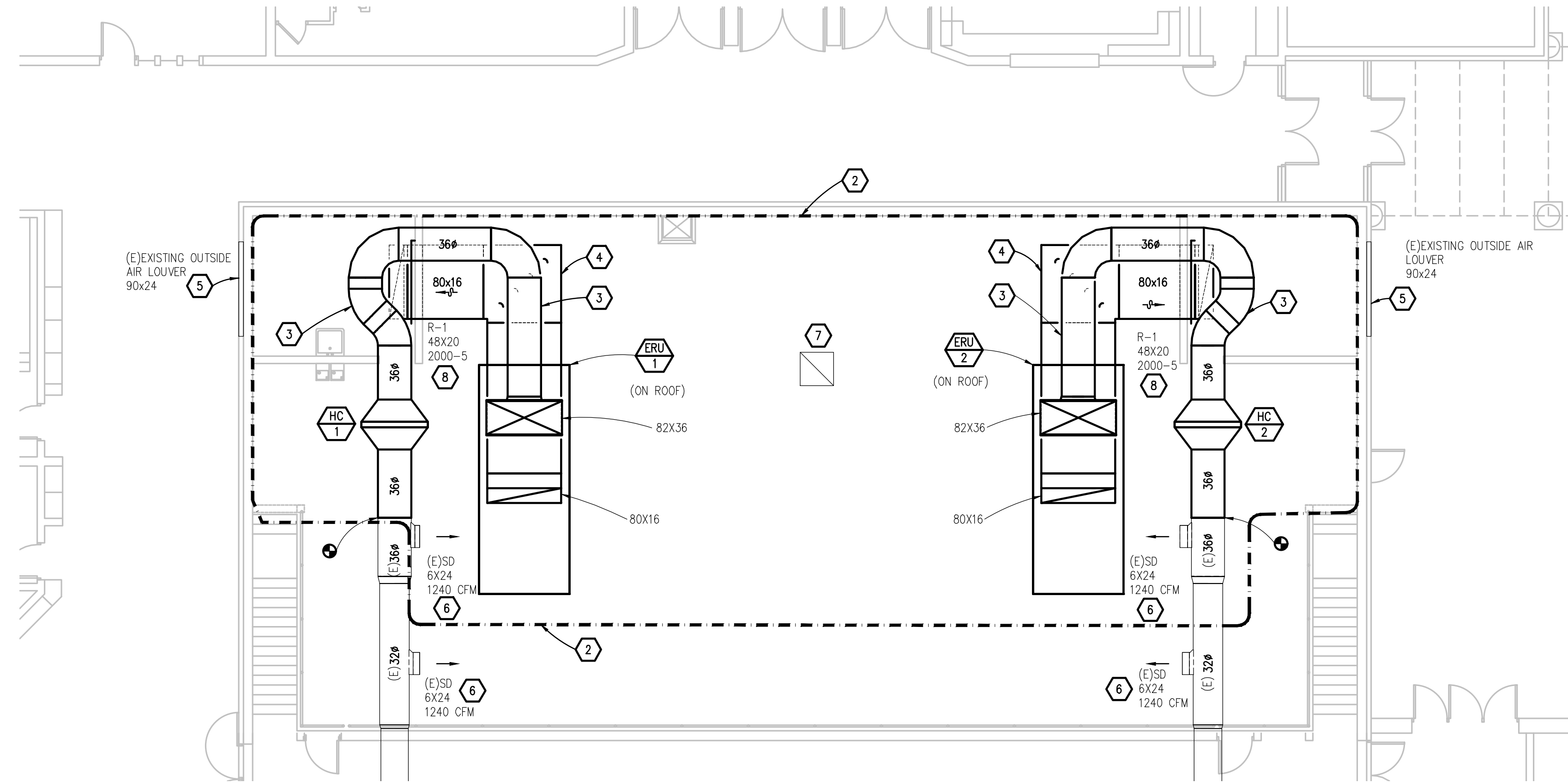


SHEET METAL GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
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5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
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7. REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

CONSTRUCTION KEY NOTES:

1. PROVIDE CONDENSATE DRAIN PIPING TO THE NEAREST ROOF DRAIN AND PROVIDE HEAT TRACE.
2. RELOCATE EXISTING FIRE PROTECTION LINES AND SPRINKLERS AS NEED FOR RENOVATION.
3. ROUTE NEW SUPPLY DUCTWORK THROUGH JOIST, REWORK EXISTING CROSS BRIDGES TO ACCOMMODATE NEW DUCTWORK. PAINT NEW SUPPLY DUCTWORK TO MATCH EXISTING DUCT WORK.
4. ROUTE NEW RETURN DUCTWORK UNDER JOIST. PAINT NEW RETURN DUCT WORK TO MATCH EXISTING DUCT WORK.
5. INSULATE OUTSIDE AIR LOUVER AS SEEN ON SHEET M6.1.
6. RE-BALANCE ALL AIR DIFFUSERS TO CFM INDICATED ON DRAWINGS.
7. CAP EXISTING RELIEF VENT ON ROOF AFTER REMOVAL ON ROOF. SEE DETAIL ON SHEET M6.1.
8. STACK 48X20 RETURN GRILLES ON TOP OF EACH OTHER. TOTAL OF 5 48X20 RETURN GRILLES. ENSURE RETURN DUCT DOES NOT BLOCK EXISTING DOOR WHEN SWUNG OPEN.



HIGH SCHOOL GYM MEZZANINE SHEET METAL PLAN
SCALE: 1/8" = 1' - 0"



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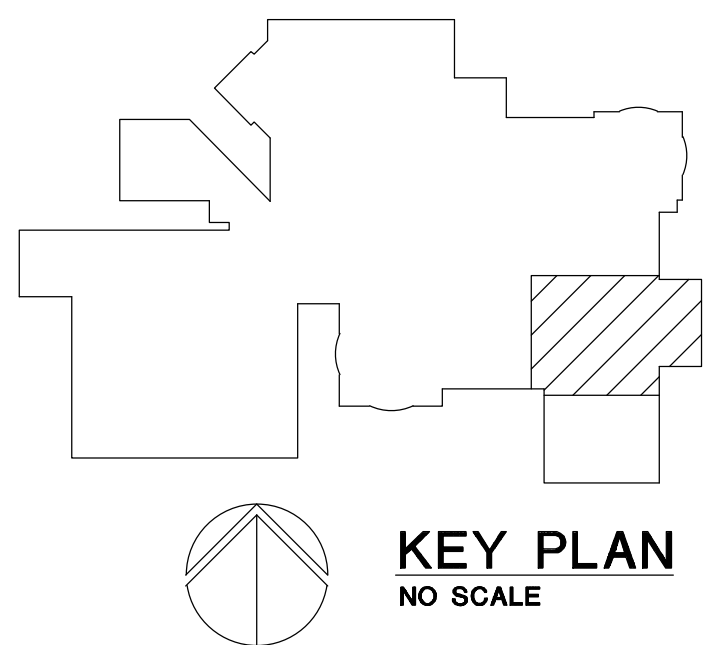
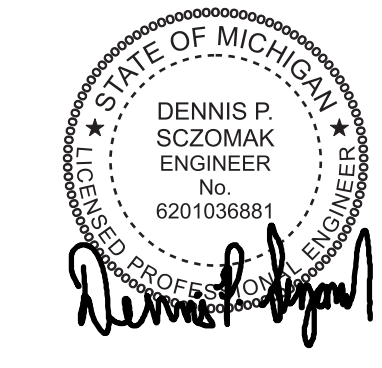


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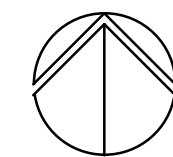
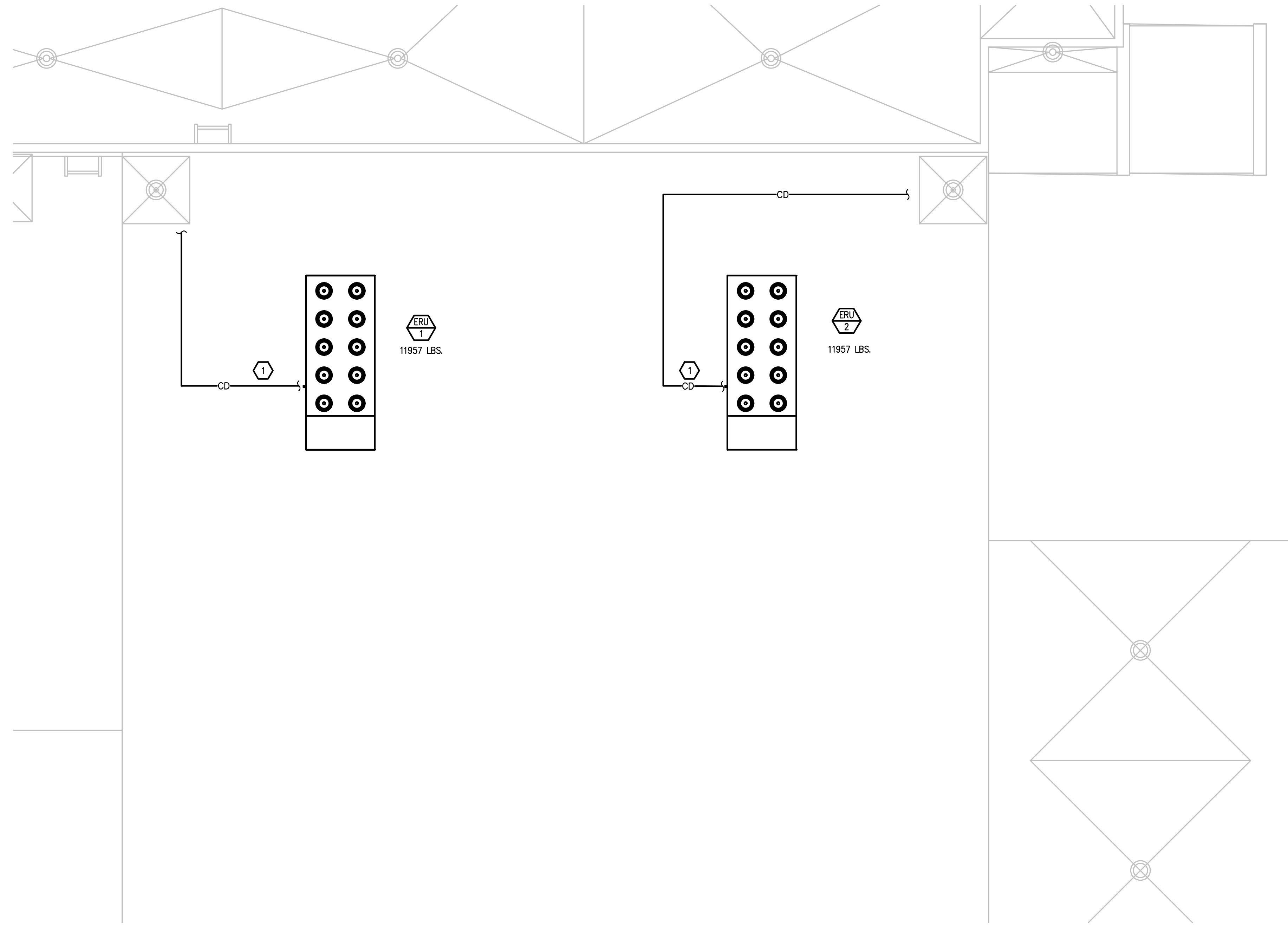
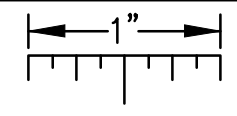
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DRAFTS:	
PROJECT NO.:	22.516 HS
SHEET TITLE:	HIGH SCHOOL GYM MEZZANINE SHEET METAL PLAN
SHEET NO.:	M4.2



KEY PLAN
NO SCALE

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HIGH SCHOOL ROOF MECHANICAL PLAN
SCALE 1/8" = 1' - 0"

SHEET METAL GENERAL NOTES:

- THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
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- REFER TO TEMPERATURE CONTROLS STANDARD MOUNTING HEIGHTS DETAIL FOR ELEVATIONS OF WALL MOUNTED TEMPERATURE CONTROL DEVICES.

CONSTRUCTION KEY NOTES:

- PROVIDE CONDENSATE DRAIN PIPING TO THE NEAREST ROOF DRAIN AND PROVIDE HEAT TRACE.
- RELOCATE EXISTING FIRE PROTECTION LINES AND SPRINKLERS AS NEED FOR RENOVATION.
- ROUTE NEW SUPPLY DUCTWORK THROUGH JOIST, REWORK EXISTING CROSS BRIDGES TO ACCOMMODATE NEW DUCTWORK. PAINT NEW SUPPLY DUCTWORK TO MATCH EXISTING DUCT WORK.
- ROUTE NEW RETURN DUCTWORK UNDER JOIST. PAINT NEW RETURN DUCT WORK TO MATCH EXISTING DUCT WORK.
- INSULATE OUTSIDE AIR LOUVER AS SEEN ON SHEET M6.1.
- RE-BALANCE ALL AIR DIFFUSERS TO CFM INDICATED ON DRAWINGS.
- CAP EXISTING RELIEF VENT ON ROOF AFTER REMOVAL ON ROOF. SEE DETAIL ON SHEET M6.1.
- STACK 48X20 RETURN GRILLES ON TOP OF EACH OTHER. TOTAL OF 5 48X20 RETURN GRILLES. ENSURE RETURN DUCT DOES NOT BLOCK EXISTING DOOR WHEN SWUNG OPEN.



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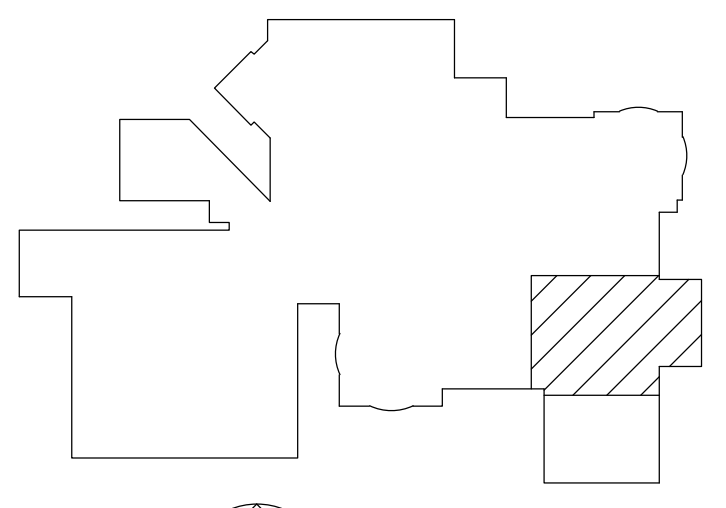
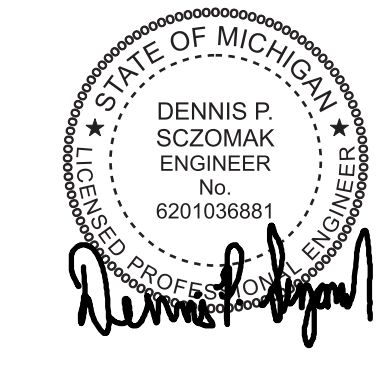
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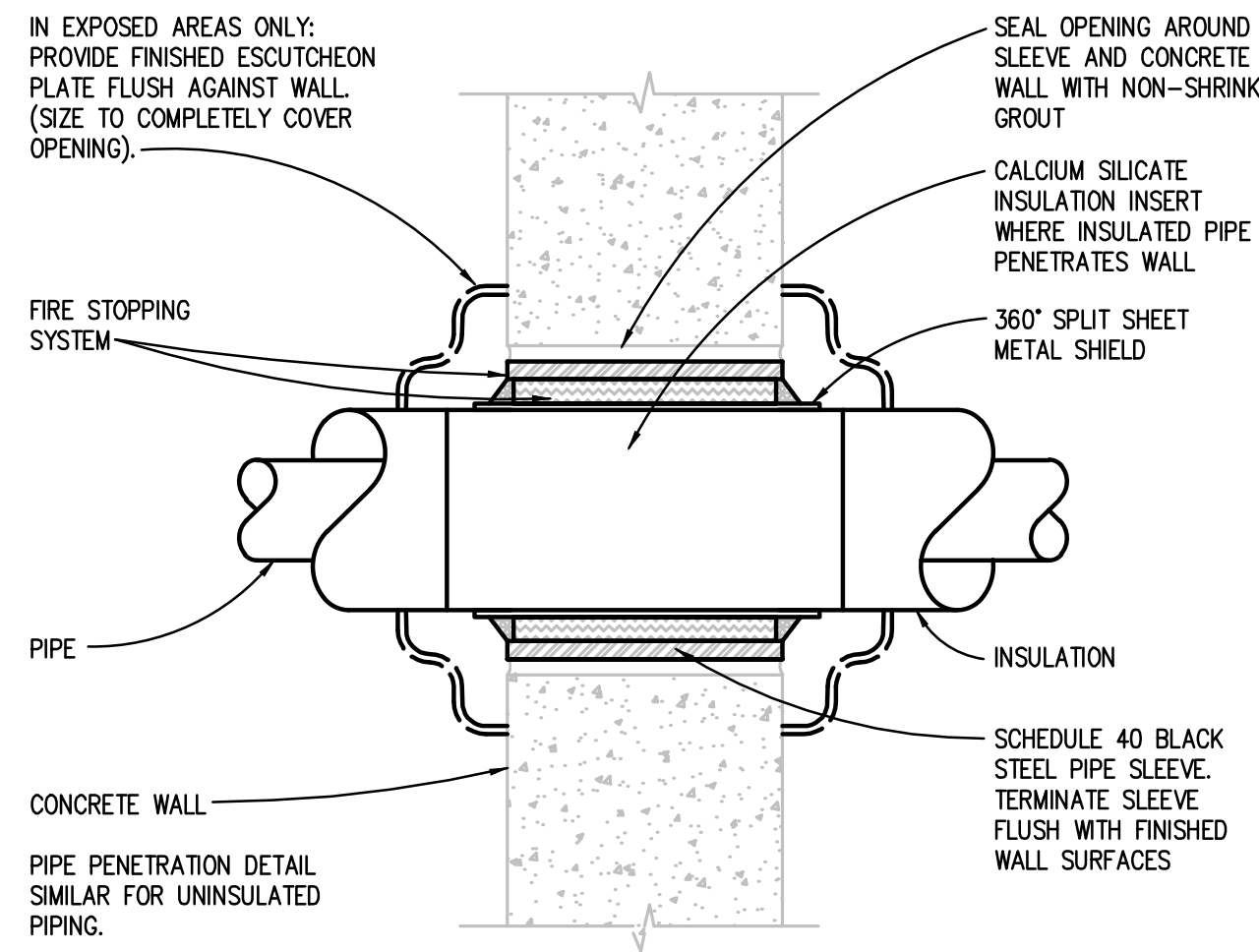
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PIC:	WEK
PK:	WEK
DRAFTS:	EMW
PROJECT NO:	22.516 HS
SHEET TITLE:	HIGH SCHOOL ROOF MECHANICAL PLAN
SHEET NO:	M5.1

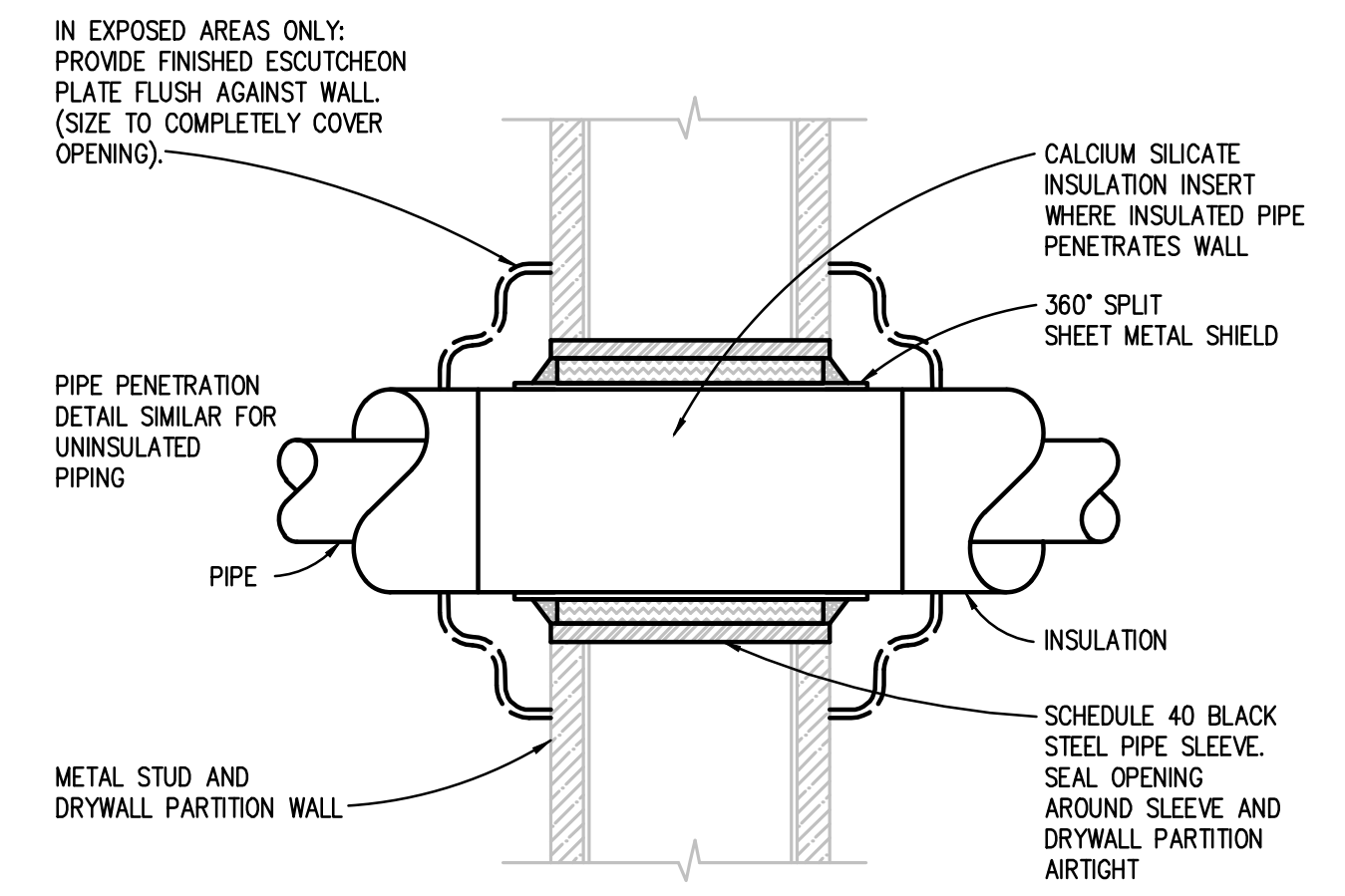


KEY PLAN
NO SCALE



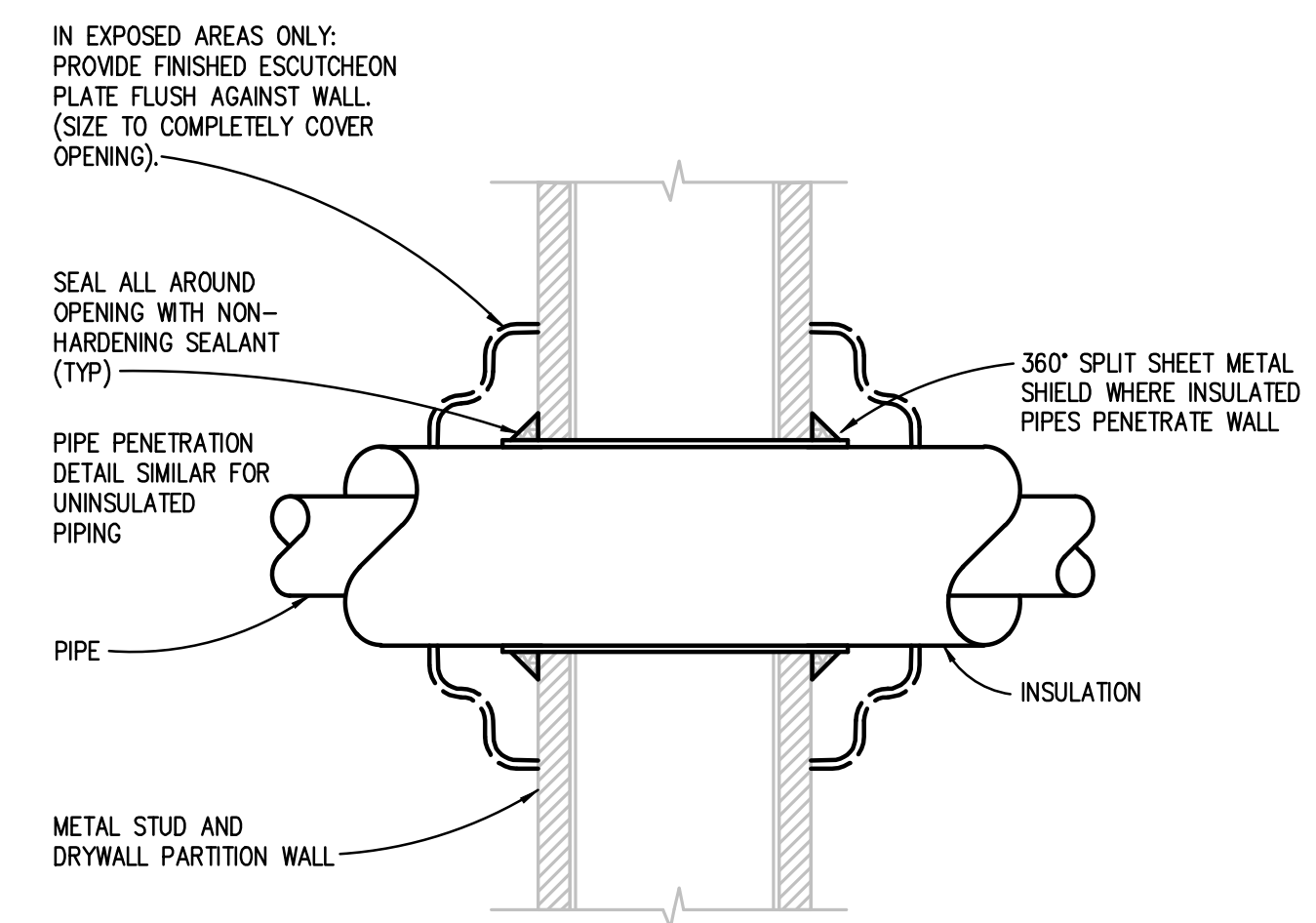
DETAIL INDICATES THE INSTALLATION REQUIREMENTS FOR A FIRE RATED ASSEMBLY. FOR A NON-FIRE RATED ASSEMBLY PACK SLEEVED OPENING WITH INSULATION MATERIAL AND CAULK WITH NON-HARDENING SEALANT.

FIRE RATED AND NON-FIRE RATED POURED CONCRETE OR BLOCK WALL PIPE PENETRATION DETAIL
NO SCALE



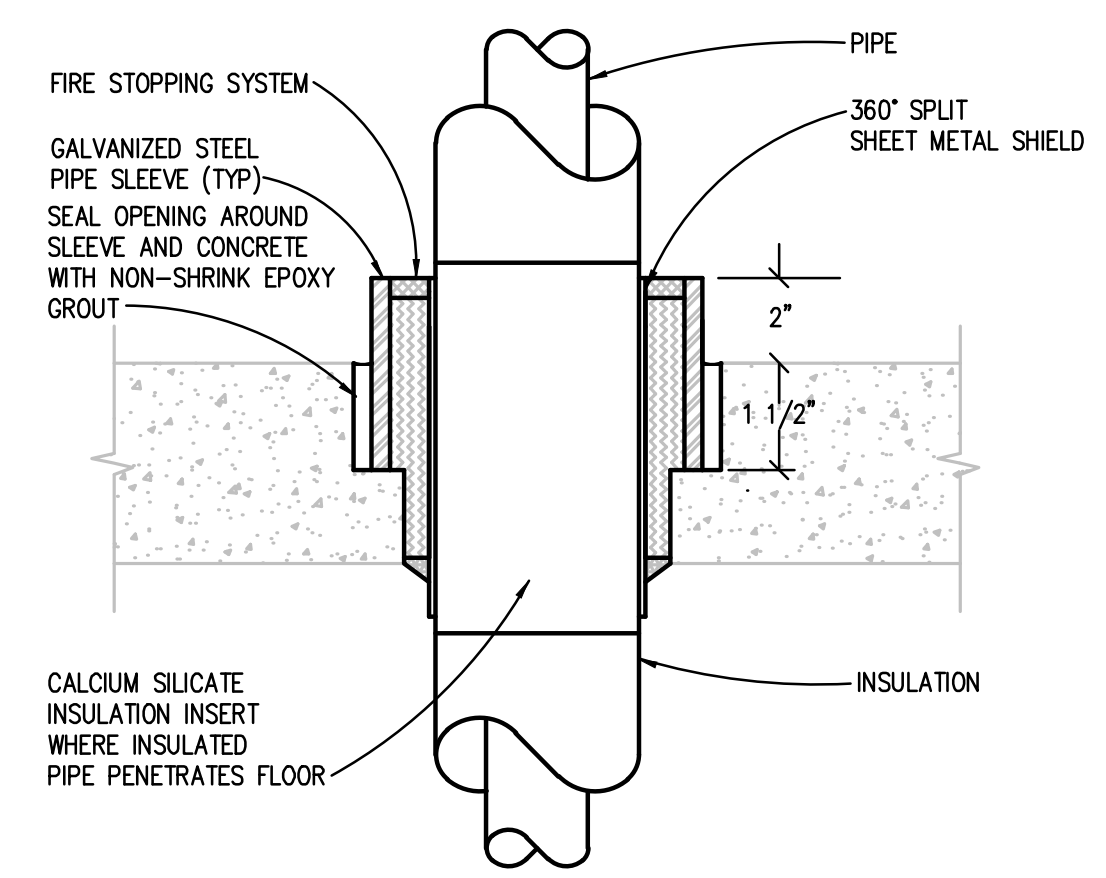
DETAIL INDICATES THE INSTALLATION REQUIREMENTS FOR A FIRE RATED ASSEMBLY. FOR A NON-FIRE RATED ASSEMBLY PACK SLEEVED OPENING WITH INSULATION MATERIAL AND CAULK WITH NON-HARDENING SEALANT.

FIRE RATED AND NON-FIRE RATED METAL STUD AND DRYWALL PARTITION WALL PIPE PENETRATION DETAIL
NO SCALE

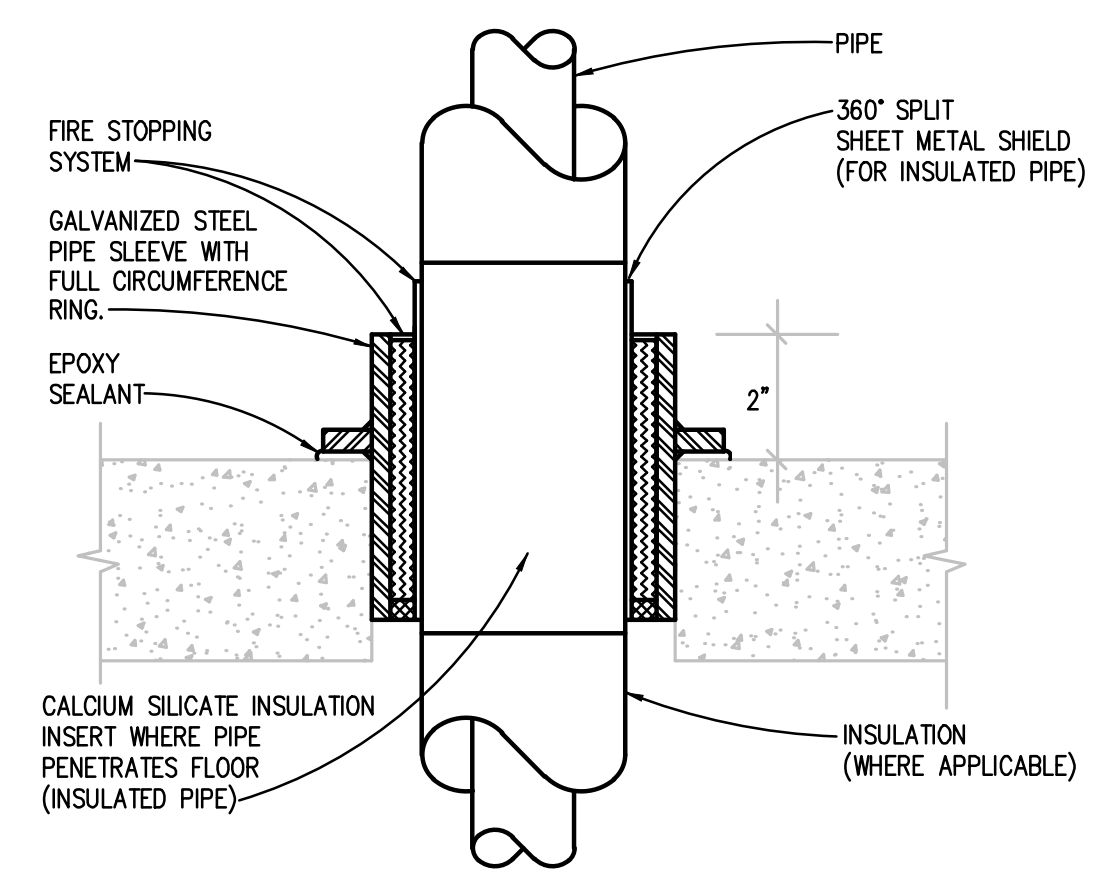


THIS DETAIL DOES NOT APPLY TO HEATING PIPING 2" AND LARGER. FOR HEATING PIPING 2" AND LARGER REFER TO "FIRE RATED AND NON-FIRE RATED METAL STUD AND DRYWALL PARTITION WALL PIPE PENETRATION DETAIL"

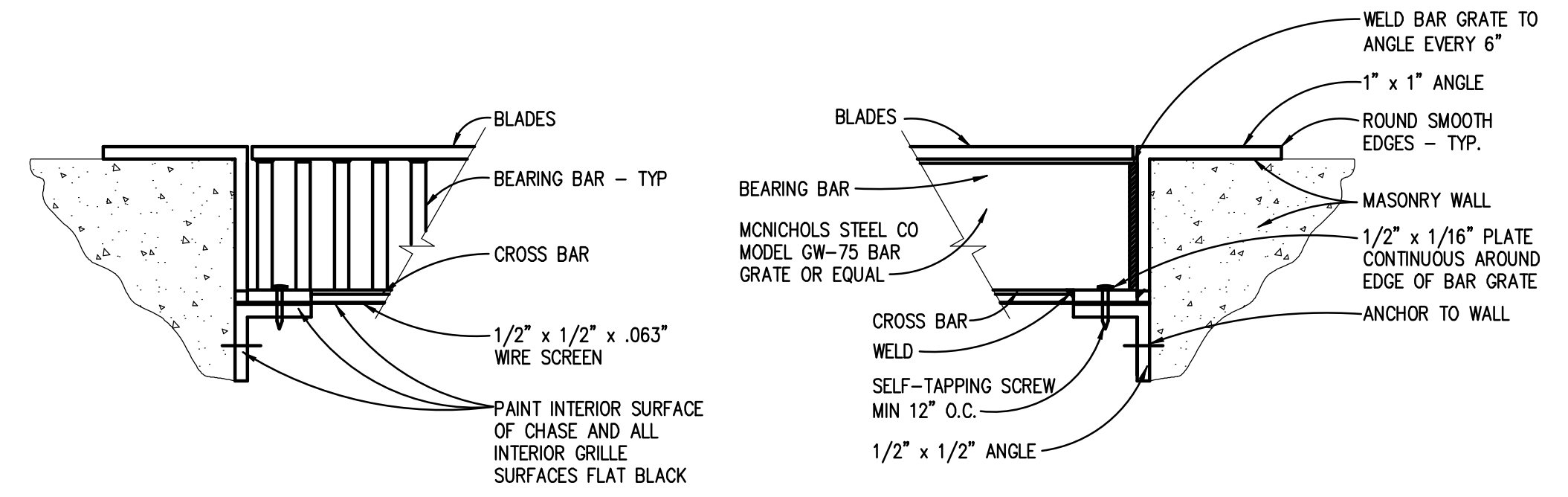
NON-FIRE RATED METAL STUD AND DRYWALL PARTITION WALL PIPE PENETRATION DETAIL
NO SCALE



EXISTING FLOOR PIPE PENETRATION DETAIL
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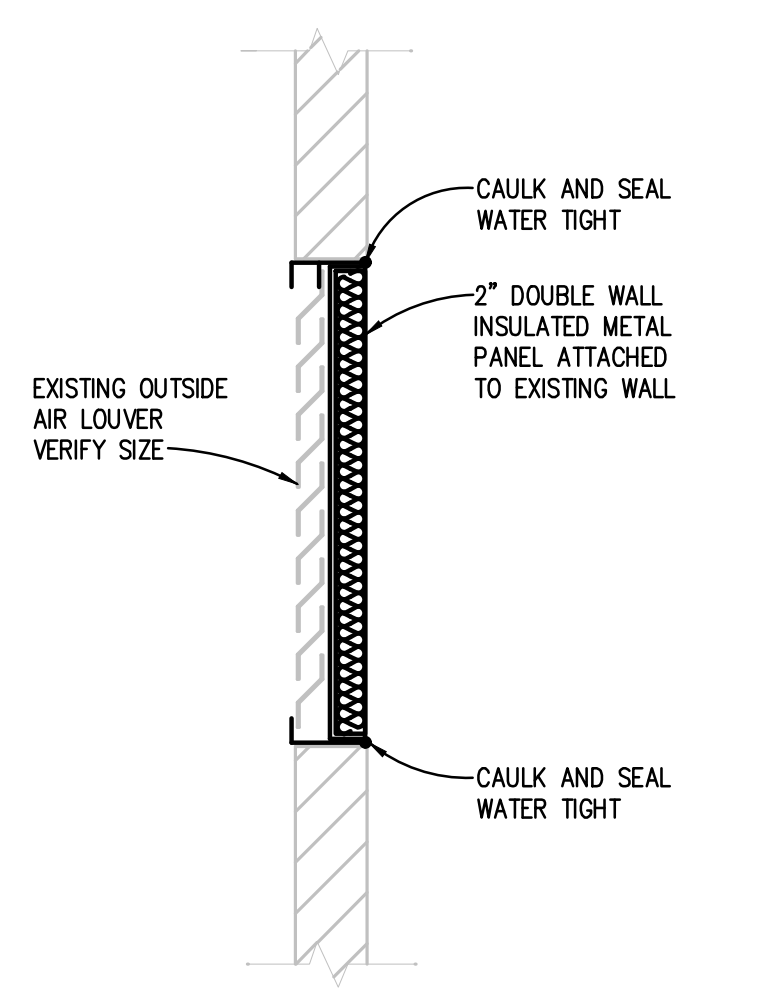


EXISTING FLOOR PIPE PENETRATION DETAIL
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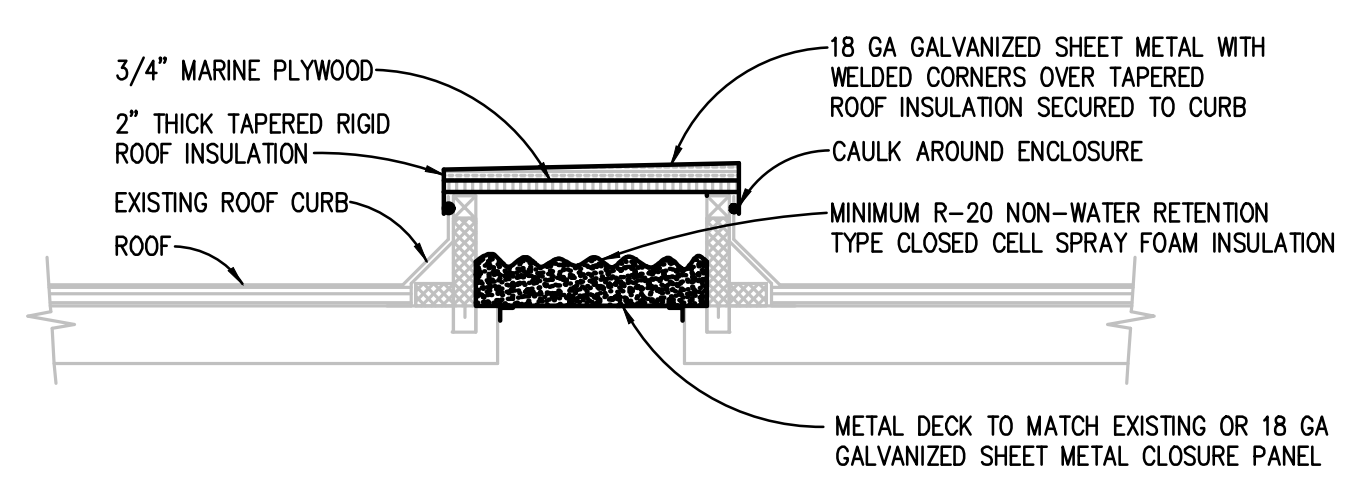


SECTION 'B-B'
NO SCALE

SECTION 'A-A'
NO SCALE

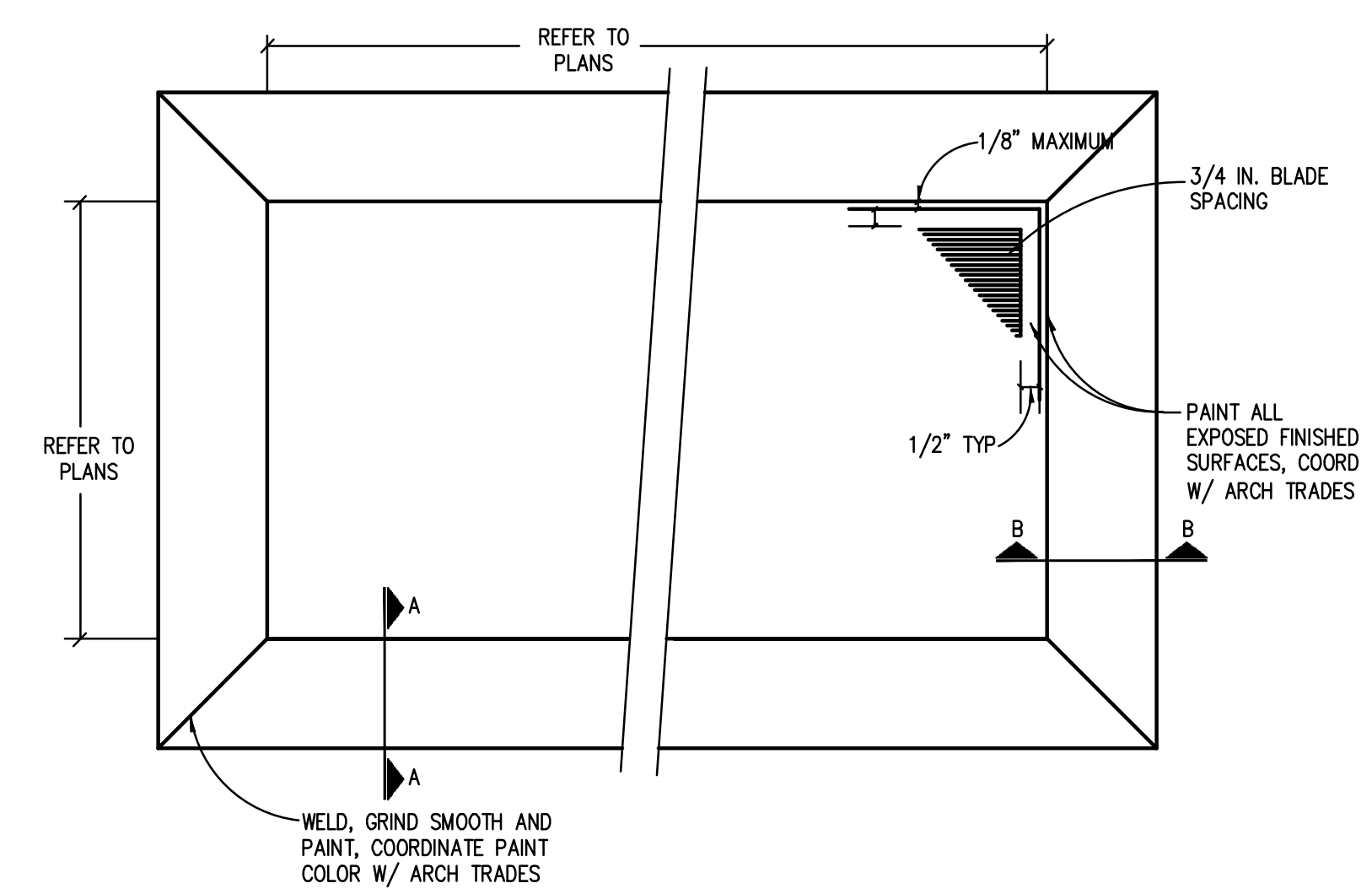


EXISTING EXTERIOR LOUVER AND/OR GRILLE CLOSURE DETAIL
NO SCALE



NOTE:
1. FASTEN TOP CLOSURE, WITH SCREWS THROUGH SIDE.
2. NOT TO BE USED FOR CURBS GREATER THAN 24" IN ANY DIMENSION

SMALL ROOF CURB CAP DETAIL
NO SCALE



NOTE:
GRIND AND DEBURR ALL SURFACES PRIOR TO APPLYING FINISH.

HEAVY DUTY RETURN AIR GRILLE DETAIL
NO SCALE



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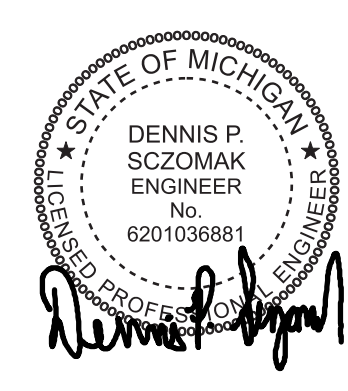


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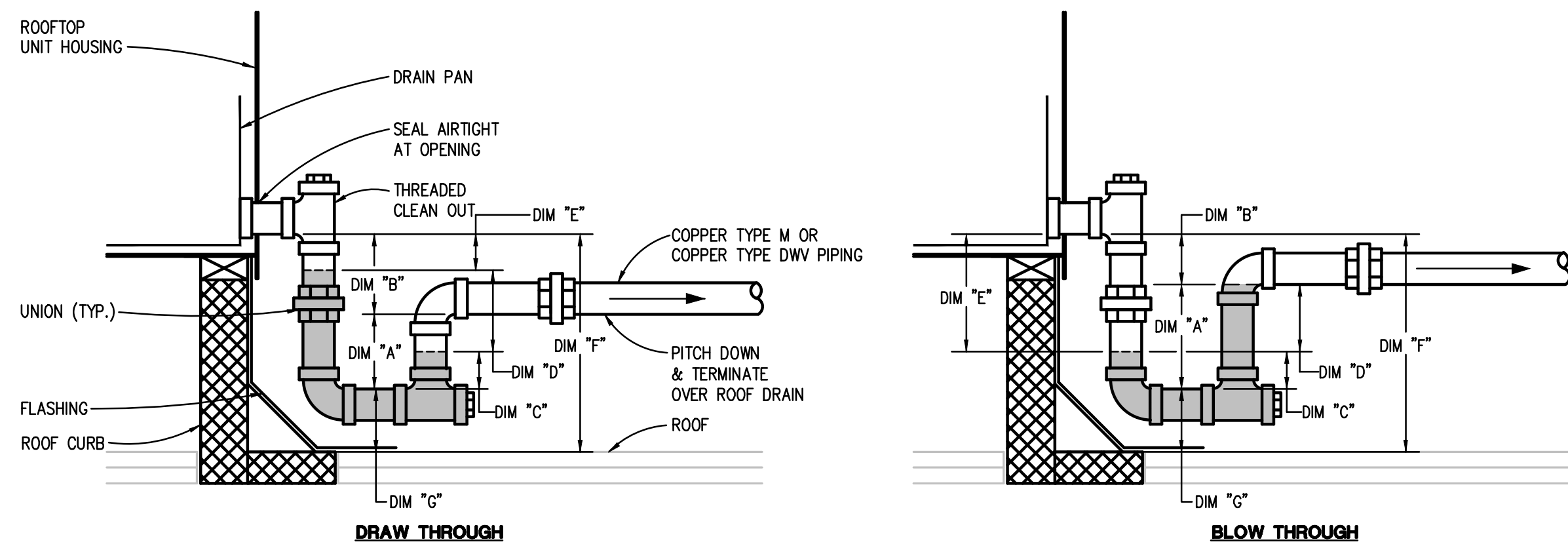
PIC:	WEK
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DRAFTS:	EMW
PROJECT NO.:	22.516 HS
SHEET TITLE:	MECHANICAL DETAILS
SHEET NO.:	M6.1



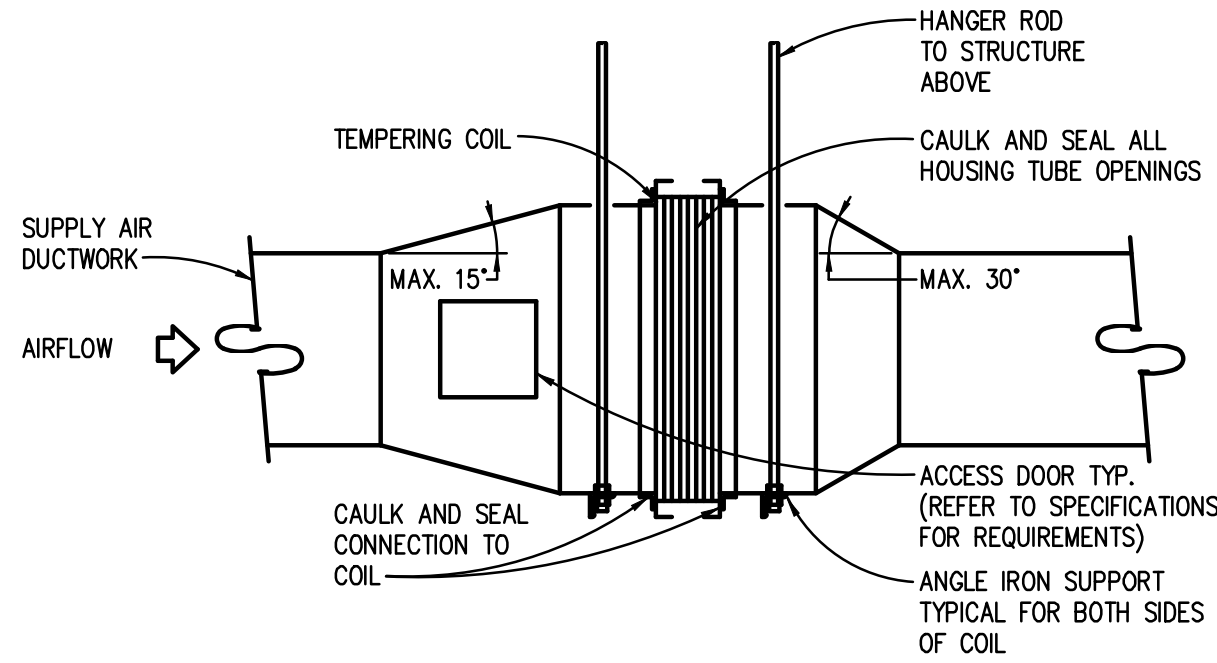
g:\2024\2024-0338-00\CAD\51 cased hs gym air conditioning\2024-0338-M6-DT.dwg, M6.1, 1/16/2025 5:33:02 PM, Robert W. MacKinnon, Peter Basso Associates Inc.

TRAP DIMENSION TABLE										
TYPE OF SYSTEM	S.P. AT DRAIN PAN (N.) (NOTE A)	DIMENSION "A" (INCHES) MIN.	DIMENSION "B" (INCHES)	DIMENSION "C" (INCHES) (TRAP SEAL)	DIMENSION "D" (INCHES)	DIMENSION "E" (INCHES)	DIMENSION "F" (INCHES)			
							DRAIN PIPE SIZE (INCHES)			
							1 1/2	2	2 1/2, 3	4
DRAW THROUGH	-5.1 TO -6	5.0	5.0	2	6	2	13.0	14.0	15.0	16.0
	-4.1 TO -5	4.5	4.5	2	5	2	12.0	13.0	14.0	15.0
	-3.1 TO -4	4.0	4.0	2	4	2	11.0	12.0	13.0	14.0
	-2.1 TO -3	3.5	3.5	2	3	2	10.0	11.0	12.0	13.0
BLOW THROUGH	UP TO -2	3.0	3.0	2	2	2	9.0	10.0	11.0	12.0
	UP TO +2	4.0	2.0	2	2	4	9.0	10.0	11.0	12.0
	+2.1 TO +3	5.0	2.0	2	3	5	10.0	11.0	12.0	13.0
	+3.1 TO +4	6.0	2.0	2	4	6	11.0	12.0	13.0	14.0
	+4.1 TO +5	7.0	2.0	2	5	7	12.0	13.0	14.0	15.0
	+5.1 TO +6	8.0	2.0	2	6	8	13.0	14.0	15.0	16.0

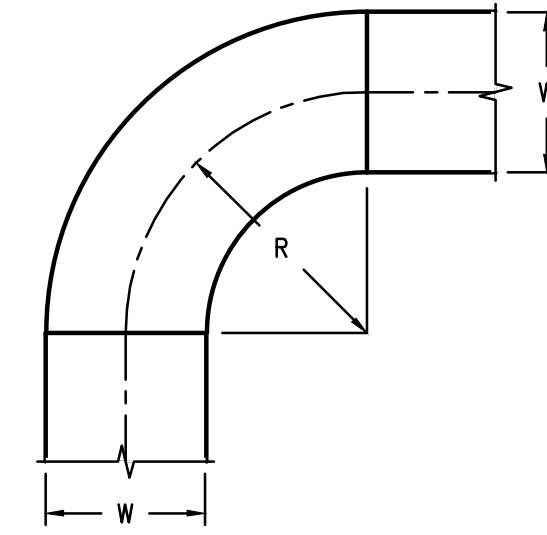
- NOTES: A. REFER TO ROOFTOP AIR HANDLING UNIT (COMMERCIAL, UNITARY, MODULAR) SCHEDULE FOR (-) OR (+) STATIC PRESSURE AT DRAIN PAN.
 B. CONDENSATE DRAIN PAN TRAP PIPING SERVING ENERGY RECOVERY UNIT HEAT EXCHANGER AND HUMIDIFIER SECTIONS, WHERE LOCATED OUTDOORS, SHALL BE INSULATED AND HEAT TRACED.
 C. DIMENSION "G" IS MIN: 3" FOR UP TO 1 1/2" DRAIN PIPE
 4" FOR 2" DRAIN PIPE
 5" FOR 2 1/2" OR 3" DRAIN PIPE
 6" FOR 4" DRAIN PIPE
 D. PROVIDE ROOF CURB WITH ADEQUATE HEIGHT TO MEET DIMENSION "F"



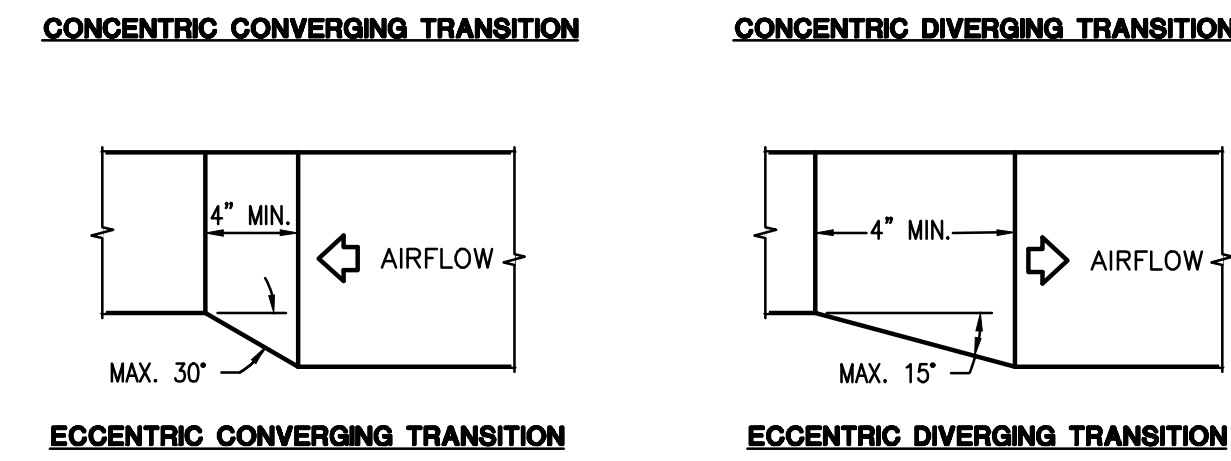
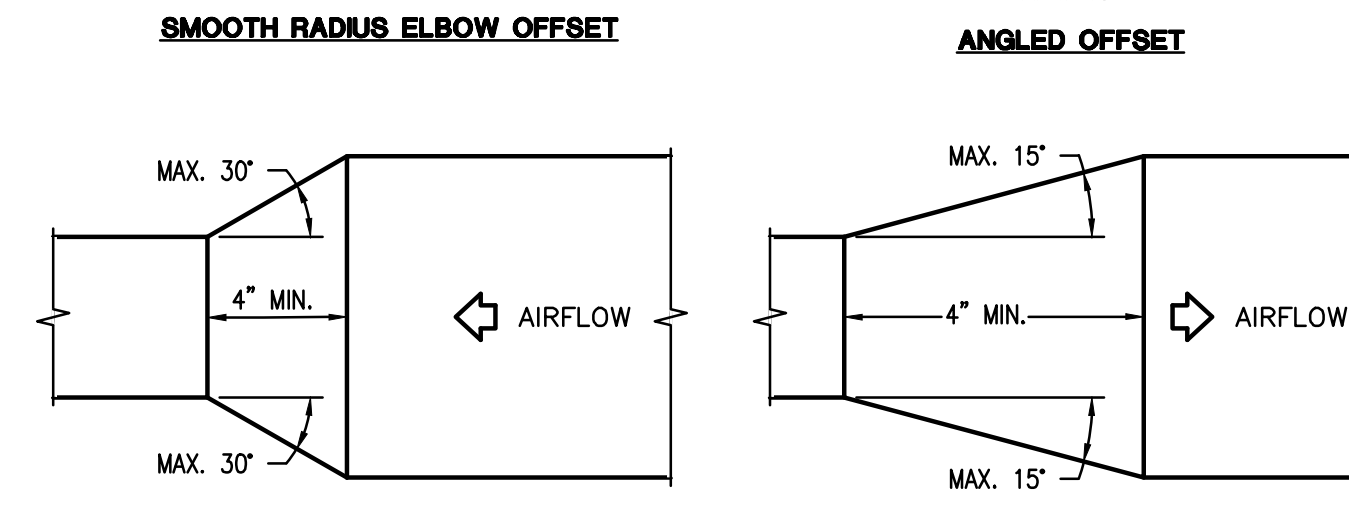
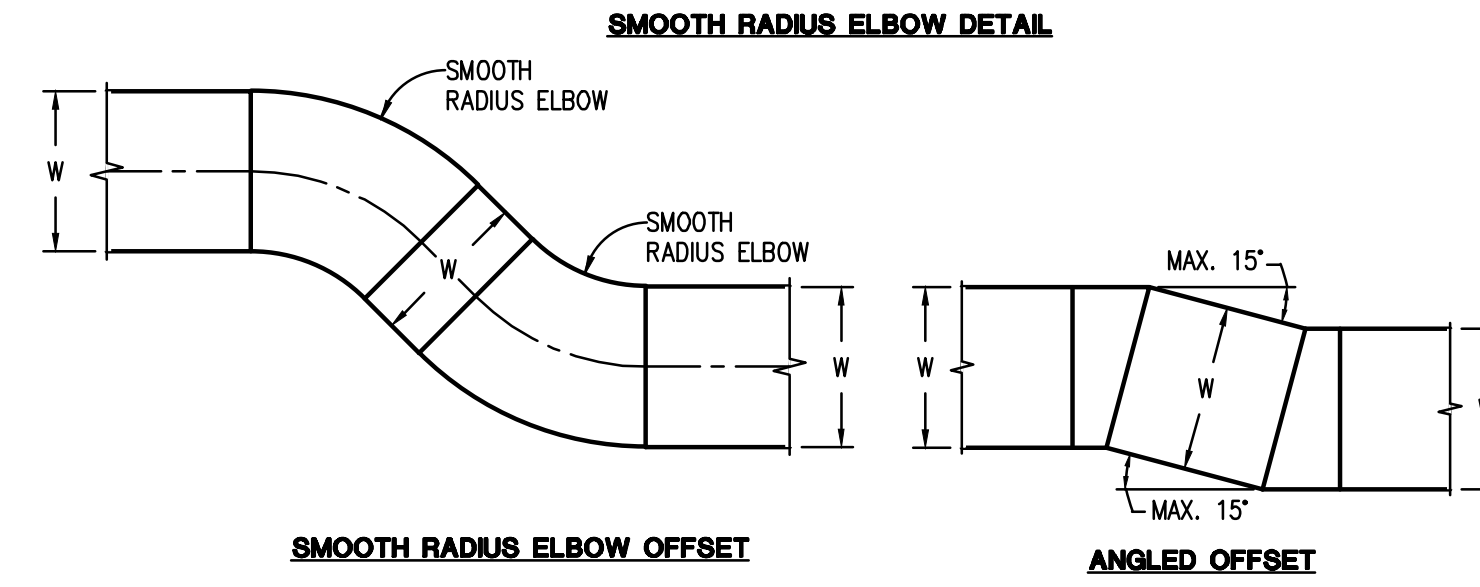
ENERGY RECOVERY UNIT CONDENSATE DRAIN PAN TRAP DETAIL
 NO SCALE



DUCT MOUNTED TEMPERING COIL INSTALLATION DETAIL
 NO SCALE



- NOTES:
 1. R/W = 1.0 FOR VELOCITIES <= 2,000 FPM UNLESS OTHERWISE INDICATED, R/W = 1.5 FOR VELOCITIES > 2,000 FPM UNLESS OTHERWISE INDICATED.
 2. ALL CHANGES IN DIRECTION SHALL BE SMOOTH RADIUS ELBOW UNLESS OTHERWISE INDICATED.
 3. THIS DETAIL APPLIES TO CHANGES IN DIRECTION FOR ALL ANGLES.



DUCT TRANSITION AND OFFSET DETAILS
 NO SCALE



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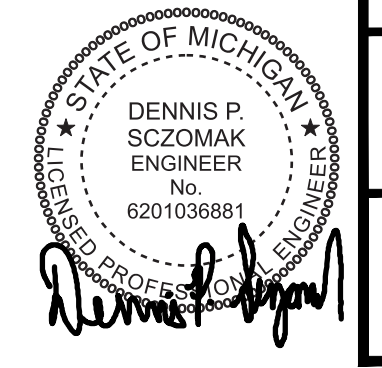


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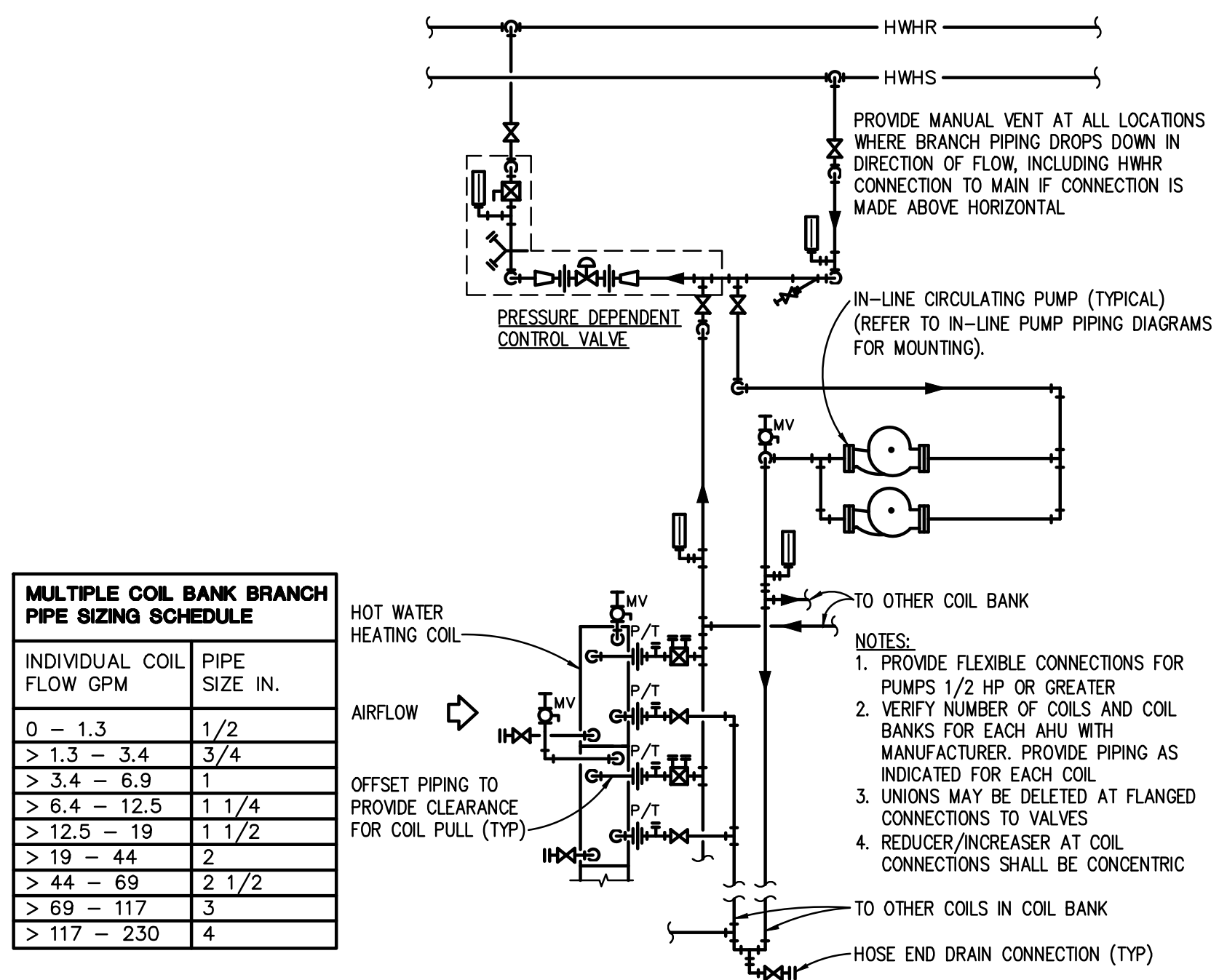
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PK:	WEK
DRAFTS:	EMW
PROJECT NO.:	22.516 HS
SHEET TITLE:	MECHANICAL DETAILS
SHEET NO.:	M6.2



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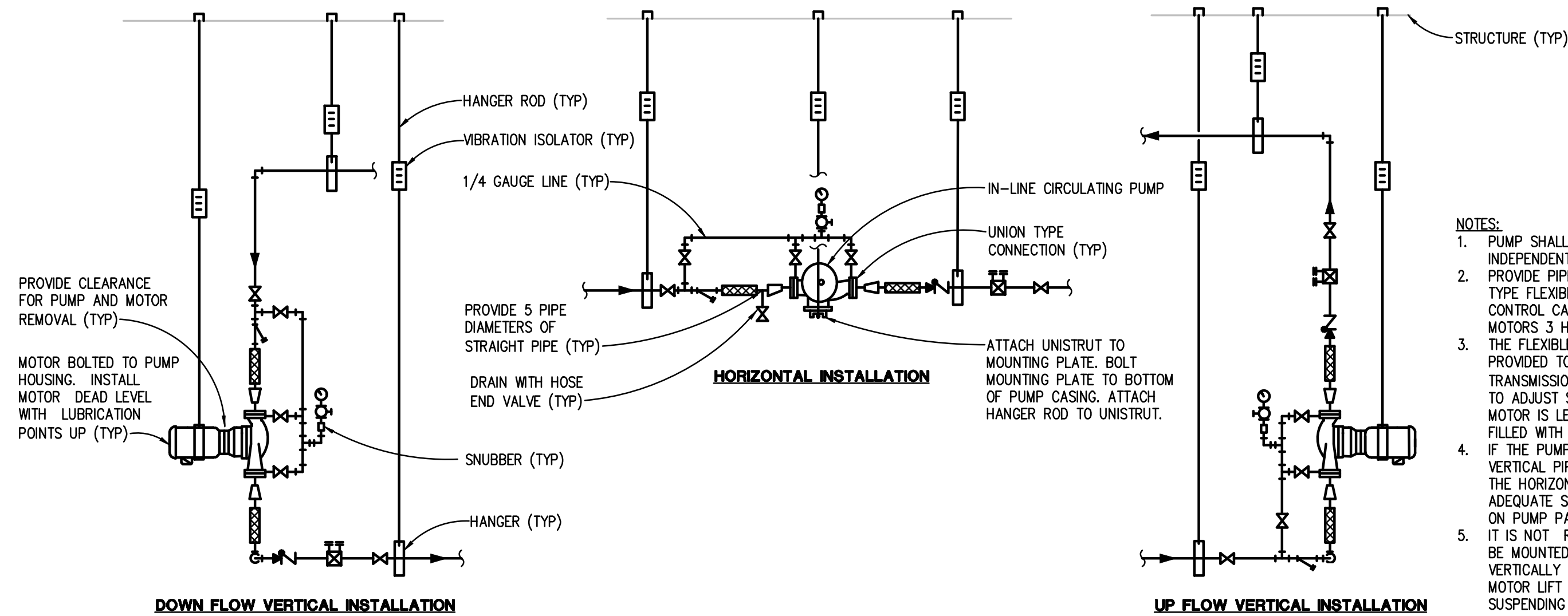


MULTIPLE COIL BANK BRANCH PIPE SIZING SCHEDULE

INDIVIDUAL COIL FLOW GPM	PIPE SIZE IN.
0 - 1.3	1/2
> 1.3 - 3.4	3/4
> 3.4 - 6.9	1
> 6.4 - 12.5	1 1/4
> 12.5 - 19	1 1/2
> 19 - 44	2
> 44 - 69	2 1/2
> 69 - 117	3
> 117 - 230	4

- NOTES:
1. PROVIDE FLEXIBLE CONNECTIONS FOR PUMPS 1/2 HP OR GREATER.
 2. VERIFY NUMBER OF COILS AND COIL BANKS FOR EACH AHU WITH MANUFACTURER. PROVIDE PIPING AS INDICATED FOR EACH COIL.
 3. UNIONS MAY BE DELETED AT FLANGED CONNECTIONS TO VALVES.
 4. REDUCER/INCREASER AT COIL CONNECTIONS SHALL BE CONCENTRIC.

AHU HOT WATER HEATING COIL PIPING DIAGRAM
NO SCALE



- NOTES:
1. PUMP SHALL BE SUPPORTED INDEPENDENTLY FROM PIPING.
 2. PROVIDE PIPE MULTIPLE SPHERE RUBBER TYPE FLEXIBLE CONNECTORS WITH CONTROL CABLES FOR PUMPS WITH MOTORS 3 HORSEPOWER AND GREATER.
 3. THE FLEXIBLE CONNECTORS ARE PROVIDED TO ATTENUATE SOUND TRANSMISSION (I.E. HUM). CONTRACTOR TO ADJUST SPRING HANGERS SUCH THAT MOTOR IS LEVEL AFTER SYSTEM IS FILLED WITH WATER.
 4. IF THE PUMP IS TO BE MOUNTED IN VERTICAL PIPING WITH THE MOTOR IN THE HORIZONTAL POSITION, PROVIDE ADEQUATE SUPPORT TO PREVENT STRAIN ON PUMP PARTS AND PIPING.
 5. IT IS NOT RECOMMENDED THAT PUMP BE MOUNTED WITH THE MOTOR VERTICALLY DOWNWARD. DO NOT USE MOTOR LIFT RINGS AS A MEANS OF SUSPENDING THE PUMP.

IN-LINE CLOSE COUPLED (BELL AND GOSSETT SERIES 90) TYPE CIRCULATING PUMP PIPING DIAGRAM
NO SCALE



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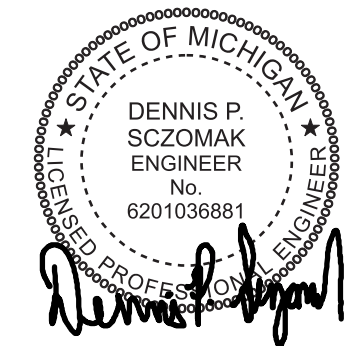
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SHEET NO.:	M6.3



ABOVEGROUND HVAC PIPING & VALVE APPLICATION SCHEDULE																			
PIPE SIZE (INCHES)	MATERIAL						CONNECTION					ISOLATION VALVES		KEYED NOTES					
	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (SCHED. 80)	CARBON STEEL (STD.)	COPPER TYPE DWV	SOLDERED	BRAZED	WELDED	THREADED	FLANGED	GROOVED		PRESSURE SEAL	MECHANICALLY FORMED TEE	BALL	GENERAL SERVICE BUTTERFLY	HI-PERF BUTTERFLY
HEATING HOT WATER SUPPLY & RETURN - MIN. WORKING PRESS. & TEMP., 125 PSIG AT 200 DEG F																			
UP TO 2				X							X					X			
UP TO 2		X						X	X							X			
2-1/2 TO 4				X						X		X					X		A
2-1/2 TO 4		X							X								X		A
6 TO 8				X						X		X					X		A
6 TO 8		X							X								X		A
10				X						X		X					X		A
12						X				X		X					X		A
14 AND LARGER						X				X		X					X		A

- GENERAL NOTES**
- "X" INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
 - DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS. IF A BRONZE VALVE CONNECTS THE DISSIMILAR METALS NO FURTHER DIELECTRIC ISOLATION IS REQUIRED.
 - NPS 2 AND SMALLER: USE BRASS COUPLING, NIPPLE, OR UNION.
 - NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.
 - USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
 - HVAC EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
 - GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

- KEYED NOTES**
- GROOVED AND FLANGED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS FOR THIS PIPING SYSTEM ONLY. ACCESSIBLE LOCATIONS ARE DEFINED AS EXPOSED CONSTRUCTION OR ABOVE LAY-IN CEILINGS.
 - BALL VALVE WITH 250 PSIG STEAM TRIM.
 - BALL VALVE WITH 150 PSIG STEAM TRIM.

ABOVEGROUND HVAC PIPE & ACCESSORY INSULATION APPLICATION SCHEDULE														
INDOOR PIPE SYSTEM AND SIZE (INCHES)	INSULATION MATERIAL & THICKNESS (INCHES)						FIELD-APPLIED JACKET MATERIAL							KEYED NOTES
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SILICATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PVDC (INDOOR)	PVDC (OUTDOOR)	
HEATING HOT WATER SUPPLY & RETURN 200 DEG F AND LOWER														
NPS 1-1/4 AND SMALLER		1.5							X	X				A
NPS 1-1/2 AND LARGER		2							X	X				A
REFRIGERANT SUCTION & HOT GAS (RIGID COPPER)														
NPS 6 AND SMALLER	1	1		1	1	1			X	X				
NPS 8 AND LARGER	1.5	1.5		1.5	1.5	1.5			X	X				
REFRIGERANT SUCTION & HOT GAS (SOFT COPPER)														
	1								X	X				

- UNLESS OTHERWISE INDICATED OR SCHEDULED, THE FOLLOWING DO NOT REQUIRE INSULATION:
 DIRECT BURIED COOLING SYSTEM PIPING
 PIPING THAT CONVEYS FLUIDS HAVING DESIGN OPERATING TEMPERATURE RANGE BETWEEN 60 DEG F. AND 105 DEG F., INCLUSIVE.
- GENERAL NOTES**
- "X" OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
 - INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.
 - FOR PIPING NPS 1-1/4 AND SMALLER WITHIN PARTITIONS IN CONDITIONED SPACES INSULATION MAY BE REDUCED BY ONE-INCH THICKNESS, BUT NOT TO LESS THAN ONE-INCH THICKNESS.
 - FOR PIPING NPS 1 AND SMALLER, INSULATION IS NOT REQUIRED FOR STRAINERS, CONTROL VALVES, AND BALANCING VALVES.

- KEYED NOTES**
- PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, CIRCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR.
 - PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.
 - STEAM AND CONDENSATE PIPING JACKET SHALL BE STUCCO EMBOSSED.
 - PIPING WITHIN ENERGY RECOVERY UNITS SHALL BE TYPE 304 STAINLESS STEEL, SMOOTH; 0.010 INCH THICK. SEAMS AND JOINTS CAULKED WITH CHEMICALLY RESISTANT SEALER.

DUCT SYSTEM INSULATION APPLICATION SCHEDULE													
DUCT SYSTEMS LOCATED INDOORS	INSULATION MATERIAL & THICKNESS (INCHES)								FIELD APPLIED JACKET MATERIAL		KEYED NOTES		
	FIBERGLASS BLANKET 0.75 LB/CU FT	FIBERGLASS BLANKET 1.0 LB/CU FT	FIBERGLASS BOARD 2.25 LB/CU FT	FIBERGLASS BOARD 6.0 LB/CU FT	FLEXIBLE ELASTOMERIC	ASTM E2336 2-HOUR FIRE RATED BLANKET	2-HOUR FIRE RATED BLANKET	ALUMINUM	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)				
SUPPLY AIR, EXCEPT AS NOTED BELOW													
		1.5											A, E
OUTSIDE AIR AND MIXED AIR, EXCEPT AS NOTED BELOW													
		1.5											
OUTSIDE AIR INTAKE, RELIEF AIR AND EXHAUST AIR PLENUMS ADJACENT TO EXTERIOR LOUVERS													
		1.5											

- PLENUMS, DUCTS, AND DUCT ACCESSORIES NOT REQUIRING INSULATION:
 FIBROUS-GLASS DUCTS
 DOUBLE-WALL METAL DUCTS WITH INSULATION OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/ESNA 90.1 - 2013
 METAL DUCTS WITH DUCT LINER OF SUFFICIENT THICKNESS TO COMPLY WITH ENERGY CODE AND ASHRAE/ESNA 90.1 - 2013
 FABRIC SUPPLY DUCTS
 FACTORY-INSULATED FLEXIBLE DUCTS
 FACTORY-INSULATED PLENUMS AND CASINGS
 FLEXIBLE CONNECTORS
 VIBRATION-CONTROL DEVICES
 FACTORY-INSULATED ACCESS PANELS AND DOORS

- GENERAL NOTES**
- "X" OR THICKNESS IN INCHES INDICATE ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
 - REFER TO METAL DUCT SECTION OF SPECIFICATIONS FOR DUCT LINING AND DOUBLE-WALL INSULATED DUCT.
 - REFER TO HVAC CASINGS SECTION OF SPECIFICATIONS FOR DOUBLE-WALL INSULATED PLENUMS.

- KEYED NOTES**
- INCLUDE INSULATION AROUND DUCT MOUNTED COILS AND AIR TERMINAL UNIT COILS.
 - NUMBER OF LAYERS AND TOTAL INSULATION THICKNESS AS RECOMMENDED BY SELECTED MANUFACTURER.
 - DOES NOT APPLY TO PREFABRICATED, ZERO-CLEARANCE GREASE DUCT.
 - PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL DUCT INSULATION.
 - EXPOSED SUPPLY DUCTWORK LOCATED IN A CONDITIONED SPACE SERVED BY THE SAME AIR HANDLING SYSTEM IS NOT REQUIRED TO BE INSULATED.

DUCT SYSTEM APPLICATION SCHEDULE																	
AIR SYSTEMS	DUCT MATERIAL											KEYED NOTES					
	G90 GALV. SHEET METAL	DOUBLE-WALL LINED G90 GALV. SHEET METAL (DOUBLE INNER WALL)	DOUBLE-WALL LINED G90 GALV. SHEET METAL (PERF. INNER WALL)	G90 GALV. SHEET METAL WITH 1-INCH LINING	GALVANNEALED SHEET METAL	ALUMINUM	TYPE 304 STAINLESS STEEL	TYPE 316 STAINLESS STEEL	PVC COATED GALV. SHEET METAL (4x1)	PVC COATED GALV. SHEET METAL (1x4)	PVC COATED GALV. SHEET METAL (4x4)		16 GA. CARBON STEEL	ZERO-CLEARANCE PREFABRICATED RANGE HOOD EXHAUST DUCT	FABRIC	DESIGN PRESSURE CLASS (INCHES WG)	SEAL CLASS
SUPPLY AIR WITHOUT TERMINAL UNITS	X														+2	A	5
RETURN AIR WITHOUT TERMINAL UNITS	X														-2	A	5

- GENERAL NOTES**
- "X" INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A DUCT SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
 - 4 X 1 PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON EXTERIOR SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND MINIMUM 1 MIL (0.025 MM) THICK ON INTERIOR SURFACES.
 - 1 X 4 (4 X 1 REVERSE COATED) PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON INTERIOR SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND MINIMUM 1 MIL (0.025 MM) THICK ON EXTERIOR SURFACES.
 - 4 X 4 PVC-COATED GALVANIZED STEEL: FACTORY-APPLIED PVC COATINGS SHALL BE 4 MILS (0.10 MM) THICK ON SHEET METAL SURFACES OF DUCTS AND FITTINGS EXPOSED TO CORROSIVE CONDITIONS AND 4 MILS (0.10 MM) THICK ON OPPOSITE SURFACES.

- KEYED NOTES**
- SCREWS, DAMPERS, OR PROJECTIONS OF ANY TYPE ON INTERIOR OF DUCT SURFACE ARE PROHIBITED.
 - DUCT SHALL BE LINED WITHIN 25 FEET UPSTREAM OF FANS.
 - ALL WELDED CONSTRUCTION.

SCHEDULES GENERAL NOTES:

- TYPICAL FOR ALL SCHEDULE SHEETS:
- REFER TO ELECTRICAL STANDARD SCHEDULES, ONE LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL ELECTRICAL INFORMATION.
 - PROVIDE THE FOLLOWING FACTORY-WIRED ELECTRICAL OPTIONS/ACCESSORIES WHERE INDICATED IN SCHEDULE:
 - NON-FUSED DISCONNECT SWITCH
 - UNIT SHALL BE SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS
 - SERVICE RECEPTACLE
 - FUSED DISCONNECT SWITCH
 - COMBINATION STARTER
 - UNIT SHALL HAVE (2) SINGLE POINT CONNECTIONS WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS. (1) CONNECTION SHALL BE FOR CONDENSING SECTION AND (1) CONNECTION SHALL BE FOR THE REMAINDER OF THE UNIT.
 - FOR MODULATION/CONTROL TYPE COLUMN, "VFC" INDICATES VARIABLE FREQUENCY CONTROLLERS, "AUTO" INDICATES AUTOMATIC OPERATION (CONTROLLED BY TEMPERATURE CONTROLS OR SELF CONTAINED CONTROLS), "MANUAL" INDICATES HAND OPERATION.
 - IF VARIABLE FREQUENCY CONTROLLERS ARE INDICATED TO BE PROVIDED AND ARE NOT INSTALLED INTEGRAL TO THE UNIT, VARIABLE FREQUENCY CONTROLLERS SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR (UNLESS OTHERWISE NOTED) AND INSTALLED BY THE ELECTRICAL CONTRACTOR INCLUDING THE LINE SIDE AND LOAD SIDE WIRING TO THE MOTOR AND INCLUDING MISCELLANEOUS STEEL REQUIRED FOR THE SUPPORT AND MOUNTING OF THE VFC. REFER TO FLOOR PLANS FOR LOCATION.
 - WHERE EQUIPMENT IS INDICATED TO HAVE A SINGLE POINT ELECTRICAL CONNECTION, THAT EQUIPMENT SHALL COME COMPLETE WITH FACTORY INSTALLED STARTERS, MOTOR OVERLOAD PROTECTION, CONTACTORS, FUSING AND ALL NECESSARY INTERNAL WIRING AND CONTROLS. PROVIDE A FACTORY MOUNTED UNIT DISCONNECTING MEANS WHERE THE ELECTRICAL CONTRACTOR SHALL MAKE SINGLE POINT CONNECTION. INSTALL PACKAGED EQUIPMENT SUCH THAT THE ELECTRICAL CONNECTION AND CONTROLS ARE ACCESSIBLE AND HAVE CLEARANCES MEETING THE NATIONAL ELECTRICAL CODE.
 - WHERE PACKAGED EQUIPMENT IS PROVIDED, NAMEPLATE MUST INDICATE MAXIMUM OVERCURRENT PROTECTION BY HACR RATED CIRCUIT BREAKERS OR FUSES. IF FUSE PROTECTION ONLY IS INDICATED, PROVIDE A FUSIBLE DISCONNECT AND FUSES WITH THE UNIT.
 - WHERE EQUIPMENT IS DESIGNATED BY MANUFACTURER AND MODEL NUMBER, THIS IS THE BASIS OF DESIGN. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT BY OTHER SPECIFIED MANUFACTURERS OR PROPOSED ALTERNATE EQUIPMENT BY THE BASIS OF DESIGN MANUFACTURER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS TO ELECTRICAL REQUIREMENTS, STRUCTURAL LOADING, OR ARCHITECTURAL APPURTENANCES AND SHALL INCLUDE THE COST OF SUCH REVISIONS IN HIS BID.
 - WHERE EQUIPMENT IS SCHEDULED TO INCLUDE A SERVICE RECEPTACLE, PROVIDE A FACTORY MOUNTED SERVICE RECEPTACLE WITH APPROPRIATE FUSES AND TRANSFORMERS CONNECTED ON THE LINE SIDE OF THE UNIT DISCONNECT. PROVIDE A NAMEPLATE ON THE DISCONNECT SWITCH INDICATING THE PRESENCE OF LIVE POWER TO THE SERVICE RECEPTACLE WHEN THE UNIT DISCONNECT IS IN THE OFF POSITION.
 - SIZE ALL EQUIPMENT FEEDERS BASED ON THE LISTED MOP (MAXIMUM OVERCURRENT PROTECTION), REFER TO THE FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE ON THE ELECTRICAL STANDARD SCHEDULES SHEET.

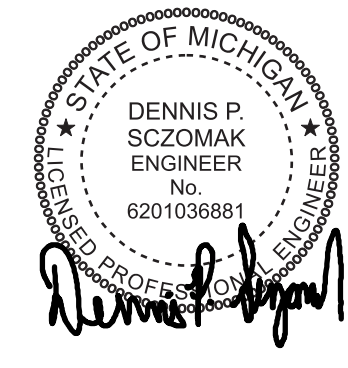
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CRAWFORD AUSABLE SCHOOL DISTRICT
GRAYLING HIGH SCHOOL
 HVAC UPGRADES
 1135 N. OLD27, GRAYLING, MI 49738

DATE	ISSUED FOR
11/20/24	DD
12/02/24	COORDINATION
12/06/24	50% CD
01/17/25	BID SET

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 PBA Project No.: 2024.0338

PK: WEK
 DRAFTS: EMW
 PROJECT NO:
22.516 HS
 SHEET TITLE:
 MECHANICAL SCHEDULES
 SHEET NO:
M7.1



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ENERGY RECOVERY UNIT SCHEDULE

UNIT IDENTIFICATION	AREA/SYSTEM SERVED	SUPPLY FAN										EXHAUST FAN				HEAT EXCHANGER (SUMMER)						HEAT EXCHANGER (WINTER)						COOLING COIL - DX COOLING						HOT GAS REHEAT		OUTSIDE AIR FILTERS			RETURN FILTERS			ELECTRICAL					CURB		UNIT WEIGHT W/ CURB (LBS.)	SA/RA CONFIG.	EA/OA CONFIG.	MODEL NO.					
		CFM	MINIMUM OUTSIDE AIRFLOW CFM (NOTE 3)		ESP*	TSP*	CONTROL TYPE	MOTOR		CFM	ESP*	TSP*	CONTROL TYPE	MOTOR		SUPPLY SIDE			EXHAUST SIDE			SUPPLY SIDE			EXHAUST SIDE			SENSIBLE CAPACITY MBH	TOTAL CAPACITY MBH	E.D.B. °F	L.D.B. °F	REFRIG. TYPE	MIN FACE AREA SQ. FT.	MAX. VEL. F.P.M	E.D.B. °F	L.D.B. °F	EFF. %	AREA SQ. FT.	SP* TOTAL	EFF. %	AREA SQ. FT.	SP* TOTAL	VOLTS	PHASE	FLA	MOP	SCCR KA	OPTIONS/ACCESSORIES					TYPE		HEIGHT		
			BHP	HP				BHP	HP					E.A.T. °F	L.A.T. °F	A.P.D. IN. WG.	E.A.T. °F	L.A.T. °F	A.P.D. IN. WG.	EFFIC. (%)	E.A.T. °F	L.A.T. °F	A.P.D. IN. WG.	E.A.T. °F	L.A.T. °F	A.P.D. IN. WG.	EFFIC. (%)																										STANDARD	VIBRATION ISOLATION SPRING CURB			
ERU-1	HS GYM	10,000	6300	5649	1.5	3	VFC	3.35 TOTAL	2 @ 5	10,000	0.75	1.585	VFC	2.85 TOTAL	2 @ 3	91	78	0.75	75	87	0.75	-	-10	54	0.75	72	7.3	0.75	-	234	282	77	54	R-454	33	297	-	70	(8) MERV 8	3.34	0.336	(8) MERV 8	3.34	-	460	3	67.9	90			N	Y	24	11468	DOWN/DOWN THRU CURB	END ROOF	VXE-312-74 C-251-0-G2
ERU-2	HS GYM	10,000	6300	5649	1.5	3	VFC	3.35 TOTAL	2 @ 5	10,000	0.75	1.585	VFC	2.85 TOTAL	2 @ 3	91	78	0.75	75	87	0.75	-	-10	54	0.75	72	7.3	0.75	-	234	282	77	54	R-454	33	297	-	70	(8) MERV 8	3.34	0.336	(8) MERV 8	3.34	-	460	3	67.9	90			N	Y	24	11468	DOWN/DOWN THRU CURB	END ROOF	VXE-312-74 C-251-0-G2

- GENERAL NOTES:**
- REFER TO SCHEDULES GENERAL NOTES.
 - MODEL NUMBERS ARE VALENT UNLESS OTHERWISE NOTED.
 - MINIMUM OUTSIDE AIRFLOW MAX-MIN CFM IS THE REQUIRED MINIMUM OUTSIDE AIRFLOW RATE WITH MAXIMUM OCCUPANT LOAD. MINIMUM OUTSIDE AIRFLOW MIN-MIN CFM IS THE REQUIRED MINIMUM OUTSIDE AIRFLOW RATE WITH ZERO OCCUPANT LOAD.
 - FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.
 - FOR UNITS LOCATED OUTDOORS, INSULATE AND PROVIDE ELECTRIC HEAT TRACE FOR HEAT EXCHANGER CABINET DRAIN PIPING.

HOT WATER HEATING COIL SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	MAXIMUM NUMBER ROWS	MAXIMUM FIN DENSITY FINS/INCH	CAPACITY MBH	AIR				MINIMUM FACE AREA SQ. FT.	WATER				CONTROL VALVE W.P.D. FT. HD.	MODEL NUMBER	KEYED NOTES	
					AIRFLOW CFM	E.D.B. °F	L.D.B. °F	MAXIMUM A.P.D. IN. WG.		FLOW GPM	FLUID TYPE	E.W.T. °F	L.W.T. °F				MAXIMUM W.P.D. FT. HEAD
HC-1	HS GYM	3	11	460	10,000	48	90	0.25	22.5	23.0	W	130	90	5.5	5	5WQ1103B	
HC-2	HS GYM	3	11	460	10,000	48	90	0.25	22.5	23.0	W	130	90	5.5	5	5WQ1103B	

- GENERAL NOTES:**
- MODEL NUMBERS ARE TRANE UNLESS OTHERWISE NOTED.
 - COIL SELECTION BASED ON .00025 FOULING FACTOR.
 - FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.

PUMP SCHEDULE

UNIT IDENTIFICATION	SYSTEM SERVED	LOCATION	TYPE	COUPLING TYPE	WATERFLOW GPM	FLUID TYPE	COLDEST SYSTEM OPERATING TEMP. °F FOR PUMP SELECTION	PUMP HEAD FT.	OVERLOAD GPM	MINIMUM EFFICIENCY %	MOTOR			MODULATION/CONTROL TYPE	ELECTRICAL				MODEL NUMBER	KEYED NOTES
											BHP	HP	RPM		VOLTS	PHASE	SCCR KA (NOTE 4)	OPTIONS/ACCESSORIES		
CP-1A	HC-1	HS GYM	INLINE	CLOSE	23	WATER	60	15	NON-OVERLOADING	61	0.154	1/3	1800	AUTO	120	1	10		E90-1.25AAB	PRIMARY
CP-1B	HC-1	HS GYM	INLINE	CLOSE	23	WATER	60	15	NON-OVERLOADING	61	0.154	1/3	1800	AUTO	120	1	10		E90-1.25AAB	BACKUP
CP-2A	HC-2	HS GYM	INLINE	CLOSE	23	WATER	60	15	NON-OVERLOADING	61	0.154	1/3	1800	AUTO	120	1	10		E90-1.25AAB	PRIMARY
CP-2B	HC-2	HS GYM	INLINE	CLOSE	23	WATER	60	15	NON-OVERLOADING	61	0.154	1/3	1800	AUTO	120	1	10		E90-1.25AAB	BACKUP

- GENERAL NOTES:**
- REFER TO SCHEDULES GENERAL NOTES.
 - MODEL NUMBER ARE BELL & GOSSETT UNLESS OTHERWISE NOTED.
 - FLUID TYPE: W = WATER, PGXX = PROPYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL, EGXX = ETHYLENE GLYCOL SOLUTION XX PERCENTAGE OF GLYCOL.
 - CONTROLLER (E.G. VARIABLE FREQUENCY CONTROLLER, MOTOR STARTER) FOR SPECIFIED EQUIPMENT SHALL BE MANUFACTURED AND MARKED PER NEC WITH A MINIMUM SHORT CIRCUIT CURRENT RATING AS INDICATED.

GRILLE, REGISTER, AND DIFFUSER SCHEDULE

UNIT IDENTIFICATION	TYPE	FACE SIZE	NECK SIZE	FRAME TYPE	ACCESSORY	CONSTRUCTION	FINISH	MODEL NUMBER	KEYED NOTES
R-1	GRILLE	48x20	SEE PLANS	F	--	STEEL	CUSTOM COLOR	95	

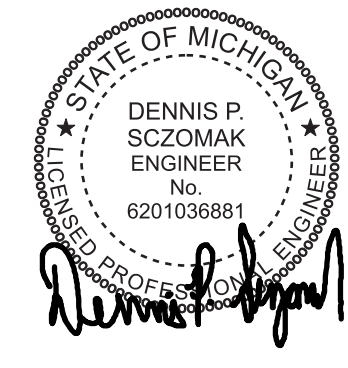
- GENERAL NOTES:**
- MODEL NUMBERS ARE PRICE UNLESS OTHERWISE NOTED.

HORIZONTAL PIPING AND SUPPORT APPLICATION SCHEDULE

	HANGER OR SUPPORT TYPE				SHIELD TYPE				KEYED NOTES	
	MSS TYPE 1 CLEVIS HANGER	MSS TYPE 10 SWIVEL RING BAND HANGER	MSS TYPE 41 DOUBLE ROD PIPE ROLLER	MSS TYPE 43 SINGLE ROD ROLLER HANGER	MSS TYPE 44 PIPE ROLLER & STAND	MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND	MSS TYPE 39 PROTECTION SADDLE	MSS TYPE 40 INSULATION PROTECTION SHIELD		THERMAL-HANGER SHIELD
METAL PIPE TYPE & SIZE										
UNINSULATED SINGLE PIPE										
UP TO 2 INCH	X	X								
2-1/2 INCH TO 4 INCH	X	X								
6 INCH TO 8 INCH	X									
10 INCH	X									
12 INCH			X							
14 INCH AND LARGER			X							
INSULATED SINGLE COLD PIPES										
UP TO 2 INCH	X	X					X	X	X	A
2-1/2 INCH TO 4 INCH	X								X	
6 INCH TO 8 INCH	X								X	
10 INCH	X								X	
12 INCH	X								X	
14 INCH AND LARGER	X								X	
INSULATED SINGLE HOT PIPES										
UP TO 2 INCH	X	X					X	X	X	A, C
2-1/2 INCH TO 4 INCH			X	X	X	X	X	X	X	B, C
6 INCH TO 8 INCH			X	X	X	X	X	X	X	B, C
10 INCH			X	X	X	X	X	X	X	B, C
12 INCH			X	X	X	X	X	X	X	B, C
14 INCH AND LARGER			X				X	X	X	B, C

- GENERAL NOTES:**
- "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.
 - REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS.
 - HANGERS AND SUPPORTS USED FOR FIRE PROTECTION SERVICES SHALL BE UL LISTED OR FMG APPROVED.
 - HANGER ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC COATED, FELT LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS.
 - REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR HANGER SPACING.
 - MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING U-BOLTS OR STRUT CLAMPS AND THERMAL HANGER SHIELDS. REFER TO KEYED NOTE A.
 - MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD HANGER ELEMENTS INDICATED FOR SINGLE COLD PIPES.
 - MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING ROLLER ELEMENTS AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEYED NOTES B AND C.
 - MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD ROLLER HANGERS INDICATED AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEYED NOTES B AND C.
 - REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR ADDITIONAL SYSTEM SPECIFIC HANGER APPLICATIONS.

- KEYED NOTES:**
- USE THERMAL HANGER SHIELD ON TRAPEZE SUPPORTED INSULATED PIPE TO PREVENT CRUSHING OF INSULATION.
 - USE THERMAL HANGER SHIELD DESIGNED FOR USE ON ROLLER SUPPORTS FOR INSULATED HOT PIPE.
 - USE TYPE 39 PROTECTION SADDLES IF INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS WITH INSULATION MATCHING ADJOINING INSULATION.



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PBA Project No.: 2024-0338

PIC:	WEK
PK:	WEK
DRAFTS:	EMW
PROJECT NO:	22.516 HS
SHEET TITLE:	MECHANICAL SCHEDULES
SHEET NO:	M7.2

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TEMPERATURE CONTROL - SYMBOLS LIST

SCHEMATIC SYMBOLS

SYMBOL	DESCRIPTION
AFC	AIR FLOW CONTROLLER
AQ	AQUASTAT, STRAP ON BULB
CO2	CARBON DIOXIDE SENSOR - WALL MOUNTED
CO2	CARBON DIOXIDE SENSOR - DUCT MOUNTED
CO	CARBON MONOXIDE SENSOR - WALL MOUNTED
CO	CARBON MONOXIDE SENSOR - DUCT MOUNTED
CS	CURRENT SWITCH
CT	CURRENT TRANSMITTER
(Wheel)	DAMPER - INLET VANES
(Zigzag)	DAMPER - OPPOSED BLADE
(Parallel)	DAMPER - PARALLEL BLADE
M	DAMPER MOTOR
M	DAMPER MOTOR W/ POSITIVE POSITIONER
DPT	DIFFERENTIAL PRESSURE TRANSMITTER
DPS	DIFFERENTIAL PRESSURE SWITCH
EP	ELECTRIC-PNEUMATIC RELAY
EPT	ELECTRIC TO PNEUMATIC TRANSDUCER
CM	FIRE ALARM SYSTEM, ADDRESSABLE CONTROL MODULE
IM	FIRE ALARM SYSTEM, ADDRESSABLE INTERFACE MODULE
FMS	FLOW MEASURING STATION
FM	FLOW METER
FS	FLOW SWITCH
FZ	FREEZE/STAT
FZ	GAUGE - FLOW
FZ	GAUGE - PRESSURE
FZ	GAUGE - TEMPERATURE
[]	GUARD FOR STAT OR SENSOR
[]	HUMIDIFIER
H	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)
H	HUMIDITY SENSOR, DUCT MOUNTED
LVL	LEVEL SWITCH OR TRANSMITTER
LS	LIMIT SWITCH
---	LINE - ELECTRIC
---	LINE - PNEUMATIC
M	MAIN CONTROL AIR SUPPLY
M/S	MOTOR STARTER
OS	OCCUPANCY SENSOR
R	PILOT LIGHT OR BEACON R - RED LENS A - AMBER LENS B - BLUE LENS G - GREEN LENS
PE	PNEUMATIC-ELECTRIC SWITCH
PS	PRESSURE SWITCH
PT	PRESSURE TRANSMITTER
R	RELAY, ELECTRIC
✓ _N	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)
AN	SIGNAL - DDC/BAS, ANALOG INPUT
AO	SIGNAL - DDC/BAS, ANALOG OUTPUT
DN	SIGNAL - DDC/BAS, DIGITAL INPUT
DO	SIGNAL - DDC/BAS, DIGITAL OUTPUT
AN	SIGNAL - PACKAGED EQUIPMENT, ANALOG INPUT
AO	SIGNAL - PACKAGED EQUIPMENT, ANALOG OUTPUT
DN	SIGNAL - PACKAGED EQUIPMENT, DIGITAL INPUT
DO	SIGNAL - PACKAGED EQUIPMENT, DIGITAL OUTPUT

SCHEMATIC SYMBOLS (CONT.)

SYMBOL	DESCRIPTION
DD	SMOKE DETECTOR - DUCT MOUNTED
SD	SMOKE DETECTOR - SPACE MOUNTED
S/S	START/STOP RELAY
SPT	STATIC PRESSURE TRANSMITTER
SP	STATIC PRESSURE SENSOR OR PROBE
SW	SWITCH
T	TEMPERATURE SENSOR - RIGID ELEMENT IN WELL
T	TEMPERATURE SENSOR - STRAP ON BULB
T	TEMPERATURE SENSOR - DUCT MOUNTED AVG ELEMENT
T	TEMPERATURE SENSOR - DUCT MOUNTED RIGID ELEMENT
T	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)
T _N	THERMOSTAT FOR NIGHT SETBACK
XF	TRANSFORMER
2V	VALVE - 2 WAY CONTROL VALVE
3V	VALVE - 3 WAY CONTROL VALVE
2V/M	VALVE - 2 WAY CONTROL W/ POSITIONER
3V/M	VALVE - 3 WAY CONTROL W/ POSITIONER
VFC	VARIABLE FREQUENCY CONTROLLER
VS	VELOCITY SENSOR
VIB	VIBRATION SWITCH
V	VOLTAGE SENSOR

WIRING SYMBOLS

SYMBOL	DESCRIPTION
(Speaker)	AUDIBLE DEVICE (AS DEFINED ON TC DRAWINGS)
M/S	COIL - MOTOR STARTER CONTACTOR
R	COIL - RELAY
DR	COIL - TIME DELAY RELAY
VFC	COIL - VARIABLE FREQUENCY CONTROLLER CONTACTOR
(Valve)	COIL - EP OR SOLENOID VALVE
(Contact)	CONTACT - INSTANT OPERATING, NO
(Contact)	CONTACT - INSTANT OPERATING, NC
(Contact)	CONTACT - TIMED AFTER COIL IS ENERGIZED, NOTC
(Contact)	CONTACT - TIMED AFTER COIL IS ENERGIZED, NCTO
(Contact)	CONTACT - TIMED AFTER COIL IS DE-ENERGIZED, NOTO
(Contact)	CONTACT - TIMED AFTER COIL IS DE-ENERGIZED, NCTO
(Ground)	GROUND
(Motor)	MOTOR, SINGLE PHASE
(Pilot Light)	PILOT LIGHT OR BEACON R - RED LENS A - AMBER LENS B - BLUE LENS G - GREEN LENS
(Pilot Light)	PILOT LIGHT, WITH PUSH-TO-TEST
(Push Button)	PUSH BUTTON - MOMENTARY CONTACT, NO
(Push Button)	PUSH BUTTON - MOMENTARY CONTACT, NC
(Push Button)	PUSH BUTTON - MOMENTARY CONTACT, NO & NC
(Push Button)	PUSH BUTTON - MOMENTARY, NO (MUSHROOM HEAD)
(Push Button)	PUSH BUTTON - MOMENTARY, NC (MUSHROOM HEAD)

WIRING SYMBOLS (CONT.)

SYMBOL	DESCRIPTION
(Switch)	SWITCH - 2 POSITION SELECTOR
(Switch)	SWITCH - 3 POSITION SELECTOR HAND/OFF/AUTO
(Switch)	SWITCH - FLOW (AIR, WATER, ETC.), NO
(Switch)	SWITCH - FLOW (AIR, WATER, ETC.), NC
(Switch)	SWITCH - LIMIT, NO, HELD CLOSED
(Switch)	SWITCH - LIMIT, NC
(Switch)	SWITCH - LIMIT, NC, HELD OPEN
(Switch)	SWITCH - LIQUID LEVEL, NO
(Switch)	SWITCH - LIQUID LEVEL, NC
(Switch)	SWITCH - MANUAL SPST, NO
(Switch)	SWITCH - MANUAL DPDT, NO
(Switch)	SWITCH - MANUAL SPST, NC
(Switch)	SWITCH - MANUAL DPDT, NC
(Switch)	SWITCH - MANUAL SPDT
(Switch)	SWITCH - MANUAL DPDT
(Switch)	SWITCH - PRESSURE & VACUUM, NO
(Switch)	SWITCH - PRESSURE & VACUUM, NC
(Switch)	SWITCH - TEMPERATURE ACTUATED, NO
(Switch)	SWITCH - TEMPERATURE ACTUATED, NC
(Thermal)	THERMAL OVERLOAD, SINGLE PHASE
(Thermal)	THERMAL OVERLOAD CONTACTS - 3 PHASE
(Transformer)	TRANSFORMER
(Wire)	WIRE TERMINATION AT DEVICE
(Wire)	WIRE TO WIRE TERMINATION
(Wire)	WIRING NOT CONNECTED

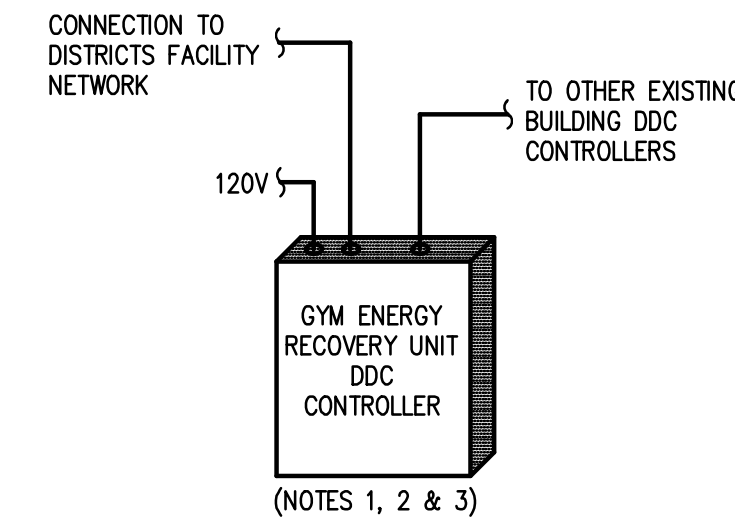
WIRING TERMS

ABBREVIATION	DESCRIPTION
SPST	SINGLE POLE SINGLE THROW
SPDT	SINGLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPDT	DOUBLE POLE DOUBLE THROW
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NCTC	NORMALLY CLOSED TIMED CLOSED

PNEUMATIC CONTROL SYMBOLS (ADDITIONAL)

SYMBOL	DESCRIPTION
LA	LOAD ANALYZER
LR	LOW PRESSURE SELECTOR RELAY
(Switch)	MANUAL GRADUAL POSITION SWITCH
RR	RATIO RELAY
RC	RECEIVER CONTROLLER
(Circle X)	SWITCHED CONTROL AIR SUPPLY

NOTE: SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.



DDC SYSTEM ARCHITECTURE

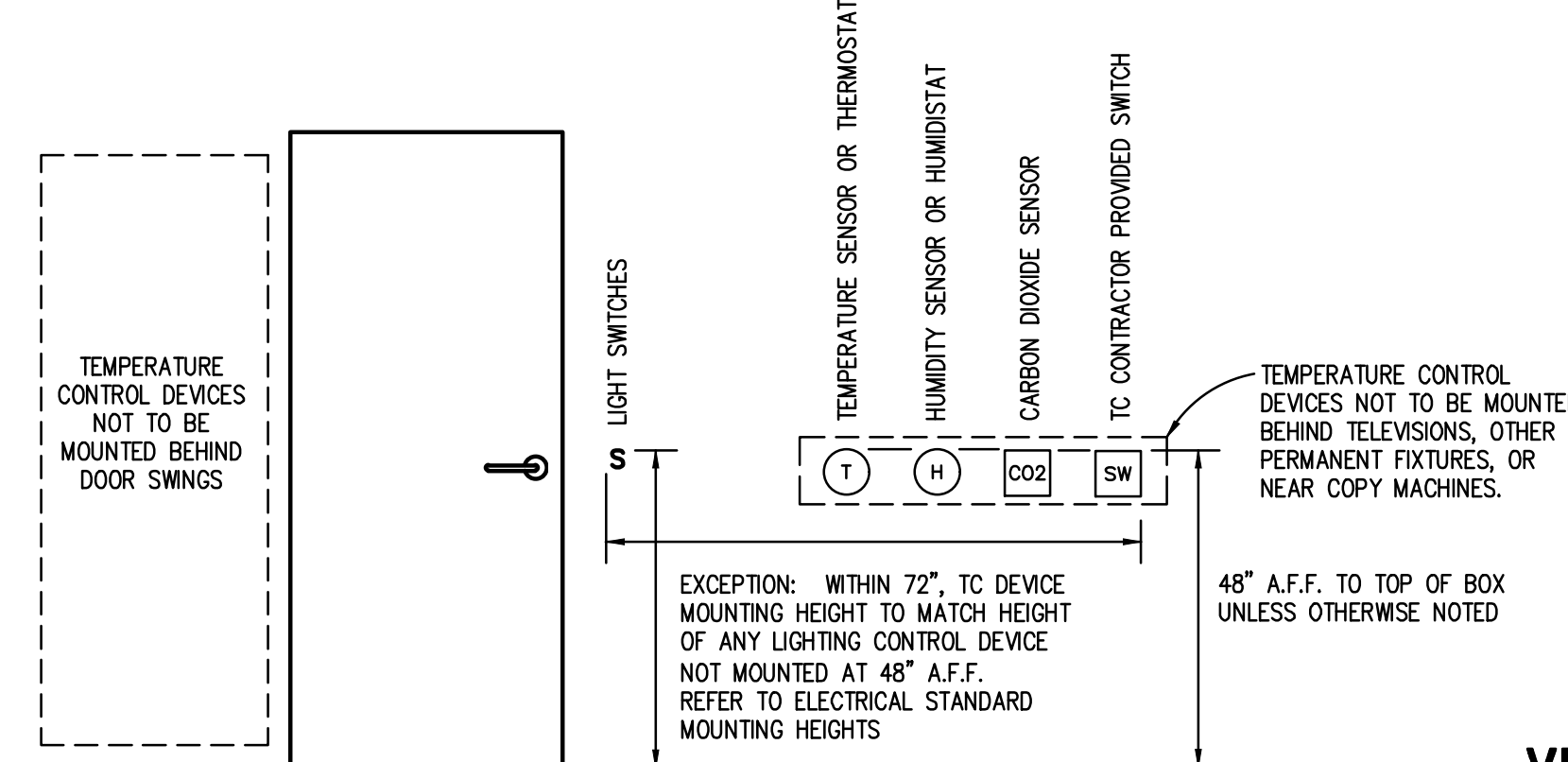
NO SCALE

NOTES:

- REFER TO TEMPERATURE CONTROL SCHEMATICS FOR THE REQUIRED POINTS ASSOCIATED FOR EACH SYSTEM.
- TC CONTRACTOR SHALL PROVIDE SYSTEM NETWORK CONTROL GRAPHICS FOR ALL NEW WORK. REFER TO SPECIFICATIONS FOR REQUIREMENTS.
- TC CONTRACTOR SHALL PROVIDE REQUIRED POWER SUPPLIES FROM DEDICATED AND/OR SPARE CIRCUITS IDENTIFIED ON ELECTRICAL PANEL SCHEDULES. COORDINATE WITH ELEC CONTRACTOR. REFER TO ELECTRICAL DWGS FOR PANEL SCHEDULES AND PANEL LOCATIONS.

TEMPERATURE CONTROL GENERAL NOTES

- THESE GENERAL SHALL BE APPLICABLE FOR ALL TC DRAWINGS.
- "PROVIDE" IS DEFINED AS "FURNISH AND INSTALL".
- TC CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
- THE PORTIONS OF CONTROL DIAGRAMS AND WIRING DIAGRAMS DRAWN IN HEAVY LINE WEIGHT INDICATE NETWORK. THE PORTIONS DRAWN IN LIGHT LINE WEIGHT INDICATE EXISTING.
- ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS'S WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION.
- TC CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
- ALL TC PROVIDED COMPONENTS, AND ALL TC CONTRACTOR INSTALLED WIRING AND SHALL BE LABELED PER SPECIFICATIONS.
- ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE ELECTRICAL SPECIFICATIONS.
- DESIGNATES DEVICE TO BE MOUNTED IN T.C. PANEL.
- DUCT SMOKE DETECTORS SHALL BE FURNISHED, INSTALLED AND WIRED TO THE FIRE ALARM SYSTEM BY THE ELECTRICAL CONTRACTOR. SHALL PROVIDE DUCT SMOKE DETECTOR WIRING INTERLOCK TO MOTOR STARTERS OR VSD'S.
- ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR UNLESS OTHERWISE NOTED. TC CONTRACTOR SHALL COORDINATE WITH VSD AND MOTOR STARTER SUPPLIERS TO DETERMINE EXACT WIRING REQUIREMENTS AND TERMINATION POINTS.
- ALL DDC AND CONTROL INTERLOCK WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
- ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH ELECTRICAL SPECIFICATION REQUIREMENTS. TWO SEPERATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR A.C. WIRING AND THE OTHER FOR D.C. WIRING.
- TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED. REFER TO ELECTRICAL PANEL SCHEDULES FOR SPARE CIRCUITS OR CIRCUITS DEDICATED TO TEMPERATURE CONTROLS. COORDINATE CIRCUIT USE WITH ELECTRICAL CONTRACTOR.
- TC CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
- THERMOSTATS AND SPACE TEMPERATURE SENSORS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE.
- TC CONTRACTOR SHALL PROVIDE AUXILIARY PANELS FOR REQUIRED PANEL MOUNTED EQUIPMENT SUCH AS RELAYS, TRANSDUCERS, CONTROL TRANSFORMERS, ETC. AUXILIARY PANELS SHALL BE LOCATED NEXT TO ASSOCIATED DDC PANEL.
- REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSE IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
- CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
- FREEZE-STATS SHALL BE MOUNTED ON UPSTREAM FACE OF COOLING COILS.
- CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
- ALL CONTROL VALVES, CONTROL DAMPERS AND ASSOCIATED CONTROL ACTUATORS IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TC CONTRACTOR UNLESS OTHERWISE NOTED. DAMPER SIZE AND LOCATIONS ARE INDICATED ON MECHANICAL FLOOR PLAN DRAWINGS.
- ALL CONTROL VALVES AND DAMPERS FURNISHED BY THE TC CONTRACTOR SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR. ALL PIPE PENETRATIONS AND BASIC FITTINGS REQUIRED FOR SENSOR INSTALLATIONS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR.
- DAMPER ACTUATORS SHALL BE INSTALLED BY TC CONTRACTOR.
- ALL INSTRUMENTATION TUBING REQUIRED FOR DPS, DPT AND SPT COMPONENT INSTALLATIONS SHALL BE PROVIDED BY TC CONTRACTOR.
- TC CONTRACTOR SHALL FIELD MOUNT ALL REQUIRED PACKAGED CONTROL COMPONENTS FURNISHED BY EQUIPMENT SUPPLIERS WHERE INDICATED. ALL REQUIRED 24V PACKAGED CONTROL FIELD WIRING AND 120V FAN INTERLOCK WIRING SHALL BE PROVIDED BY TC CONTRACTOR UNLESS NOTED OTHERWISE. TC CONTRACTOR SHALL COORDINATE SPECIFIC SYSTEM WIRING REQUIREMENTS WITH PACKAGED EQUIPMENT SUPPLIERS.



TC DEVICE STANDARD MOUNTING HEIGHTS DETAIL

NO SCALE

VFC BACnet INTERFACE & MONITORING REQUIREMENTS

TYPICAL FOR NEW FAN & PUMP VFCs

BACnet-MS/TP OPEN PROTOCOL INTERFACE TO BAS COMMUNICATING BUT NOT LIMITED TO THE FOLLOWING POINT DATA AS AVAILABLE:

- ON/OFF ACTIVE COMMAND STATUS
- ON/OFF RUN STATUS
- COMMON ALARM STATUS
- REMOTE VFC (ALARM) RESET
- CURRENT SPEED COMMAND (0-100%)
- CURRENT OPERATING FREQUENCY (Hz)
- RUNTIME HOURS
- RUNTIME HOURS RESET
- MOTOR VOLTAGE
- MOTOR AMPS
- MOTOR TORQUE
- POWER (KW)
- ACCUMULATED KWH
- ACCUMULATED KWH RESET
- DC LINK VOLTAGE
- MOTOR THERMAL (0-100%)
- INVERTER THERMAL (0-100%)
- HEAT SINK TEMPERATURE

NOTE:

TC CONTRACTOR SHALL COORDINATE BACnet-MS/TP OPEN PROTOCOL WIRE TERMINATION REQUIREMENTS AND POINT INTEGRATION CAPABILITIES WITH VFC SUPPLIER/MANUFACTURER AND PROVIDE APPROPRIATE BAS COMPONENTS FOR COMMUNICATION INTERFACE TO BAS.



CORNERSTONE ARCHITECTS

122 S. Union, Ste. 200
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CRAWFORD AUSABLE SCHOOL DISTRICT
GRAYLING HIGH SCHOOL
HVAC UPGRADES
1135 N. OLD27, GRAYLING, MI 49738

DATE	ISSUED FOR
11/20/24	DD
12/02/24	COORDINATION
12/06/24	50% CD
01/17/25	BID SET

PBA
Peter Basso Associates
CONSULTING ENGINEERS
5145 Livernois, Suite 100
Troy, Michigan 48068-3276
Tel: 248-579-5060
www.PeterBassoAssociates.com
PBA Project No.: 2024-0338

PIC: WEK
PK: WEK
DRAFTS: EMW

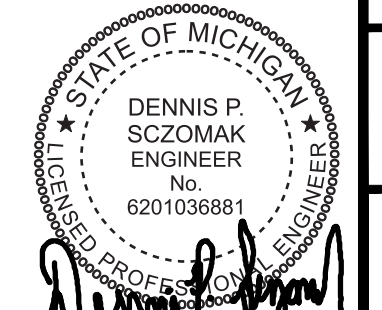
PROJECT NO:

22.516 HS

SHEET TITLE:
TEMPERATURE CONTROL STANDARDS AND GENERAL NOTES

SHEET NO:

M8.1



ELECTRICAL SYMBOL LIST

(NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
X (NL)	X DENOTES FIXTURE TYPE (NL INDICATES NIGHT LIGHT)	TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION	CP	CONTROL PANEL	SC	SECURITY CAMERA
[Symbol]	FILL DENOTES EMERGENCY FIXTURE	TWCD	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER	M	MOTOR	MD	MOTION DETECTOR
[Symbol]	TROFFER LIGHT	TWCA	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL	VFC	VARIABLE FREQUENCY CONTROLLER	SK	SECURITY KEY SWITCH
[Symbol]	STRIP LIGHT	TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP	MC	MANUAL CONTROLLER	DC	DOOR CONTACT
[Symbol]	LINEAR LIGHT	TWCDP	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP	MAG	MAGNETIC CONTROLLER	KP	KEY PAD
[Symbol]	MULTIHEAD ADJUSTABLE LIGHT	RGP	REMOTE GENERATOR ANNUNCIATOR PANEL	CMC	COMBINATION MAGNETIC CONTROLLER	CR	CARD READER
[Symbol]	DOWN LIGHT	ATS	AUTOMATIC TRANSFER SWITCH	NFDS	NON-FUSIBLE DISCONNECT SWITCH	DB	DURESS PUSH BUTTON STATION
[Symbol]	DIRECTIONAL DOWN LIGHT	UPS	UNINTERRUPTIBLE POWER SUPPLY	FDS	FUSIBLE DISCONNECT SWITCH	DE	DELAYED EGRESS
[Symbol]	DECORATIVE LIGHT	CSX	LOW VOLTAGE CONTROL STATION "X" INDICATES TYPE	EB	ENCLOSED CIRCUIT BREAKER	REX	REQUEST TO EXIT STATION
[Symbol]	DECORATIVE LIGHT	[Symbol]	SINGLE/DUPLEX RECEPTACLE OUTLET "X" INDICATES TYPE	PBS	PUSH BUTTON STATION	PP	AUTOMATIC DOOR PUSH PAD OPERATOR
[Symbol]	WALL MOUNTED LIGHT	[Symbol]	SINGLE/DUPLEX RECEPTACLE OUTLET CONTROLLED BY AUTOMATIC CONTROL DEVICE/SYSTEM	JB	JUNCTION BOX	DO	DOOR OPERATOR
[Symbol]	WALL SCONCE	[Symbol]	QUAD RECEPTACLE OUTLET	GR	GROUND ROD	DA	DOOR ACTUATOR
[Symbol]	ARM MOUNTED LIGHT	[Symbol]	ABOVE COUNTER DUPLEX RECEPTACLE OUTLET (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY, UPS, USB, AND GFCI RECEPTACLE OUTLETS)	GC	GROUND CONNECTION	AC	ACCESS CONTROL STATION
[Symbol]	LIGHTING TRACK	[Symbol]	DUPLEX GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE OUTLET	HH	HANDHOLE	ACCP	ACCESS CONTROL CONTROL PANEL
[Symbol]	TRACK LIGHT	[Symbol]	DEAD FRONT GROUND FAULT CIRCUIT INTERRUPTER	[Symbol]	CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED "X" INDICATES CONDUIT SIZE	ACPS	ACCESS CONTROL POWER SUPPLY
[Symbol]	ADJUSTABLE FLOOD LIGHT	[Symbol]	DUPLEX EMERGENCY RECEPTACLE OUTLET	[Symbol]	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET	[Symbol]	CIRCUIT BREAKER
[Symbol]	STEP LIGHT	[Symbol]	DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	ABOVE COUNTER EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET	[Symbol]	DRAWOUT CIRCUIT BREAKER MANUALLY OPERATED
[Symbol]	LED TAPE	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET	[Symbol]	DRAWOUT CIRCUIT BREAKER ELECTRICALLY OPERATED
[Symbol]	REMOTE DRIVER	[Symbol]	DUPLEX UPS RECEPTACLE OUTLET	[Symbol]	TELECOMMUNICATION OUTLET "X" INDICATES TYPE	[Symbol]	SWITCH
[Symbol]	HIGH BAY LIGHT	[Symbol]	DUPLEX RECEPTACLE OUTLET WITH 2 USB PORTS	[Symbol]	ABOVE COUNTER TELECOMMUNICATION OUTLET "X" INDICATES TYPE	[Symbol]	AUTOMATIC OR MANUAL TRANSFER SWITCH
[Symbol]	POLE MOUNTED LIGHT	[Symbol]	QUAD RECEPTACLE OUTLET	[Symbol]	TELECOMMUNICATION CEILING MOUNTED OUTLET "X" INDICATES TYPE	[Symbol]	FUSE
[Symbol]	POST TOP LIGHT	[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	TELECOMMUNICATION BACKBOARD	[Symbol]	TRANSFORMER
[Symbol]	BOLLARD LIGHT	[Symbol]	DUPLEX RECEPTACLE OUTLET WITH 2 USB PORTS	[Symbol]	WALL/CEILING MOUNTED SPECIAL RECEPTACLE OUTLET - REFER TO ELECTRICAL STANDARD SCHEDULES	[Symbol]	CURRENT TRANSFORMER
[Symbol]	IN GROUND LIGHT	[Symbol]	4 PORT USB CHARGING STATION	[Symbol]	POWER POLE	[Symbol]	POTENTIAL TRANSFORMER
[Symbol]	EMERGENCY LIGHT	[Symbol]	CEILING MOUNTED DUPLEX/QUAD RECEPTACLE OUTLET	[Symbol]	WALL/CEILING MOUNTED SPECIAL RECEPTACLE OUTLET - REFER TO ELECTRICAL STANDARD SCHEDULES	[Symbol]	LIGHTNING ARRESTOR
[Symbol]	EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)	[Symbol]	DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	TELECOMMUNICATION GROUNDING BUS BAR	[Symbol]	PANELBOARD
[Symbol]	EXIT LIGHT WITH DIRECTIONAL ARROWS (FILLED AREA INDICATES FACE)	[Symbol]	DUPLEX TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	TELECOMMUNICATION MAIN GROUNDING BUS BAR	[Symbol]	ADDRESSABLE MONITORING MODULE FOR TAMPER SWITCH
[Symbol]	EXIT LIGHT - WALL MOUNTED (FILLED AREA INDICATES FACE)	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	INTERCOM OUTLET	[Symbol]	ADDRESSABLE MONITORING MODULE FOR FLOW SWITCH
[Symbol]	EXIT/EMERGENCY LIGHT COMBO - WALL MOUNTED (FILLED AREA INDICATES FACE)	[Symbol]	DUPLEX UPS RECEPTACLE OUTLET	[Symbol]	SPEAKER	[Symbol]	MAGNETIC DOOR RELEASE
[Symbol]	BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH	[Symbol]	DUPLEX RECEPTACLE OUTLET WITH 2 USB PORTS	[Symbol]	SPEAKER - WALL MOUNTED	[Symbol]	THERMAL OVERLOAD RELAY
[Symbol]	AUTOMATIC LOAD CONTROL RELAY	[Symbol]	QUAD RECEPTACLE OUTLET	[Symbol]	MICROPHONE	[Symbol]	NORMALLY OPEN CONTACTS
[Symbol]	LIGHTING CONTROL DEVICE - REFER TO LIGHTING CONTROL SCHEDULE	[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	VOLUME CONTROL/STATION SELECTOR	[Symbol]	NORMALLY CLOSED CONTACTS
[Symbol]	ROOM CONTROL DESIGNATION - REFER TO LIGHTING CONTROL SCHEDULE	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	SIGNALING BELL	[Symbol]	N.O. PUSH BUTTON SINGLE CIRCUIT
[Symbol]	SINGLE POLE TOGGLE SWITCH	[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	SINGLE FACE CLOCK - CEILING MOUNTED	[Symbol]	N.C. PUSH BUTTON SINGLE CIRCUIT
[Symbol]	TWO POLE TOGGLE SWITCH	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	SINGLE FACE CLOCK - WALL MOUNTED	[Symbol]	CABLE VAULT
[Symbol]	3 WAY TOGGLE SWITCH	[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE CLOCK - CEILING MOUNTED	[Symbol]	"X-X" INDICATES TYPE
[Symbol]	4 WAY TOGGLE SWITCH	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE CLOCK - WALL MOUNTED	[Symbol]	BRANCH CIRCUIT PANELBOARD
[Symbol]	KEY OPERATED SWITCH	[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED	[Symbol]	LOAD CENTER
[Symbol]	3 WAY KEY OPERATED SWITCH	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED	[Symbol]	MOTOR CONTROL CENTER
[Symbol]	4 WAY KEY OPERATED SWITCH	[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED	[Symbol]	TRANSFORMER
[Symbol]	DIMMER SWITCH	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED	[Symbol]	TIME DELAY RELAY
[Symbol]	3 WAY DIMMER SWITCH	[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED	[Symbol]	PHASE ROTATION MONITOR
[Symbol]	DIMMER OCCUPANCY SENSOR SWITCH	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED	[Symbol]	CAMLK - MALE
[Symbol]	LOW VOLTAGE DIMMER SWITCH	[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED	[Symbol]	CAMLK - FEMALE
[Symbol]	PILOT SWITCH	[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED	[Symbol]	ELECTRICAL VEHICLE SUPPLY EQUIPMENT
[Symbol]		[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED	[Symbol]	DC FAST CHARGER - STANDALONE
[Symbol]		[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED	[Symbol]	DC FAST CHARGER - POWER MODULE
[Symbol]		[Symbol]	DUPLEX RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED	[Symbol]	DC FAST CHARGER - DISPENSER
[Symbol]		[Symbol]	QUAD TAMPER RESISTANT RECEPTACLE OUTLET	[Symbol]	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED	[Symbol]	

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[Symbol]	SECURITY CAMERA	[Symbol]	MANUAL FIRE ALARM BOX	[Symbol]	FIRE ALARM BELL
[Symbol]	MOTION DETECTOR	[Symbol]	SMOKE DETECTOR	[Symbol]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE
[Symbol]	SECURITY KEY SWITCH	[Symbol]	DUCT SMOKE DETECTOR	[Symbol]	FIRE ALARM VISUAL NOTIFICATION APPLIANCE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DOOR CONTACT	[Symbol]	CARBON MONOXIDE DETECTOR	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	KEY PAD	[Symbol]	REMOTE TEST STATION (FOR DUCT DETECTOR)	[Symbol]	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	CARD READER	[Symbol]	HEAT DETECTOR	[Symbol]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE - CEILING MOUNTED
[Symbol]	DURESS PUSH BUTTON STATION	[Symbol]	PROJECTED BEAM DETECTOR	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DELAYED EGRESS	[Symbol]	FIRE ALARM BELL	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	REQUEST TO EXIT STATION	[Symbol]	FIRE ALARM AUDIBLE NOTIFICATION APPLIANCE	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	AUTOMATIC DOOR PUSH PAD OPERATOR	[Symbol]	FIRE ALARM VISUAL NOTIFICATION APPLIANCE CEILING MOUNTED "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DOOR OPERATOR	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DOOR ACTUATOR	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	ACCESS CONTROL STATION	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	ACCESS CONTROL CONTROL PANEL	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	ACCESS CONTROL POWER SUPPLY	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	CIRCUIT BREAKER	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DRAWOUT CIRCUIT BREAKER MANUALLY OPERATED	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DRAWOUT CIRCUIT BREAKER ELECTRICALLY OPERATED	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	SWITCH	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	AUTOMATIC OR MANUAL TRANSFER SWITCH	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	FUSE	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	TRANSFORMER	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	CURRENT TRANSFORMER	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	POTENTIAL TRANSFORMER	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	LIGHTNING ARRESTOR	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	PANELBOARD	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	ADDRESSABLE MONITORING MODULE FOR TAMPER SWITCH	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	ADDRESSABLE MONITORING MODULE FOR FLOW SWITCH	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	MAGNETIC DOOR RELEASE	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	THERMAL OVERLOAD RELAY	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	NORMALLY OPEN CONTACTS	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	NORMALLY CLOSED CONTACTS	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	N.O. PUSH BUTTON SINGLE CIRCUIT	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	N.C. PUSH BUTTON SINGLE CIRCUIT	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	CABLE VAULT	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	"X-X" INDICATES TYPE	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	BRANCH CIRCUIT PANELBOARD	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	LOAD CENTER	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	MOTOR CONTROL CENTER	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	TRANSFORMER	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	TIME DELAY RELAY	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	PHASE ROTATION MONITOR	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	CAMLK - MALE	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	CAMLK - FEMALE	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	ELECTRICAL VEHICLE SUPPLY EQUIPMENT	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DC FAST CHARGER - STANDALONE	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DC FAST CHARGER - POWER MODULE	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd
[Symbol]	DC FAST CHARGER - DISPENSER	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd	[Symbol]	FIRE ALARM VISUAL/AUDIBLE "XX" INDICATES CANDELA RATING IF NO RATING SHOWN, APPLIANCE IS 15cd

ELECTRICAL DRAWING INDEX

SHEET NO.	SHEET TITLE
E0.1	ELECTRICAL STANDARDS AND DRAWING INDEX
E0.2	ELECTRICAL STANDARD SCHEDULES
E0.3	HIGH SCHOOL ELECTRICAL COMPOSITE PLAN
ED1.1	HIGH SCHOOL GYM MEZZANINE ELECTRICAL DEMOLITION PLAN
E2.1	HIGH SCHOOL GYM MEZZANINE ELECTRICAL PLAN
E2.2	HIGH SCHOOL ROOF ELECTRICAL PLAN
E5.1	HIGH SCHOOL ONE LINE DIAGRAM

ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERES	JB	JUNCTION BOX	P	POLE
AER	ARC ENERGY REDUCTION	KA	THOUSAND AMP	PB	PUSHBUTTON STATION
AF	ARC FRAME (BREAKER RATING)	KV	KILOVOLT	PT	POTENTIAL TRANSFORMER
AFCI	ARC FAULT CIRCUIT INTERRUPTER	KVA	KILOVOLT - AMPERES	PDP	POWER DISTRIBUTION PANEL
A.F.F.	ABOVE FINISH FLOOR	KW	KILOWATT	RDP	RECEPTACLE DISTRIBUTION PANEL
AIC	AMPS INTERRUPTING CAPACITY	KWH	KILOWATT - HOURS	RP	RECEPTACLE PANEL
AL	AUDIENCE LEFT	LA	LIGHTNING ARRESTOR	RSC	RIGID STEEL CONDUIT
ALCR	AUTOMATIC LOAD CONTROL RELAY	LP	LIGHTING PANEL	SCCR	SHORT CIRCUIT CURRENT RATING SCHEDULE
AR	AUDIENCE RIGHT	LDP	LIGHTING DISTRIBUTION PANEL	SCHED	SCHEDULE
AT	AMPERES TRIP (BREAKER SETTING)	MAX	MAXIMUM	SPD	SURGE PROTECTION DEVICE
ATS	AUTOMATIC TRANSFER SWITCH	MCA	MINIMUM CIRCUIT AMPACITY	ST	SHUNT TRIP
AUX	AUXILIARY	MCB	MAIN CIRCUIT BREAKER	SW	SWITCH
BCELTS	BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH	MCC	MOTOR CONTROL CENTER	SWBD	SWITCHBOARD
BKR	BREAKER	MDP	MAIN DISTRIBUTION PANEL	SWGR	SWITCHGEAR
BPS	BOLTED PRESSURE SWITCH	MECH	MECHANICAL	TB	TERMINAL BOX
C	CONDUIT	MIN	MINIMUM	TELECOM	TELECOMMUNICATIONS
CB	CIRCUIT BREAKER	MISC.	MISCELLANEOUS	TR	TAMPER RESISTANT
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	MLO	MAIN LUGS ONLY	TTB	TELEPHONE TERMINAL BACKBOARD
CKT	CIRCUIT	MOP	MAXIMUM OVERCURRENT PROTECTION	TYP	TYPICAL
CT	CURRENT TRANSFORMER	MTD	MOUNTED	U.O.N.	UNLESS OTHERWISE NOTED
DEMO	DEMOLITION	MTG	MOUNTING	US	UPSTAGE
DM	DIMENSION	MTR	MOTOR	V	VOLTS
DSC	DISCONNECT	N	NEUTRAL	W	WIRE OR WATTS
DP	DISTRIBUTION PANEL	NC	NORMALLY CLOSED	WEC	WIRELESS ACCESS POINT
DS	DOWNSTAGE	NEC	NATIONAL ELECTRICAL CODE	WAP	WIRE GUARD
DWG	DRAWING	NF	NON-FUSIBLE	WG	WEATHER RESISTANT
EBU	EMERGENCY BATTERY UNIT	NI			

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RACEWAY / CONDUCTOR / CABLE APPLICATION SCHEDULE							
	WIRE		RACEWAY			CABLE / CORD	
	COPPER, TYPE THHN/THWN-2	COPPER, TYPE XHHW-2	ELECTRICAL METALLIC TUBING (EMT)	INTERMEDIATE METAL CONDUIT (IMC)	RIGID STEEL CONDUIT (RSC)		LIQUID TIGHT FLEXIBLE METAL CONDUIT (LFMC)
BRANCH CIRCUITS - EXTERIOR							
ROOFTOPS (WHEN APPROVED BY ENGINEER)		X		X	X		
BRANCH CIRCUITS - INTERIOR							
CONCEALED, ACCESSIBLE CEILINGS	X		X	X			X
EXPOSED, BELOW 10' AFF AND SUBJECT TO DAMAGE	X		X	X	X		
EXPOSED, BELOW 10' AFF AND NOT SUBJECT TO DAMAGE	X		X	X			
EXPOSED, ABOVE 10' AFF UNFINISHED SPACES	X		X	X			
EXPOSED, FINISHED SPACES	X						
CLASS 1 CONTROL CIRCUITS	X		X	X	X		
CLASS 2 CONTROL CIRCUITS	X		X	X	X	X	
CLASS 3 CONTROL CIRCUITS	X		X	X	X	X	
CONNECTIONS TO TRANSFORMERS, MOTORS AND VIBRATING EQUIPMENT	X					X	

GENERAL NOTES:
 1. TRANSITION FROM PVC/HDPE AND PROVIDE RIGID STEEL OR RTRC SWEEPS WHERE CONDUITS PENETRATE WALLS, CONCRETE SLABS, CONCRETE BASES, AND ASPHALT.
 2. REFER TO SPECIFICATIONS FOR RESTRICTIONS ON MC/AC CABLE INSTALLATION.
 3. EMT SHALL NOT BE USED ON THE EXTERIOR OF A BUILDING OR IN AREAS SUBJECT TO DAMAGE BELOW 10' AFF.
 4. INSTALL SURFACE RACEWAYS ONLY WHERE INDICATED ON DRAWINGS.

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.

FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE							
OVERCURRENT DEVICE RATING (AMPERES)	COPPER CONDUCTORS						KEYED NOTES
	WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE				
	PHASE & NEUTRAL	GROUND	SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G, 2PH, 1G)	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)	
15-20	12	12	3/4"	3/4"	3/4"	3/4"	
25-30	10	10	3/4"	3/4"	3/4"	3/4"	
35-40	8	10	3/4"	3/4"	3/4"	3/4"	
45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"	1
60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	1" (1 1/4")	1
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"	
80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"	1
90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1
110	2 (1)	6	-	1 1/4"	1 1/4"	1 1/4" (1 1/2")	1
125	1 (1/0)	6	-	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"	1
150	1/0	6	-	1 1/2"	1 1/2"	1 1/2"	
175	2/0	6	-	2"	2"	2"	
200	3/0	6	-	2"	2"	2 1/2"	
225	4/0	4	-	2"	2"	2 1/2"	
250	250	4	-	2 1/2"	2 1/2"	2 1/2"	
300	350	4	-	2 1/2"	2 1/2"	3"	
350	500	3	-	3"	3"	3"	
400	500	3	-	3"	3"	3"	

GENERAL NOTES:
 1. CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.
 2. CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.
 3. CONDUCTORS ARE BASED ON THHN/THWN-2 UP TO AND INCLUDING #4/0. LARGER THAN #4/0 ARE BASED ON TYPE XHHW.
 4. CONDUIT SIZES ARE VALID FOR EMT OR RSC. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.
 5. SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.
 6. OBTAIN APPROVAL FROM ENGINEER PRIOR TO INSTALLING DIFFERENT SIZE/QUANTITY OF CONDUCTORS TO OBTAIN AN EQUIVALENT AMPACITY.

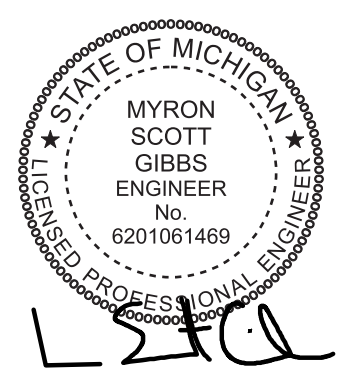
KEYED NOTES:
 1. CONDUCTORS ARE BASED ON 90C, 600V INSULATED WIRE APPLIED AT 75C FOR TERMINATION RATED 60/75C OR 75C. FOR TERMINATION RATED AT 60C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS						
BRANCH CKT RATING (A)	WIRE SIZE (AWG)	MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET)				
		120V	208V	240V	277V	480V
20A	12	83	143	165	191	331
	10	128	222	256	295	511
	8	201	348	402	464	804
	6	313	542	625	721	1250
	4					
30A	10	85	148	170	197	341
	8	134	232	268	309	536
	6	208	361	417	481	833
	4	313	542	625	721	1250

GENERAL NOTES:
 1. THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER FACTOR OF 0.85 PER NEC CHAPTER 9, TABLE 9.
 2. PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
 3. CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT.
 4. LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE 90.1 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

MOTOR CIRCUIT SIZING SCHEDULE (120V, SINGLE PHASE)				
MOTOR HP	CIRCUIT BREAKER	MANUAL MOTOR STARTER SIZE	COMBINATION STARTER SIZE	MOTOR DISCONNECT (NOTE 3)
1/6	15A	1 HP	0	20A
1/4	15A	1 HP	0	20A
1/3	15A	1 HP	0	20A
1/2	20A	1 HP	0	20A

GENERAL NOTES:
 1. BASED ON MOTOR FULL LOAD AMPERES AS PROVIDED BY THE NEC
 2. BASED ON MOTOR RUNNING OVERLOAD PROTECTIONS PROVIDED BY THERMAL OVERLOAD RELAYS.
 3. WHERE THE STARTER IS LOCATED REMOTE FROM THE MOTOR, PROVIDE DISCONNECT LOCATED AT THE MOTOR, SIZE AS INDICATED.



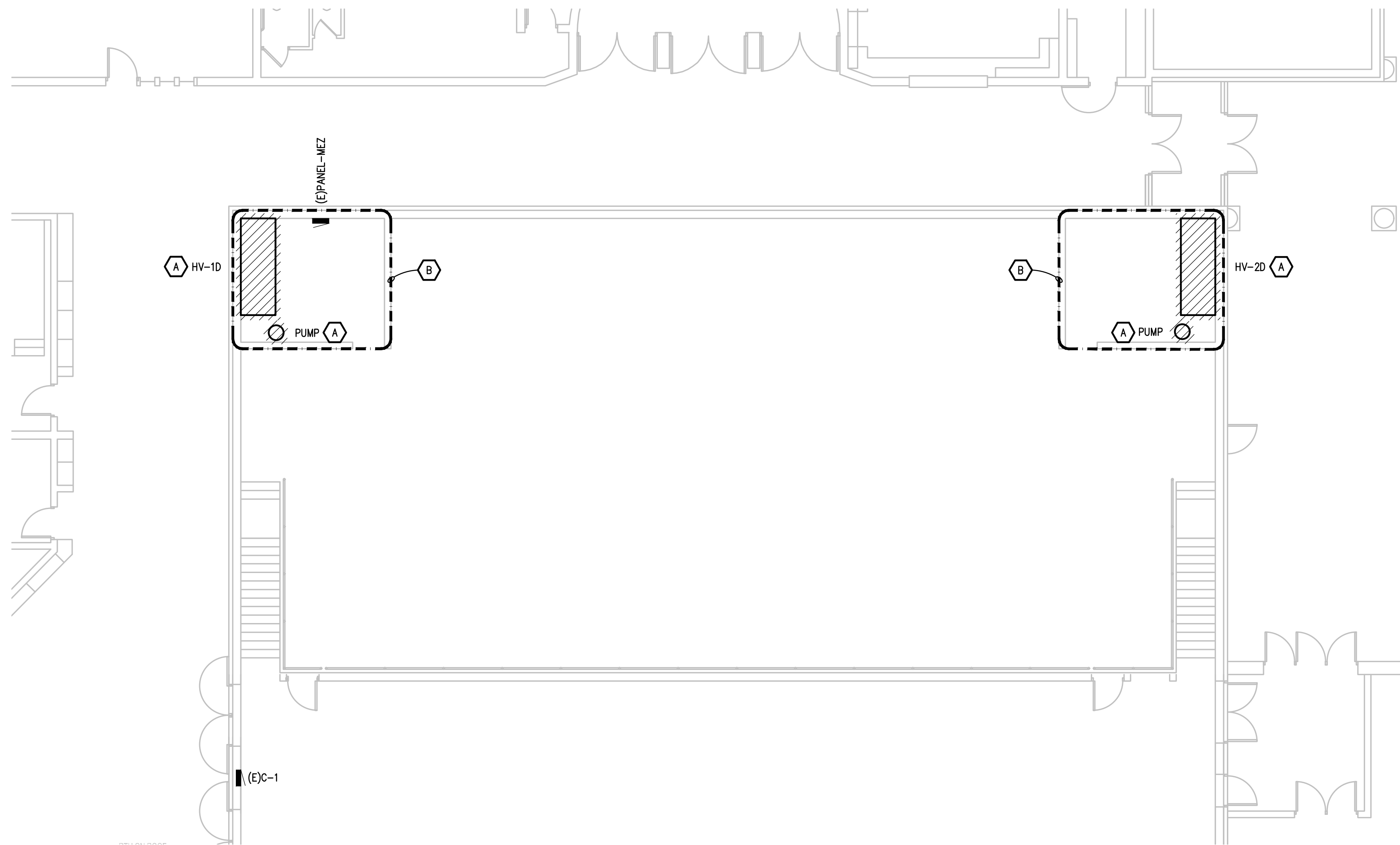
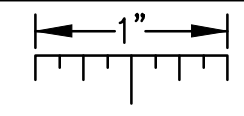
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DATE	ISSUED FOR
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PK: WEK
 PK: WEK
 DRAFTS: NCJ
 PROJECT NO:
22.516 HS
 SHEET TITLE:
 ELECTRICAL STANDARD SCHEDULES
 SHEET NO:
E0.2

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



HIGH SCHOOL GYM MEZZANINE ELECTRICAL DEMOLITION PLAN
SCALE: 1/8" = 1' - 0"

ELECTRICAL DEMOLITION GENERAL NOTES:

- VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
- REMOVE EQUIPMENT OR MATERIALS AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE COMPONENTS SHOWN.
- COORDINATE WITH NEW WORK PLANS AND ONE LINE DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CONDUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.
- REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
- MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.
- DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
- PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
- RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
- PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.

DEMOLITION KEY NOTES:

- DISCONNECT MECHANICAL EQUIPMENT AND MAKE ELECTRICALLY SAFE. MECHANICAL EQUIPMENT TO BE REMOVED BY OTHERS. REMOVE DISCONNECTS AND CONTROLS COMPLETE. REMOVE CONDUCTORS AND CONDUIT BACK TO SOURCE.
- REMOVE BRANCH CIRCUITS BACK TO NEAREST ACCESSIBLE SOURCE AND MAKE ELECTRICALLY SAFE, AS REQUIRED, TO FACILITATE MECHANICAL INSTALLATION. EXTEND BRANCH CIRCUITS IN NEW WORK.



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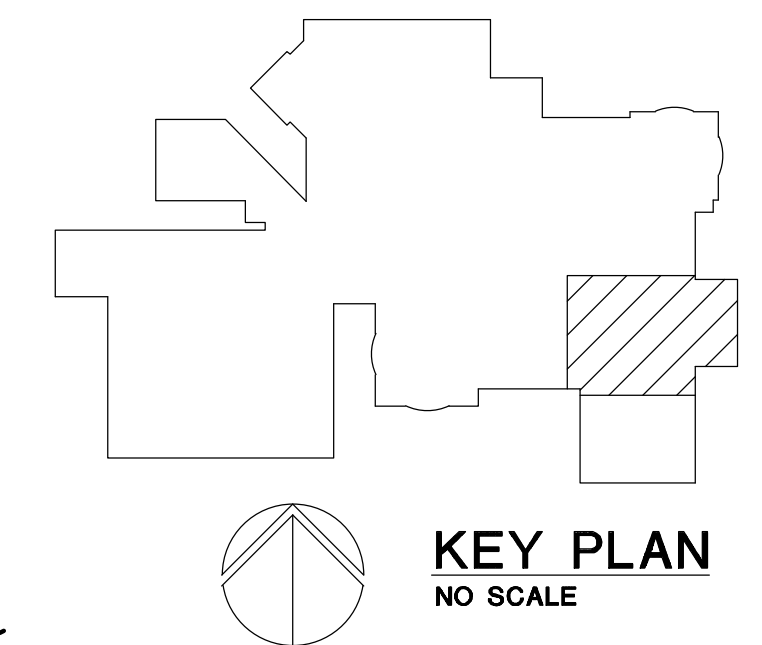
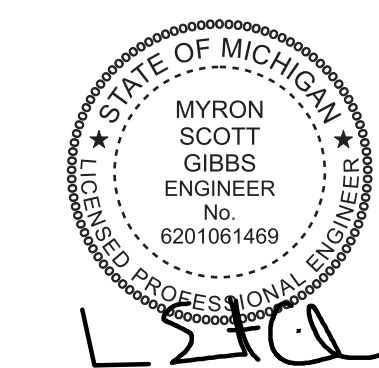
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PIC:	WEK
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22.516 HS

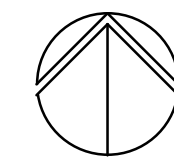
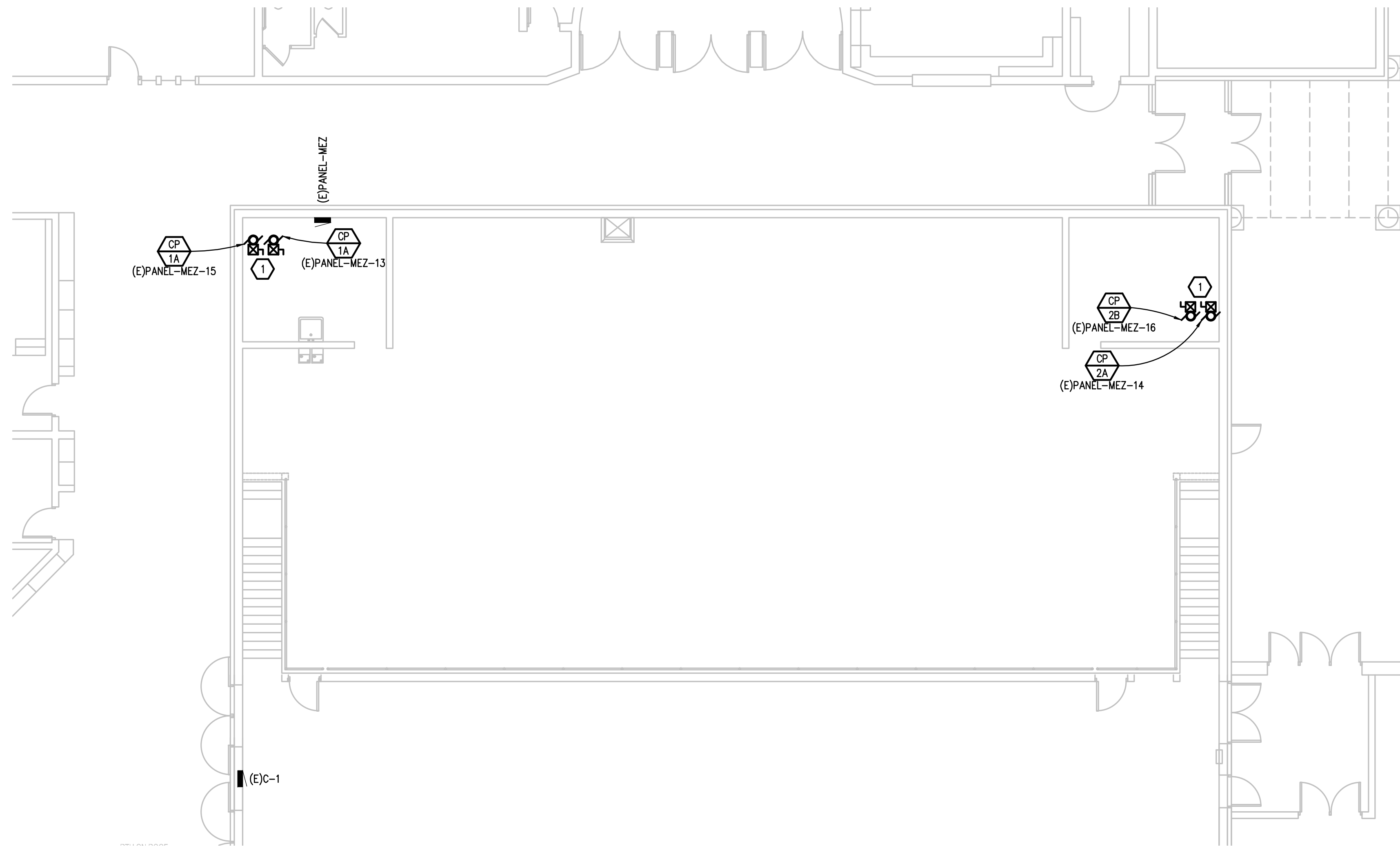
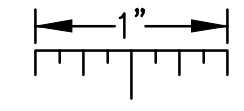
SHEET TITLE:
HIGH SCHOOL GYM
MEZZANINE ELECTRICAL
DEMOLITION PLAN

SHEET NO:
ED1.1



KEY PLAN
NO SCALE

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE.



HIGH SCHOOL GYM MEZZANINE ELECTRICAL PLAN

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

ELECTRICAL GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
4. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
5. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
6. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
7. ALL FIRE ALARM DEVICES SHALL BE COMPATIBLE WITH EXISTING SIMPLEX FIRE ALARM SYSTEM. PROVIDE NECESSARY COMPONENTS, MODULES, ETC. AS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM. RE-TEST AND CERTIFY EXISTING FIRE ALARM SYSTEM AT COMPLETION OF PROJECT.

CONSTRUCTION KEY NOTES:

1. PROVIDE COMBINATION STARTER WITHIN 6'-0" OF MECHANICAL EQUIPMENT.
2. PROVIDE CIRCUIT FOR HEAT TRACE SYSTEM. HEAT TRACE AND ASSOCIATED COMPONENTS TO BE PROVIDED BY MECHANICAL CONTRACTOR. COORDINATE EXACT REQUIREMENTS WITH HEAT TRACE MANUFACTURER AND INSTALLER. COORDINATE EXACT LOCATIONS WITH MECHANICAL DRAWINGS AND TRADES.



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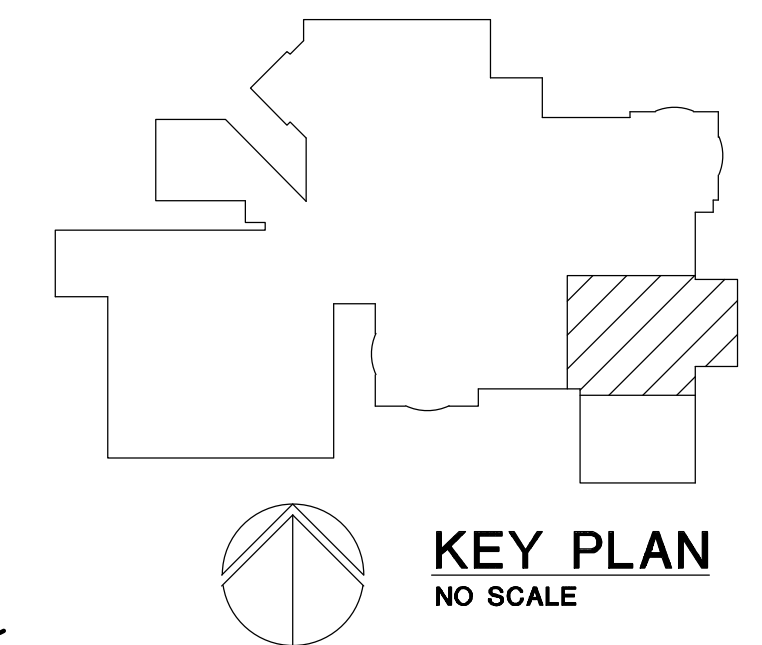
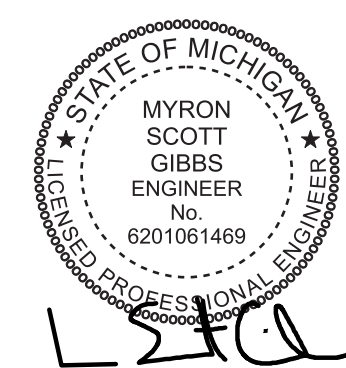
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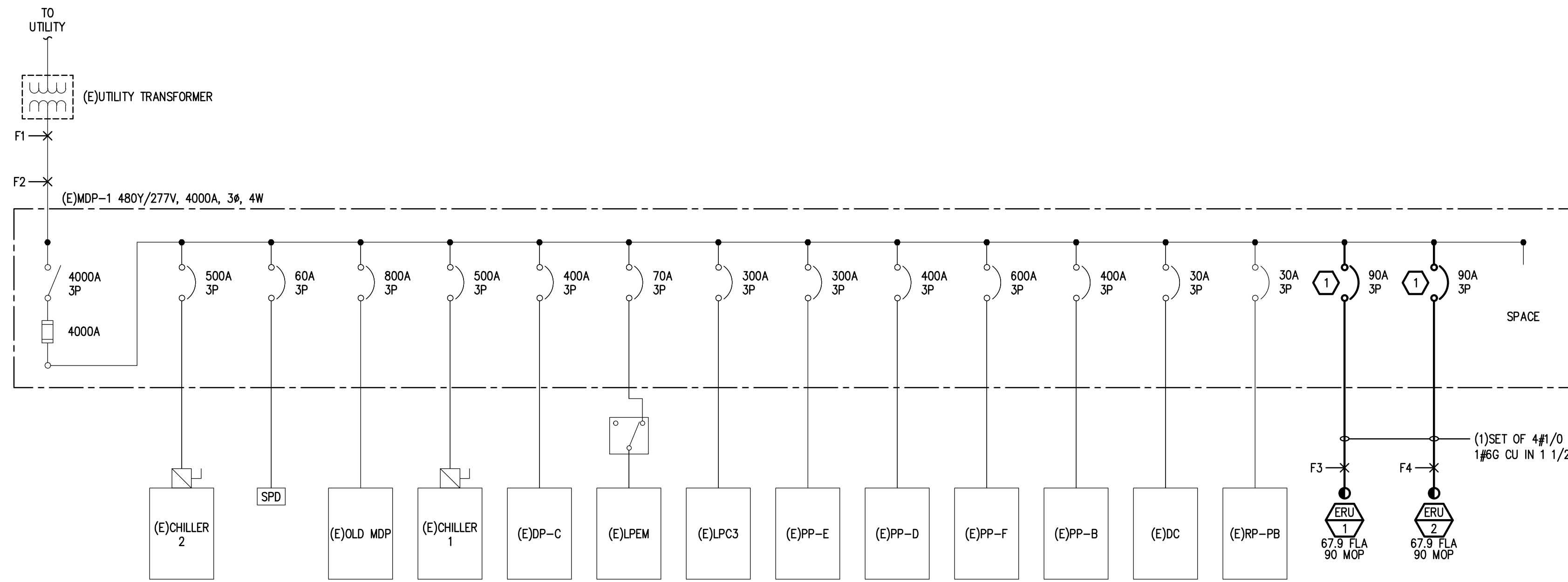
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SHEET TITLE:	HIGH SCHOOL GYM MEZZANINE ELECTRICAL PLAN
SHEET NO.:	E2.1



**KEY PLAN
NO SCALE**

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(E)MDP-1	
ADDED CONNECTED LOAD	
TOTAL (KVA):	117.22
METERED LOAD (KVA):	905.97
x125%	1132.46
REMOVED LOAD (KVA):	-14.01
CALCULATED DEMAND LOAD	
TOTAL (KVA):	1249.76
TOTAL (AMPS):	1503
CALCULATED FEEDER AND OVERCURRENT SIZING	
TOTAL (AMPS):	1504

ONE-LINE DIAGRAM - HIGH SCHOOL - NEW WORK
NO SCALE

DIAGRAM GENERAL NOTES:

- THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
- FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
- MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH THE MOTOR CIRCUIT SIZING SCHEDULES ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.

CONSTRUCTION KEY NOTES:

- NEW CIRCUIT BREAKER IN EXISTING SPACE. (E)MDP-1 IS SQUARE D OED SWITCHBOARD.

SHORT-CIRCUIT CALCULATIONS												
FAULT POINT	PANEL/ TRANSFORMER	SOURCE FAULT POINT	SOURCE Isc	CONDUIT TYPE	CONDUCTOR MATERIAL	CONDUCTOR OR BUS SIZE	"C" VALUE	E (V)	L (FT)	XFMR KVA	XFMR %Z	Isc
1	UTILITY XFMR							480				52,298
2	MDP-1	1	52,298	NM	CU	10 SETS OF 600 KCML	28033	480			0.034	50,595
3	ERU-1	2	50,595	M	CU	1 SET OF 1/0	8925	480	460.0		9.409	4,860
4	ERU-2	2	50,595	M	CU	1 SET OF 1/0	8925	480	520.0		10.637	4,348

THE FOLLOWING THREE PHASE CALCULATIONS ARE BASED ON THE "POINT-BY POINT" METHOD WHERE:

$I_{sc} = I_{sc} \times M$
 $M = 1/(1+f)$

CONDUCTOR OR BUS
 $f = 1.732 \times L \times I_{sc}$
 $C \times n \times E$

UTILITY XFMR:
 $I_{sc} = kVA \times 100,000$
 $E \times 1.732 \times \%Z$

XFMR:
 $f = I_p(sc) \times E_p \times 1.73 \times \%Z$
 $I_p(sc) = E_p \times M \times I_p(sc)$
 $100,000 \times kVA$
 E_s

L = LENGTH (FT) OF CONDUCTOR, C = CONSTANT FROM TABLE, n = NUMBER OF CONDUCTORS PER PHASE
 Isc = AVAILABLE SHORT CIRCUIT (A), E = VOLTAGE OF CIRCUIT

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PANELBOARD (E)PANEL-MEZ													
#	LOAD TYPE	DESCRIPTION	CB TYPE	CB	VA	ØA	ØC	VA	CB	CB TYPE	DESCRIPTION	LOAD TYPE	#
1		SPARE	EXIST	30		1176		1176	20	EXIST	(E)BALCONY BLEACHERS	MH	2
3			EXIST			1176		1176	20	EXIST	(E)BALCONY BLEACHERS	M	4
5	C	HEAT TRACE ERU-1	GFEP	20	110	1286		1176	20	EXIST	(E)BALCONY BLEACHERS	M	6
7	C	HEAT TRACE ERU-2	GFEP	20	110		1286	1176	20	EXIST	(E)BALCONY BLEACHERS	M	8
9	R	RECEPT. ROOFTOP	EXIST	20	360	1536		1176	20	EXIST	(E)BALCONY BLEACHERS	M	10
11	M	(E)AHU FILTER MOTOR	EXIST	20	864		1728	864	20	EXIST	(E)ERU SMOKE DAMPER	M	12
13	M	CP-1A	NEW	15	864		1728	864	15	NEW	CP-1A	M	14
15	M	CP-2A	NEW	15	864		1728	864	15	NEW	CP-2B	M	16
					ØA	ØC							
					5726	5918							

PANELBOARD INFORMATION	BRANCH CIRCUIT CONNECTED LOAD:	DEMAND FACTOR	CALCULATED LOAD	FEEDER AND OCPD SIZING	NOTES:
VOLTAGE: 120/208-1Ø	CONTINUOUS LOAD (C): 220	100%	220	125%	PANEL IS SQUARE D
BUS AMPACITY: 125A	ELECTRIC HEAT (E):	100%		100%	G1 SERIES
MAIN TYPE: MLO	NON-CONTINUOUS LOAD (NC):	100%		100%	
MINIMUM A.I.C.: 10,000	KITCHEN LOAD (K):	100%		100%	PANEL IS FED FROM
MOUNTING: SURFACE	RECEPTACLE BASE LOAD (R): 360	100%	360	100%	70A BREAKER
FEED-THROUGH LUGS	RECEPTACLE DEMAND LOAD (R):	50%		100%	
DOUBLE LUGS	LIGHTING LOAD (L):	100%		125%	
INTEGRAL SPD	ADDITIONAL TRACK LIGHTING LOAD			100%	
	MOTORS, HIGHEST LOAD (MH): 1176	125%	1470	100%	
	MOTORS, REMAINING LOAD (M): 9888	100%	9888	100%	
	TOTAL(KVA): 11.94				
	TOTAL (AMPS): 57			TOTAL (AMPS): 58	

NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD

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CORNERSTONE ARCHITECTS

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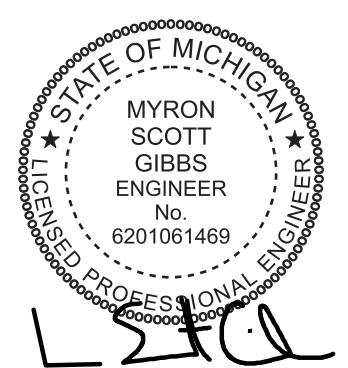
CRAWFORD AUSABLE SCHOOL DISTRICT
GRAYLING HIGH SCHOOL
HVAC UPGRADES

1135 N. OLD27, GRAYLING, MI 49738

DATE	ISSUED FOR
11/20/24	DD
12/02/24	COORDINATION
12/06/24	50% CD
01/17/25	BID SET

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PBA Project No.: 2024.0338

PIC:	WEK
PK:	WEK
DRAFTS:	NCJ
PROJECT NO.:	22.516 HS
SHEET TITLE:	HIGH SCHOOL ONE LINE DIAGRAM
SHEET NO.:	E5.1



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