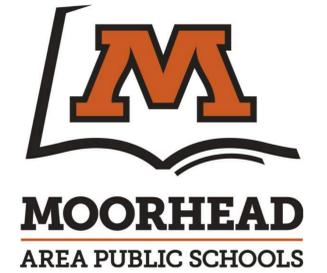




VICINITY MAP FOR REFERENCE
NOT TO SCALE



MAPS SPORTS CENTER NORTH RINK MECHANICAL UPGRADES

2300 4th Ave S, Moorhead, MN 56560

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REVISION SCHEDULE

NUMBER	DESCRIPTION	DATE
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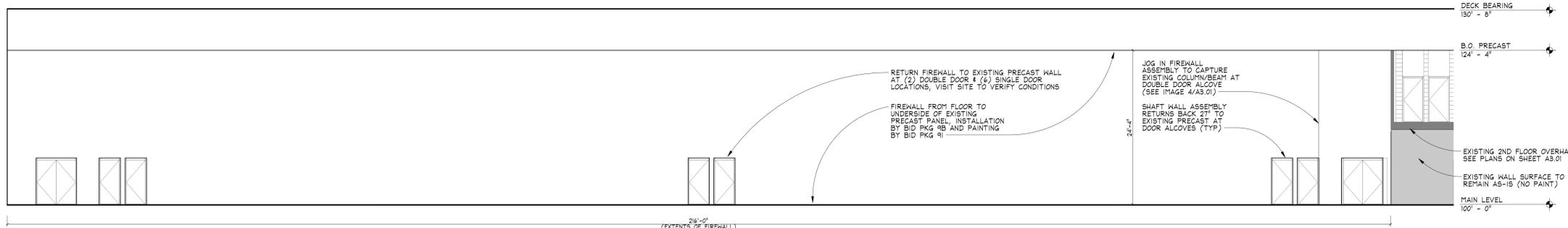
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of

Date: 2026-01-22 Registration No. 41686

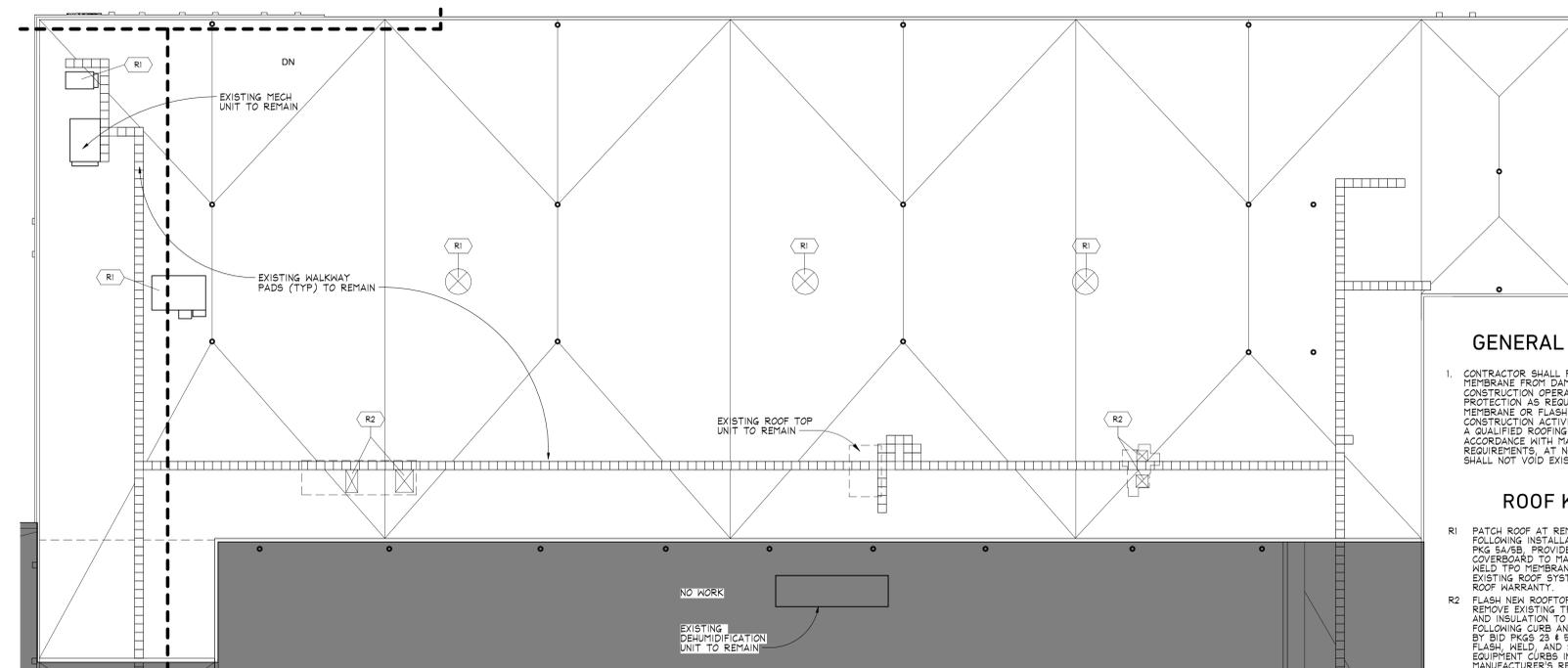
Date: 2026-01-22 Project No. 25-029



A3.00



2 NORTH RINK FIREWALL ELEVATION
SCALE: 1/8" = 1'-0"



1 ROOF PLAN - NORTH RINK
SCALE: 1/16" = 1'-0"

GENERAL ROOF NOTES

- CONTRACTOR SHALL PROTECT EXISTING TPO ROOF MEMBRANE FROM DAMAGE DURING ALL CONSTRUCTION OPERATIONS. PROVIDE TEMPORARY PROTECTION AS REQUIRED. ANY DAMAGE TO THE MEMBRANE OR FLASHING CAUSED BY CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY A QUALIFIED ROOFING CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS, AT NO COST TO THE OWNER, AND SHALL NOT VOID EXISTING ROOF WARRANTIES.

ROOF KEYNOTES

- R1 PATCH ROOF AT REMOVED MECHANICAL UNITS. FOLLOWING INSTALLATION OF NEW DECKING BY BID PKG 5A/5B, PROVIDE INSULATION AND COVERBOARD TO MATCH EXISTING. PATCH AND WELD TPO MEMBRANE TO FULLY INTEGRATE WITH EXISTING ROOF SYSTEM AND MAINTAIN OWNER'S ROOF WARRANTY.
- R2 FLASH NEW ROOFTOP EQUIPMENT CURBS. CUT AND REMOVE EXISTING TPO MEMBRANE, COVERBOARD, AND INSULATION TO CREATE NEW OPENINGS. FOLLOWING CURB AND DECK OPENING INSTALLATION BY BID PKGS 23 & 5A/5B (RESPECTIVELY) FULLY FLASH, WELD, AND SEAL TPO MEMBRANE AT NEW EQUIPMENT CURBS IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS TO MAINTAIN OWNER'S ROOF WARRANTY.

ARCHITECT:

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510 4TH AVE. N.
FARGO, ND 58102
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FARGO, ND 58104
P: 701.280.0949
F: 701.280.9686



MECHANICAL ENGINEER:

MARTIN MECHANICAL DESIGN
1201 25TH AVE. N
FARGO, ND 58103
P: 701.293.7957



ELECTRICAL ENGINEER:

MBN ENGINEERING
701 MAIN AVE
FARGO, ND 58103
P: 701.478.6336
F: 701.478.6340

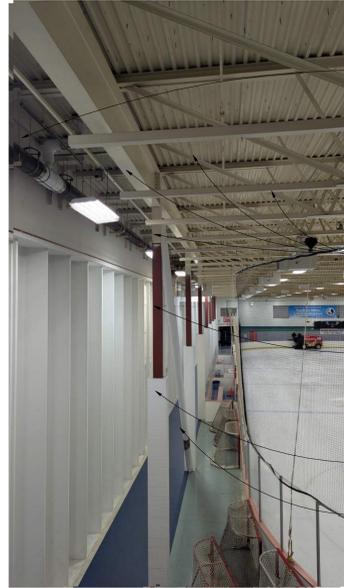


CONSTRUCTION MANAGER:

GEHRTZ CONSTRUCTION SERVICES
510 4TH AVE. N.
FARGO, ND 58102
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IMAGES



SANDBLASTING & COATING WORK SHALL EXTEND TO THE SOUTH WALL

SHAFTMALL TO BE CONSTRUCTED FROM FLOOR TO UNDERSIDE OF PRECAST PANEL

JOISTS, DECK, MISC STEEL BRACING, BEAM, & COLUMN TO BE SANDBLASTED & PREPPED TO RECEIVE HIGH-PERFORMANCE COATING

RAW STEEL @ COLUMN TO RECEIVE HIGH-PERFORMANCE COATING, PREP AS REQ'D

EXISTING CMU COLUMN WRAP TO REMAIN AS-IS (TYPICAL OF 8)

EXISTING CROSS-BRACE TO REMAIN AS-IS (TYPICAL OF 2)

IMAGE 1 SOUTH INTERIOR WALL & COLUMN LINE (LOOKING WEST)



IMAGE 2 SOUTH INTERIOR WALL (LOOKING EAST)



EXTENT OF WORK TO STOP AT THIS COLUMN LINE. SANDBLASTING & COATING WORK TO INCLUDE THE VISIBLE FACES OF THE BEAM AND COLUMNS ALONG THIS GRID LINE

PROTECT AREA ABOVE SUSPENDED CEILING FROM SAND & PAINT

EXISTING COLUMN (TYPICAL OF 4)

EXISTING CMU COLUMN WRAP & PARTIAL HEIGHT WALL TO REMAIN AS-IS

IMAGE 3 EAST INTERIOR WALL & COLUMN LINE (LOOKING EAST)

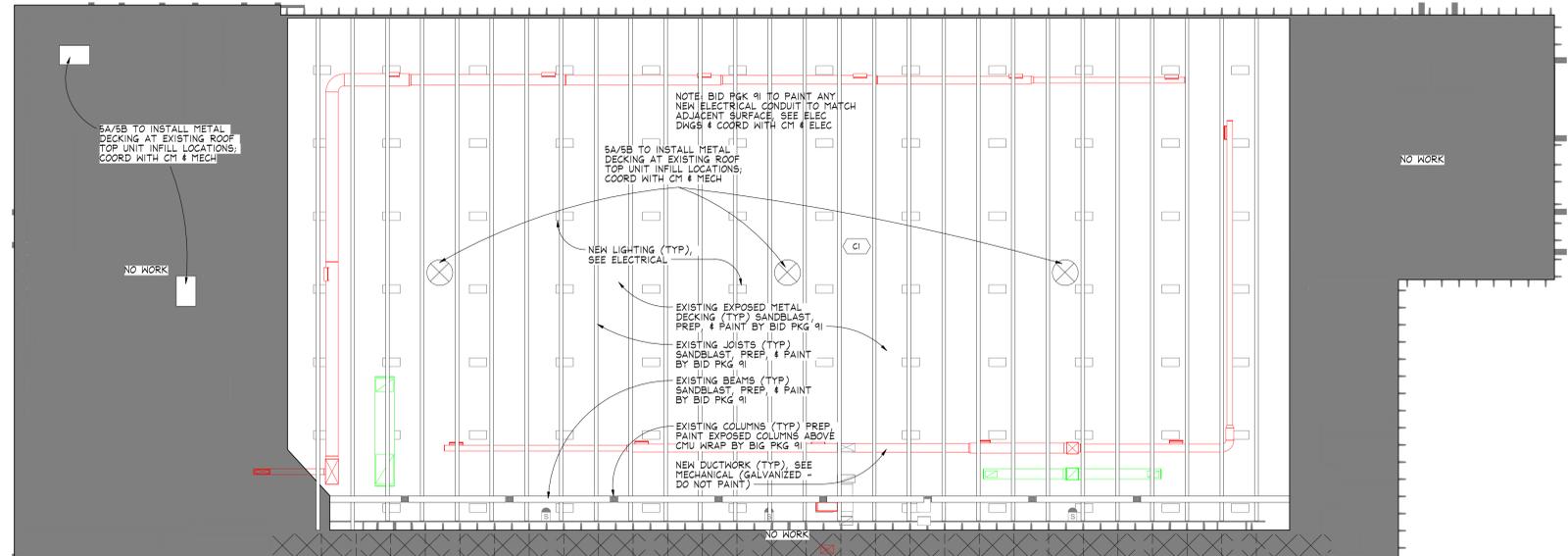


NEW FIREWALL TERMINATES AT EXISTING WEST WALL

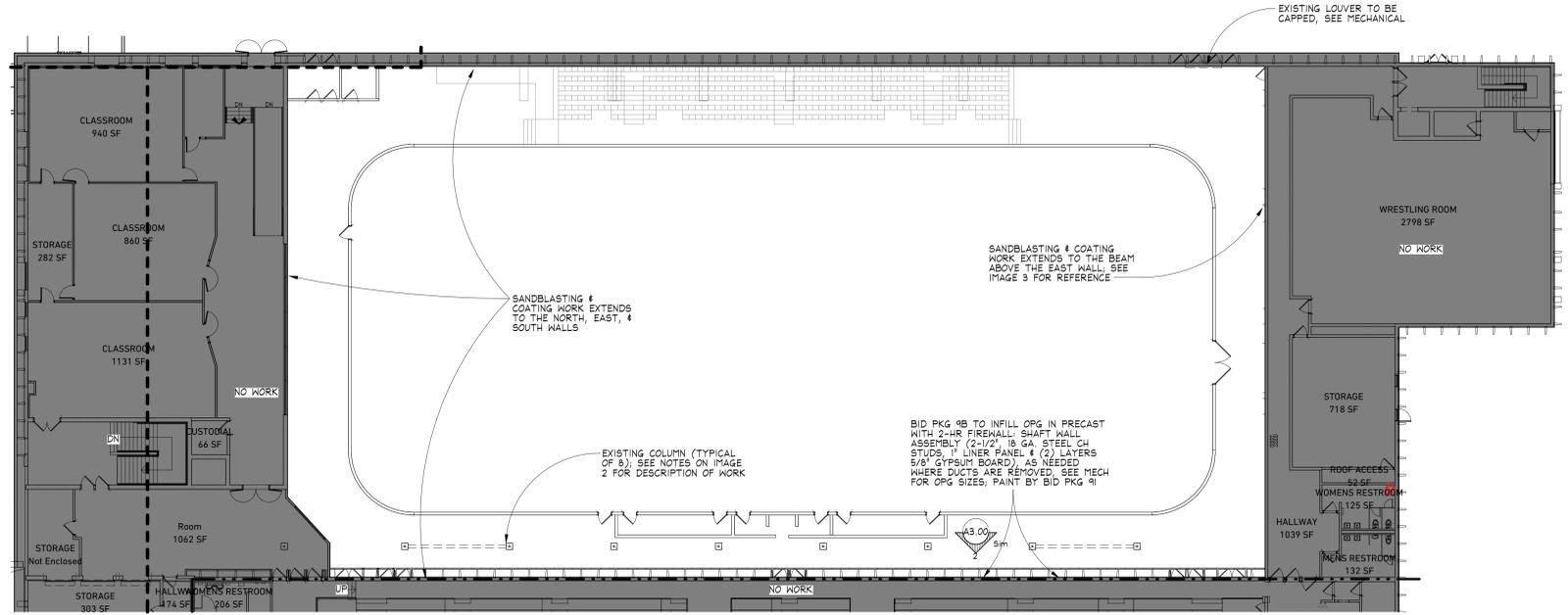
NEW FIREWALL ASSEMBLY TO TIE INTO EXISTING

FIREWALL ASSEMBLY TO RETURN BACK TO PRECAST WALL AT ALL DOOR ALCOVES

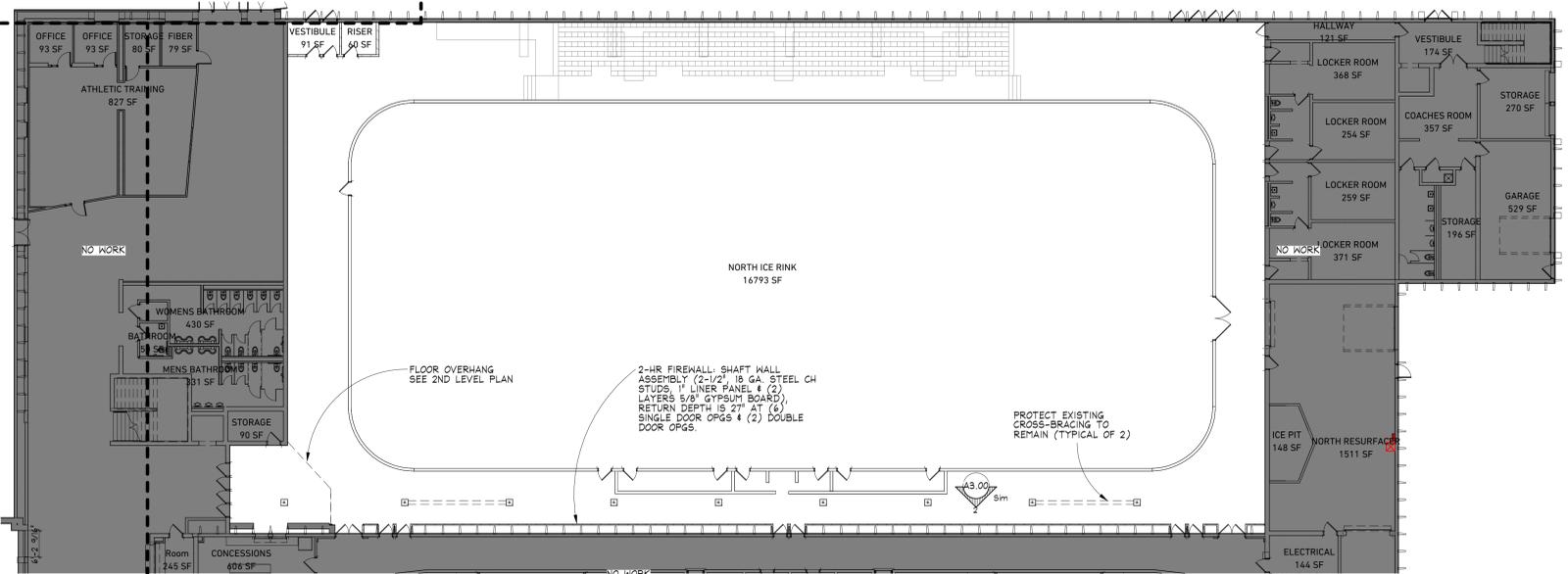
IMAGE 4 SOUTHWEST WALL AT DOOR ALCOVE (LOOKING SOUTH)



3 REFLECTED CEILING PLAN - NORTH RINK SCALE: 1/16" = 1'-0"



2 SECOND LEVEL FLOOR PLAN - NORTH RINK SCALE: 1/16" = 1'-0"



1 MAIN LEVEL FLOOR PLAN - NORTH RINK SCALE: 1/16" = 1'-0"

- GENERAL NOTES**
- PROTECT EXISTING FINISHES TO REMAIN.
 - PROTECT ALL EQUIPMENT THAT REMAINS WITHIN THE SPACE (EXISTING BLEACHERS, DASHER BOARDS, ETC).
 - PAINTING CONTRACTOR TO POLY AS NEEDED TO DIRECT SAND & DEBRIS TO A COLLECTION POINT WITHIN THE FOOTPRINT OF THE RINK.
- RCP KEYNOTES**
- C1 SANDBLAST EXISTING JOISTS, DECK, ROOF SUPPORT BEAMS, CROSS-BRACINGS, AND MISCELLANEOUS REINFORCING STEEL WITHIN THE JOIST SPACE IN PREPARATION TO RECEIVE NEW PAINTED FINISH. VISIT SITE PRIOR TO BIDDING TO VERIFY EXTENT OF WORK.

REVISION SCHEDULE

NUMBER	DESCRIPTION	DATE

ABBREVIATIONS AND SYMBOLS:

APA	ASSOCIATION
ARCH	ARCHITECT/ARCHITECTURAL
BM	BEAM
BRG	BEARING
CL	CENTER LINE
CLR	CLEAR/CLEARANCE
COL	COLUMN
CONN	CONNECTION
CONT	CONTINUOUS
EL	ELEVATION
(E)	EXISTING
GA	GAUGE
HSS	HOLLOW STRUCTURAL SECTION
JST	JOIST
K	KIP
KLF	KIPS PER LINEAR FOOT
KSI	KIPS PER SQUARE INCH
LB	ANGLE
MAX	MAXIMUM
MECH	MECHANICAL
MFG	MANUFACTURER
MIN	MINIMUM
NTS	NOT TO SCALE
OPNG	OPENING
PL	PLATE
PLF	POUNDS PER LINEAR FOOT
PSF	POUNDS PER SQUARE FOOT
REIN	REINFORCING
SA	SCREW ANCHOR
SD	SEE DETAIL
SDI	SUPERIMPOSED DEAD LOAD
SLL	SUPERIMPOSED LIVE LOAD
SE/SEOR	STRUCTURAL ENGINEER OF RECORD
SM	SIMILAR
SPEC	SPECIFICATIONS
STD	STANDARD
STL	STEEL
TOP	TOP OF
TYP	TYPICAL
UN	UNLESS OTHERWISE NOTED
VERIF	VERIFY
W/O	WITH OUT
@	AT

GENERAL CONSTRUCTION NOTES:

- THESE STRUCTURAL DRAWINGS ARE INTENDED TO BE USED IN CONJUNCTION WITH THE ARCHITECTURAL DRAWINGS. SOME DIMENSIONS, SECTIONS, AND FRAMING DETAILS MAY BE SHOWN ON THE ARCHITECTURAL DRAWINGS.
- DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER EXISTING CONDITIONS THAT ARE UNKNOWN OR THAT DIFFER FROM AS SHOWN IN THESE DRAWINGS. SUCH EXISTING CONDITIONS MAY INTERFERE WITH THE NEW CONSTRUCTION OR REQUIRE PROTECTION DURING CONSTRUCTION.
- CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER OF ALL ENCOUNTERED EXISTING CONDITIONS THAT INTERFERE WITH THE PROPER EXECUTION OF NEW WORK OR COMPROMISE THE STRUCTURAL INTEGRITY OF THE EXISTING STRUCTURE.
- ALL WORK SHALL COMPLY WITH THE 2018 INTERNATIONAL BUILDING CODE, AS APPROVED BY THE STATE OF MINNESOTA/ CITY OF MOORHEAD.
- REFERENCE STANDARDS: UNLESS OTHERWISE NOTED, ALL STANDARDS SHALL BE CURRENT EDITION, WITH LATEST ADDENDA, IF APPLICABLE.
- THE CONTRACTOR SHALL VERIFY ALL CONTRACT DOCUMENTS, SITE ELEVATIONS, DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK AND SHALL NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.
- SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES.
- THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE UNLESS OTHERWISE INDICATED. THEY DO NOT INDICATE THE MEANS, METHODS, TIMING, OR PROCEDURES USED TO COMPLETE THE CONSTRUCTION. TEMPORARY BRACING, SHORING, OR PROTECTION OF THE STRUCTURE AGAINST WIND, ERECTION AND OTHER SITE CONDITIONS DURING CONSTRUCTION OF THE BUILDING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF THE STRUCTURE DURING ALL PHASES OF DEMOLITION, CONSTRUCTION, AND INSTALLATION.
- NO AREA OF THE STRUCTURE SHALL BE LOADED WITH CONSTRUCTION MATERIALS OR EQUIPMENT THAT EXCEEDS FINAL DESIGN CRITERIA.
- SEE MECHANICAL, ELECTRICAL, AND ARCHITECTURAL DRAWINGS FOR ALL OPENINGS AND INSERTS NOT SHOWN ON THE STRUCTURAL DRAWINGS.
- VERIFY LOCATION OF BOX OUTS AND OPENINGS WITH MECHANICAL AND ELECTRICAL CONTRACTORS. OPENING SIZES AND LOCATIONS SHOWN FOR PIPES, DUCTS, ETC ARE FOR GENERAL INFORMATION ONLY AND SHALL BE VERIFIED WITH THE MECHANICAL CONTRACTOR BEFORE COMMENCING THE WORK.
- VERIFY SIZE, NUMBER, AND LOCATION OF ALL MECHANICAL AND ELECTRICAL EQUIPMENT. IF EQUIPMENT SIZES, WEIGHTS, OR LOCATIONS DO NOT CORRESPOND WITH EQUIPMENT SHOWN ON PLANS, COORDINATE ADJUSTMENTS WITH THE STRUCTURAL ENGINEER.
- HOLES, PIPES, SLEEVES, ETC NOT SHOWN ON THE DRAWINGS MUST BE APPROVED BY THE STRUCTURAL ENGINEER BEFORE PLACEMENT THROUGH STRUCTURAL MEMBERS.
- CONTRACTOR SHALL PROVIDE A CAST-IN SLEEVE FOR ALL HORIZONTAL ELEMENTS THAT EXTEND THROUGH FOOTINGS. IE: DRAIN TILE, ELECTRICAL CONDUIT, MECHANICAL PIPING, ETC. ALL SLEEVES SHALL BE COORDINATED WITH ARCHITECT/ENGINEER.
- SHOP DRAWINGS PREPARED BY SUPPLIERS, SUB CONTRACTORS, ETC, SHALL BE DIMENSIONED, REVIEWED, COORDINATED, AND SIGNED/STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE STRUCTURAL ENGINEER. MANUFACTURED COMPONENTS SUCH AS TRUSSES OR PRECAST CONCRETE SHALL BE ENGINEERED AND STAMPED PRIOR TO SUBMISSION.
- FABRICATOR SHALL CLEARLY NOTE CHANGES MADE IN THE SHOP DRAWINGS WHICH DO NOT COMPLY WITH THE CONTRACT DOCUMENTS. REVISED APPROVAL SHOP DRAWINGS SHOWING ENGINEER'S COMMENTS ACCOMPANIED WITH RECORD SET SHOP DRAWINGS, SHALL BE AVAILABLE FOR REFERENCE AT THE CONSTRUCTION SITE.
- EXPANSION ANCHORS SHALL BE HILTI "Kwik Bolt TZ" OR EQUIVALENT (UN). INSTALL ANCHORS IN STRUCTURAL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- ADHESIVE ANCHORS (AA) SHALL BE HILTI HIT HY-200 USING HAS STANDARD ROADS' OR EQUIVALENT (UN). USE HILTI HIT-CE FOR COLD WEATHER APPLICATIONS. SEE SPECIFICATIONS FOR USAGE. INSTALL ANCHORS IN STRUCTURAL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
- CONCRETE SCREW ANCHORS (GSA) SHALL BE SIMPSON STRONG-TIE "TITEN HD" OR EQUIVALENT (UN). INSTALL ANCHORS IN STRUCTURAL CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

DESIGN LOADS:

ROOF LIVE LOADS:

FLAT ROOF SNOW	P _s = 38 psf
EXPOSURE FACTOR	C _e = 1.0
IMPORTANCE FACTOR	I _e = 1.0
THERMAL FACTOR	C _t = 1.1
GROUND SNOW LOAD	P _g = 30 psf
DRIFT SURCHARGE LOAD	P _d = SEE PLAN
DRIFT WIDTH	W = 100 Ft
CONSTRUCTION LOADING	P _c = 29 psf

DEAD LOADS:

TYPICAL ROOF = 20 psf

LATERAL LOADS (WIND-MINORS):

ULTIMATE DESIGN WIND SPEED (3 SEC. GUST)	V _{ult} = 120 mph
NOMINAL DESIGN WIND SPEED	V _{nom} = 99 mph
WIND EXPOSURE	C _w = 1.0
INTERNAL PRESSURE COEFFICIENT	C _i = +/- 0.10
RISK CATEGORY	III
COMPONENTS & CLADDING	q _z = 30 psf (VELOCITY PRESSURE)

SPECIAL INSPECTIONS:

- THE CONTRACTOR SHALL COORDINATE THE TESTING AND INSPECTION SERVICES IN ACCORDANCE WITH THE PROGRESS OF THE WORK. THE CONTRACTOR SHALL PROVIDE SUFFICIENT NOTICE TO THE TESTING OR INSPECTION AGENCY OF THE REQUIRED WORK TO ALLOW ALLOCATION OF PERSONNEL. THE COST OF ANY RETESTING OR ADDITIONAL INSPECTIONS AS A RESULT OF UNINSPECTED WORK, FAILED TESTS, OR REJECTED WORK, SHALL BE BORNE BY THE CONTRACTOR.
- THE FOLLOWING TABLE INCLUDES ITEMS REQUIRING SPECIAL INSPECTION PROVIDED BY THE OWNER. SPECIAL INSPECTIONS LISTED IN THIS TABLE MAY NOT INCLUDE ALL INSPECTIONS AND/OR TESTING THAT IS REQUIRED FOR THE PROJECT PER IBC CHAPTER 17. ADDITIONAL TESTING MAY BE REQUIRED BY THE CONTRACTOR, AS PART OF THEIR CONTRACT. THESE "SPECIAL INSPECTIONS" ARE IN ADDITION TO THE INSPECTIONS BY THE BUILDING OFFICIAL THAT ARE IDENTIFIED IN SECTION 110 IBC.

REQUIRED SPECIAL INSPECTION			
DESCRIPTION OF WORK	TESTING REQUIRED	INSPECTION FREQUENCY	REMARKS
STRUCTURAL STEEL WELDING	YES	PERIODIC (10% OF ALL WELDS)	SEE AISC360 TABLE N6.1 THRU 3
STRUCTURAL STEEL BOLTING	NO	PERIODIC	SEE AISC360 TABLE N6.1 THRU 3
COLD-FORMED STEEL DECKING	NO	PERIODIC	IN ACCORDANCE WITH SDI GA/GC-2011
OPEN-WEB STEEL JOIST	NO	PERIODIC	SEE BC TABLE 1105.2.3 ITEM NO 18, 19, 1, 10, 2

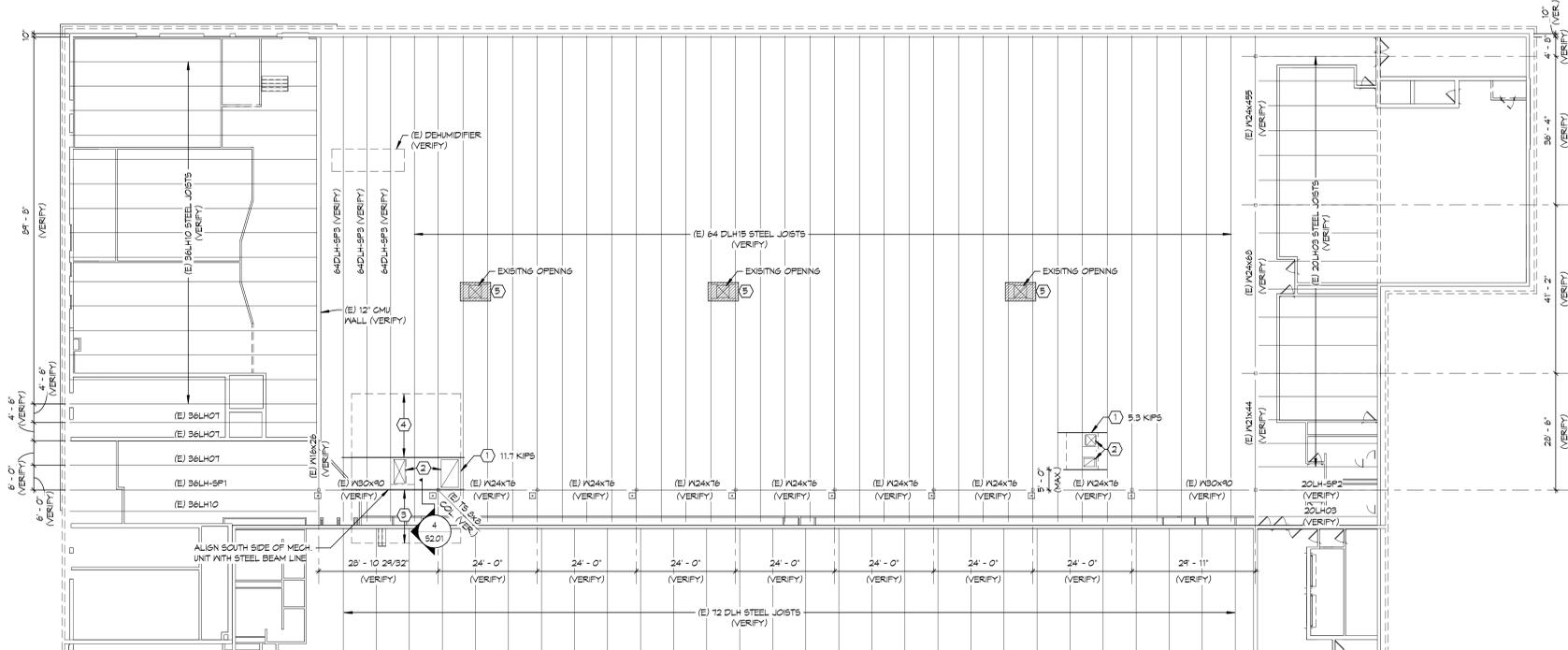
STRUCTURAL STEEL NOTES:

- STRUCTURAL STEEL WORK SHALL CONFORM TO AISC 360 & AISC 341 WITH THE FOLLOWING ASTM MATERIAL SPECIFICATIONS:

A572	W, AND WT SHAPES	F _y = 50 ksi
A500	GRADE C - HSS PIPES	F _y = 46 ksi
A500	GRADE C - HSS TUBES	F _y = 50 ksi
A36	M, S, C, MC, & L (ANGLES) SHAPES	F _y = 36 ksi
F1554	GRADE 36 - ANCHOR RODS	F _y = 36 ksi
	GRADE 55 - ANCHOR RODS	F _y = 55 ksi (WELDABLE)
	GRADE 105 - ANCHOR RODS	F _y = 105 ksi
F3125	GRADE A325 (GROUP A) - BOLTS	F _u = 120 ksi
	GRADE A490 (GROUP B) - BOLTS	F _u = 150 ksi
A563	CONNECTION NUTS	
F436	WASHERS	
A108	TYPE B - HEADED STUD ANCHORS	F _y = 65 ksi
E70XX	ELECTRODES	F _{exx} = 70 ksi
 - WELDED CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE LATEST RECOMMENDATIONS OF:
 - AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION
 - AWS - AMERICAN WELDING SOCIETY
 - WELDS NOT SPECIFIED SHALL BE A FILLET WELD, CONTINUOUS AND/OR ALL AROUND WITH MINIMUM THROAT DIMENSION AS REQUIRED FOR MATERIAL THICKNESS PER AWS.
 - STRUCTURAL FABRICATORS SHALL SHOW ALL FIELD WELDING REQUIREMENTS ON SHOP DRAWINGS SUBMITTED TO THE ENGINEER.
 - BEAMS AND COLUMNS SHALL BE ERECTED TRUE AND PLUMB WITHIN AISC TOLERANCE. PROVIDE TEMPORARY BRACING AS REQUIRED.
 - FRAMED STEEL BEAM CONNECTIONS SHALL BE "BEARING TYPE" JON.
- STEEL BEAM KEY:**
- | | |
|-----------------------------------------|--------------------------|
| BEAM SIZE | BEAM END REACTION/MOMENT |
| NUMBER OF HEADED STUDS (EQUALLY SPACED) | |
| GAMBER | |
| ELEVATION FROM T.O. STEEL | |
- 11x42 (18) (3/4") (-0'-0") 20 (BEAM END REACTION/MOMENT)
- ROOF DECK - 1 1/2" DEEP, TYPE 'B', 10 GA AS MADE BY VULCRAFT OR EQUAL
- VERIFY LOCATION OF ROOF OPENINGS WITH MECHANICAL CONTRACTOR. ROOF OPENINGS SHALL BE FRAMED WITH L3x3x3/8 ON FOUR SIDES (UN). SEE STANDARD DETAILS.

DEFERRED STRUCTURAL SUBMITTALS:

- THE DESIGN AND DOCUMENTATION OF THE CERTAIN STRUCTURAL COMPONENTS MAY BE DEFERRED UNTIL AFTER THE BUILDING PERMIT HAS BEEN ISSUED.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND CALCULATIONS THAT ARE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED FOR THE FOLLOWING DEFERRED SUBMITTALS:
 - STRUCTURAL STEEL CONNECTIONS
 - STRUCTURAL STEEL FRAMING
 - STEEL JOIST AND DECKING
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO FABRICATION FOR THE FOLLOWING DEFERRED SUBMITTALS:
 - STRUCTURAL STEEL FRAMING
 - STEEL JOIST AND DECKING



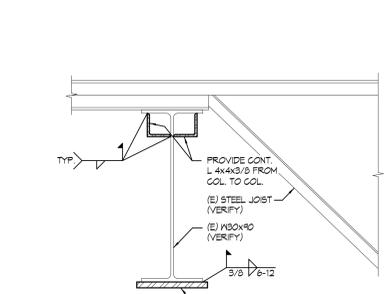
EXISTING PARTIAL ROOF FRAMING PLAN
1/16" = 1'-0"

KEY NOTES:

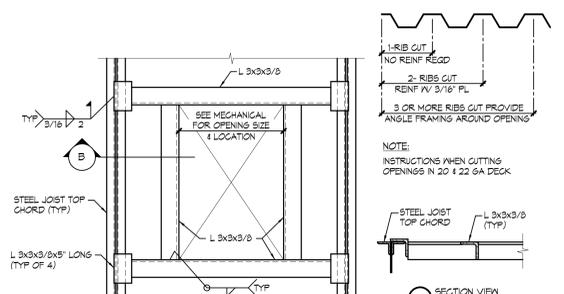
- MECHANICAL UNIT ABOVE. PROVIDE C12x20.1 SUPPORT FRAMING UNDER ALL CURBS. S.D. 1/5/20.1.
- OPENING THROUGH EXISTING ROOF DECK. PROVIDE L 3x3x1/4 ANGLE FRAMING AROUND OPENING. S.D. 2/5/20.1.
- MECHANICAL UNIT SNOW DRIFT:

78 PSF	15'-6"
78 PSF	15'-0"
- MECHANICAL UNIT SNOW DRIFT:

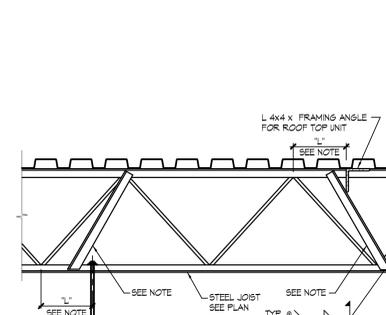
78 PSF	15'-0"
78 PSF	15'-0"
- PROVIDE 1 1/2" TYPE 'B', 10 GA. METAL ROOF DECK OVER EXISTING OPENING. EXTEND 4' BEYOND EXISTING JOIST AT EACH END.



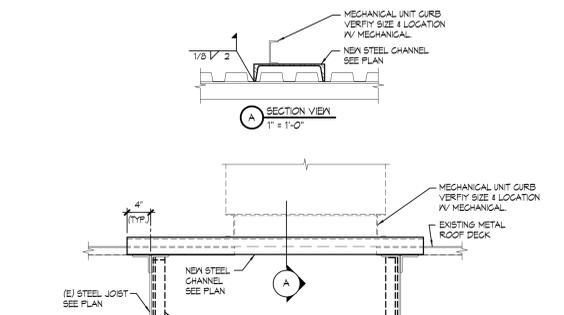
4 BEAM REINFORCING @ EXIST. BEAM
S2.01 1" = 1'-0"



2 ANGLE FRAMING @ ROOF OPENING
S2.01 1" = 1'-0"



3 JOIST REINFORCING DETAIL
S2.01 1" = 1'-0"



1 MECHANICAL SUPPORT DETAIL
S2.01 1" = 1'-0"

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510 NORTH 4TH AVENUE FARGO, ND 58102-4821 | (701)280-0187

gehrtz
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STRUCTURAL CONSULTANT
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www.meyerengineering.com
HE 094.0222.2025 JES/ GEM

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Print Name: Wilson Stepien
Signature: [Signature]
Date: 1/14/24 License # 49139

REVISION SCHEDULE

NUMBER	DESCRIPTION	DATE

M

MOORHEAD
AREA PUBLIC SCHOOLS

MAPS SPORTS CENTER
NORTH RINK
MECHANICAL UPGRADES

2300 4th Ave. S., Moorhead, MN 56560

EXISTING ROOF FRAMING PLAN

ABBREVIATIONS			
A	AIR	KW	KILOWATT
ABS	ACRYLON, TRILE-BUTADIENE-STYRENE	LAT	LEAVING AIR TEMPERATURE
AC	ABOVE CEILING	LB	POUNDS
AC	AIR CONDITIONING	LN	LINEAR
ACP	ASBESTOS CEMENT PIPE	LWT	LEAVING WATER TEMPERATURE
ADJ	ADJUSTABLE	M	METER
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
ALUM	ALUMINUM	MECH	MECHANICAL
AMP	AMPS	MIN	MINIMUM
AP	ACCESS PANEL	MFG	MANUFACTURER
ARCH	ARCHITECT	MH	MANHOLE
AS	AIR SEPARATOR	MOD	MOTOR OPERATED DAMPER
ASHRAE	AMERICAN SOCIETY OF HEATING REFRIGERATION AND AIR CONDITIONING ENGINEERS	NC	NORMALLY CLOSED
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	NEC	NATIONAL ELECTRIC CODE
BSME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
BD	BALANCING DAMPER	NIC	NOT IN CONTRACT
B/G	BELOW GRADE	NO	NORMALLY OPEN
BFF	BACKFLOW PREVENTER	NOT	NOT TO SCALE
BTU	BRITISH THERMAL UNIT	OA	OUTSIDE AIR
CAP	CAPACITY	OFD	OVERFLOW DRAIN
CFM	CUBIC FEET PER MINUTE	OWN	OWNER FURNISH CONTRACTOR INSTALLS
CL	CENTER LINE	OFOI	OWNER FURNISH OWNER INSTALLS
CLG	CEILING	PSIA	POUNDS/SQ INCH ABSOLUTE
CO	CLEANOUT	PSIG	POUNDS/SQ INCH GAUGE
COMP	COMPARTMENT	PVC	POLYVINYL CHLORIDE
CONC	CONCRETE	RA	RETURN AIR OR RELIEF AIR
CONT	CONTINUED	RD	ROOF DRAIN
CONTR	CONTRACTOR	RECIRC	RECIRCULATING
CP	CONTROL PANEL	REF	REFERENCE
CW	DOMESTIC HOT WATER	REG	REGISTER
CWR	CHILLED WATER RETURN	REQ	REQUIRED/REQUIREMENTS
CWS	CHILLED WATER SUPPLY	RH	RELATIVE HUMIDITY
DB	DECIBEL	RHW	RECIRCULATED DOMESTIC HOT WATER
DIA	DIAMETER	RL	RAIN LEADER
DN	DOWN	RLA	RELIEF AIR
DMPR	DAMPEN	RM	ROOM
DS	DOWNSPOUT	RP	REVOLUTIONS PER MINUTE
DWG	DRAWING	SA	SUPPLY AIR
EAT	ENTERING AIR TEMPERATURE	SCW	SOFT COLD WATER
EGG	EGG CRATE GRILLE	SD	SMOKE DAMPER
EFC	EFFICIENCY	SCW	SOFT COLD WATER
EJ	EXPANSION JOINT	SD	SMOKE DAMPER
ELEC	ELECTRICAL	SIM	SIMILAR
EW	ENTERING WATER TEMPERATURE	SP	STATIC PRESSURE
EXH	EXHAUST	SPEC	SPECIFIC
EXIST	EXISTING	SQ	SQUARE
F	FAHRENHEIT	SS	SANITARY SEWER
F	FRESH AIR	SD	STORM DRAIN
FCO	FLOOR CLEAN OUT	STM	STEAM
FD	FIRE/SMOKE DAMPER OR FLOOR DRAIN	TEMP	TEMPERATURE
FDC	FIRE DEPARTMENT CONNECTION	TOP	TOP OF FAN
FLEX	FLEXIBLE	TOD	TOP OF DECK
FT	FEET	T-STAT	THERMOSTAT
FTG	FOOTING	TYP	TYPICAL
GA	GAUGE	UNDG	UNDERGROUND
GAL	GALLON	UNON	UNLESS OTHERWISE NOTED
GC	GENERAL CONTRACTOR	V	VERIFY
GPH	GALLONS PER HOUR	V	VERIFY
GPM	GALLONS PER MINUTE	VAC	VACUUM
HB	HOSE BIB	VD	VOLUME DAMPER
HFMD	HEATING FLOW MEASURING DEVICE	VCP	VITRIFIED CLAY PIPE
HP	HORSE POWER	VEL	VELOCITY
HTG	HEATING	VTR	VENT THRU ROOF
HTR	HEATER	W	WASHER
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING	W	WITH
HW	DOMESTIC HOT WATER	WO	WITHOUT
HWR	HOT WATER RETURN	WCO	WALL CLEAN OUT
HWS	HOT WATER SUPPLY	WFD	WATER FLOW DEVICE
HYD	HYDRANT	WP	WATERPROOF OR WEATHER PROOF
INSUL	INSULATION	MC	MECHANICAL CONTRACTOR
INV	INVERT	EC	ELECTRICAL CONTRACTOR
KEC	KITCHEN EQUIPMENT CONTRACTOR	FP	FIRE PROTECTION CONTRACTOR

PRIOR APPROVAL SPECIFICATION

MANUFACTURERS' TRADE NAMES AND CATALOG NUMBERS LISTED ARE INTENDED TO INDICATE THE QUALITY OF EQUIPMENT OR MATERIALS DESIRED. MANUFACTURERS NOT LISTED MUST HAVE PRIOR APPROVAL. WRITTEN PRIOR APPROVAL MUST BE OBTAINED FROM THE ARCHITECT/ENGINEER PRIOR TO BID OPENING. REQUESTS ARE TO BE SUBMITTED SUFFICIENTLY AHEAD OF THE DEADLINE TO GIVE AMPLE TIME FOR EXAMINATION. THE ITEMS APPROVED WILL BE LISTED IN AN ADDENDUM AND ONLY THIS LIST OF EQUIPMENT WILL BE ACCEPTED IN LIEU OF SPECIFIED PRODUCTS. SUBMITTALS MUST INDICATE THE SPECIFIC ITEM OR ITEMS TO BE FURNISHED IN LIEU OF THOSE SPECIFIED, TOGETHER WITH COMPLETE TECHNICAL AND COMPARATIVE DATA ON SPECIFIED ITEMS AND PROPOSED ITEMS.

TEMPERATURE CONTROL NOTES

ALL CONTROL WIRING, LINE VOLTAGE WIRING, CONDUIT, ETC. ASSOCIATED WITH THE TEMPERATURE CONTROLS SHALL BE FURNISHED AND INSTALLED BY THE M.C. IF THE M.C. DOES NOT HAVE A STAFFED ELECTRICIAN, THE WORK SHALL BE SUBBED OUT AND INCLUDED IN THE M.C. PRICE.

ALL CONTROL CABLING IN EXPOSED CEILING OR ABOVE INACCESSIBLE CEILING AREAS SHALL BE INSTALLED IN CONDUIT. WHERE CONTROL CABLING IS INSTALLED ABOVE ACCESSIBLE CEILING, IT MAY RUN FREE-AIR AND PROPERLY SUPPORTED PER CODE. SEE DIV. 26 FOR CONDUIT REQUIREMENTS.

GENERAL PLUMBING NOTES

THE FOLLOWING NOTES APPLY TO ALL MECHANICAL SHEETS.

- ALL EQUIPMENT SHALL BE UL TESTED AND BEAR UL STAMP.
- ROUTE ALL PLUMBING PIPING PARALLEL TO BUILDING LINES UNLESS OTHERWISE NOTED.
- ALL PLUMBING PIPING SHALL BE CONCEALED ABOVE SUSPENDED CEILING AND IN MECHANICAL CHASES UNLESS NOTED OR INDICATED OTHERWISE. PLUMBING PIPING SHALL BE EXPOSED IN ROOMS WITHOUT CEILINGS. EXPOSED PIPING AND DUCTWORK IN FINISHED SPACES SHALL BE PAINTED TO MATCH WALL OR CEILING AS APPROVED BY ARCHITECT/OWNER. THE PAINTING SHALL BE DONE BY THE CONTRACTOR INSTALLING THE PLUMBING PIPING UNLESS OTHERWISE APPROVED BY ARCHITECT.
- THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR SLEEVES AND/OR OPENINGS REQUIRED TO INSTALL PLUMBING PIPES THROUGH FOUNDATIONS, FLOOR SLABS, WALLS, BEAMS AND ROOF.
- CEILING ACCESS SHALL BE PROVIDED AT ALL VALVES, WHERE ACCESS IS REQUIRED TO SPACE ABOVE INACCESSIBLE CEILING. CEILING ACCESS DOORS (WHERE RATINGS WITH ARCHITECTS PLANS) SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR UNLESS NOTED OTHERWISE.
- COORDINATE WITH OTHER TRADES TO PREVENT CONFLICTS WITH THE INSTALLATION OF MECHANICAL WORK. PROVIDE ADEQUATE SPACE FOR EQUIPMENT SERVICING AND COMPONENT REPLACEMENT.
- DOMESTIC PIPING, DRAIN PIPING AND PLUMBING PIPING SHALL BE COORDINATED WITH OTHER TRADES BEFORE BEING INSTALLED. ALL EQUIPMENT SHALL BE INSTALLED WITH ACCORDANCE WITH ARCHITECTURAL REFLECTED CEILING PLANS. FAILURE TO COORDINATE WORK WILL BE REDONE AT THE EXPENSE OF THE CONTRACTOR.
- SEAL ALL SPACE AROUND PLUMBING PIPING PENETRATIONS OF WALLS AND FLOORS WITH FIRESTOPPING MATERIAL. ALSO SEAL ALL EXTERIOR WALL AND ROOF PENETRATIONS WATER TIGHT.
- ALL MOTORS SHALL BE MOUNTED SO THAT THE NAMEPLATE CAN BE READ WITHOUT REMOVING THE MOTOR FROM ITS MOUNTING.
- PROVIDE HOUSEKEEPING PADS BELOW FLOOR MOUNTED EQUIPMENT. PADS ARE TO BE REINFORCED CONCRETE 4" THICK AND 3' BEYOND UNIT EDGES IN ALL DIRECTIONS.
- PROVIDE SLEEVES WHERE NEEDED FOR PLUMBING WORK. COORDINATE LOCATION OF SLEEVES AND HOLD OUTS REQUIRED WITH THE GENERAL CONTRACTOR PRIOR TO SETTING OF FORMS, WALLS AND OTHER STRUCTURAL MEMBERS.
- PROVIDE OFFSETS AND TRANSITIONS AS MAY BE REQUIRED TO INSTALL PLUMBING PIPING.
- CUTTING, DEMOLITION, AND PATCHING OF WALLS, FLOOR, AND REMOVAL AND REPLACEMENT OF CEILING, REQUIRED TO INSTALL PLUMBING PIPING, ARE TO BE COORDINATED BY, AND PAID FOR BY THE MECHANICAL CONTRACTOR.
- THIS CONTRACTOR SHALL PROVIDE COMPLETE FIRE CAULKING FOR ALL WALL, FLOOR AND CEILING PENETRATIONS. THIS INCLUDES ALL PLUMBING PIPING, CONTROL WIRING AND CONDUIT, NECESSITATED BY HIS WORK.
- AFTER FLUSHING THE DOMESTIC WATER PIPING, THE PIPING SHALL BE FILLED WITH A WATER/CHLORINE SOLUTION CONTAINING AT LEAST 200 PPM OF CHLORINE AND THE SYSTEM ALLOWED TO STAND FOR THREE HOURS.
- DOMESTIC WATER SERVICE PIPING SHALL BE THOROUGHLY FLUSHED AND TESTED WITH 125 PSIG HYDROSTATIC TEST FOR EIGHT (8) HOURS MINIMUM, IN ACCORDANCE WITH ALL STATE, NATIONAL AND LOCAL PLUMBING CODES.
- SANITARY SEWERS AND VENT PIPING SHALL BE TESTED IN ACCORDANCE WITH NATIONAL, STATE, AND LOCAL PLUMBING CODES. ALL POINTS SHALL BE PLUGGED AND FILLED WITH WATER TO UPPERMOST OUTLET. SYSTEM SHALL STAND FULL OF WATER FOR 24 HOURS OR BE TESTED WITH A 5 PSI AIR TEST FOR 15 MINUTES WITH NO INDICATION OF LEAKS.
- ALL GAS PIPING SHALL BE AIR TESTED IN ACCORDANCE WITH LOCAL CITY CODES, BUT IN NO CASE LESS THAN 25 POUND AIR TEST FOR THIRTY (30) MINUTES AT THE COMPLETION OF THE WORK. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL BOARD OF FIRE UNDERWRITERS AND ALL STATE AND LOCAL CODES. NO DOUBLE WYE DRAINAGE FITTINGS SHALL BE USED IN THE HORIZONTAL POSITION.
- GATE VALVES AND CHECK VALVES ON SUMP PUMPS AND SEWAGE EJECTORS SHALL BE INSTALLED ABOVE THE SUMPS.
- A FULL SIZE VENT STACK (3" MINIMUM) SHALL BE PROVIDED CONTINUOUS FROM ITS BASE THROUGH THE ROOF TERMINAL. THIS VENT SHALL BE THE MOST REMOTE STACK FROM THE LOCATION WHERE THE BUILDING DRAIN LEAVES THE BUILDING.
- FIXTURE DRAIN LINES MUST CONNECT TO THE VERTICAL SANITARY DRAIN WITH A TEE CONNECTION RATHER THAN A WYE CONNECTION.
- BUILDING STORM SEWERS SHALL BE SLOPED A MINIMUM 1/8" PER FOOT UNLESS OTHERWISE NOTED ON APPROVED PLANS.
- ABOVE GRADE HORIZONTAL RUNS OF PLASTIC WASTE AND VENT PIPE CANNOT EXCEED 35 FEET IN TOTAL LENGTH. ABOVE GRADE VERTICAL STACKS CONSTRUCTED OF PLASTIC PIPE MAY EXCEED 35 FEET IN TOTAL HEIGHT ONLY IF AN APPROVED EXPANSION JOINT IS USED.
- SOLVENT WELD JOINTS IN PVC AND CPVC PIPE MUST INCLUDE USE OF A PRIMER WHICH IS OF CONTRASTING COLOR TO THE PIPE AND CEMENT.
- ROUGH-IN FOR AND CONNECT HOT AND COLD WATER, WASTE AND VENT TO ALL FIXTURES AND EQUIPMENT FURNISHED BY OTHERS SUCH AS ICE MACHINES, WASHERS ETC. THIS CONTRACTOR IS RESPONSIBLE FOR VERIFYING EXACT REQUIREMENTS AND LOCATIONS AND FOR PROVIDING ALL TRAPS, TAILPIECES, VALVES AND SUPPLIES FOR EACH ITEM OF EQUIPMENT.
- REFER TO FLOOR PLANS FOR MAIN SIZES NOT SHOWN ON HOT AND COLD WATER AND WASTE AND VENT PIPING DIAGRAMS.
- ROOFING REPAIRS FOR THE INSTALLATION OF MECHANICAL EQUIPMENT SHALL BE BY MECHANICAL. RUBBER ROOFING SHALL BE REPAIRED BY A CERTIFIED INSTALLER SO THAT ROOFING WARRANTY IS NOT VOIDED.
- PLUMBING SHALL BE IN STRICT ACCORDANCE TO ALL STATE AND LOCAL PLUMBING CODES. PROVIDE AND INSTALL BACKWATER VALVE IF REQUIRED BY STATE OR LOCAL CODE.
- PLUMBING CONTRACTOR TO COORDINATE EXACT LOCATION OF TUB AND SHOWER VALVE AND HEAD LOCATIONS WITH ARCHITECTURAL PLANS PRIOR TO INSTALL.
- THIS SET OF DRAWINGS COMPRISE THE CONTRACT DOCUMENTS FOR THIS PROJECT AND AS SUCH EACH DISCIPLINE'S DRAWING SHEETS (ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL, AND SPECIALTY) SHALL BE REFERRED TO AND COORDINATED WITH EACH OTHER. IF CONFLICTS ARE NOTED BETWEEN THE DISCIPLINES, THEY ARE TO BE BROUGHT TO THE ARCHITECT OF RECORD'S ATTENTION TO BE RESOLVED. IT IS ESPECIALLY IMPORTANT TO REFERENCE AND COORDINATE WITH THE ARCHITECTURAL DRAWINGS.

GENERAL HVAC NOTES

THE FOLLOWING NOTES APPLY TO ALL MECHANICAL SHEETS.

- ALL EQUIPMENT SHALL BE UL TESTED AND BEAR UL STAMP.
- ROUTE ALL HVAC PIPING PARALLEL TO BUILDING LINES UNLESS OTHERWISE NOTED.
- ALL HEATING PIPING, COOLING PIPING AND DUCTWORK SHALL BE CONCEALED ABOVE SUSPENDED CEILING AND IN MECHANICAL CHASES UNLESS NOTED OR INDICATED OTHERWISE. PIPING AND DUCTWORK SHALL BE EXPOSED IN ROOMS WITHOUT CEILINGS. EXPOSED PIPING AND DUCTWORK IN FINISHED SPACES SHALL BE PAINTED TO MATCH WALL OR CEILING AS APPROVED BY ARCHITECT/OWNER. THE PAINTING SHALL BE DONE BY THE CONTRACTOR INSTALLING THE PIPING OR DUCTWORK UNLESS OTHERWISE APPROVED BY ARCHITECT.
- THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR SLEEVES AND/OR OPENINGS REQUIRED TO INSTALL PIPES AND DUCTS THROUGH FOUNDATIONS, FLOOR SLABS, WALLS, BEAMS AND ROOF.
- CEILING ACCESS SHALL BE PROVIDED AT ALL VALVES, FIRE DAMPERS, SMOKE DAMPERS, FIRE/SMOKE DAMPERS, MANUAL AND MOTORIZED DAMPERS, AND OTHER ITEMS REQUIRING SERVICE OR INSPECTION. WHERE ACCESS IS REQUIRED TO SPACE ABOVE INACCESSIBLE CEILING, CEILING ACCESS DOORS SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR UNLESS NOTED OTHERWISE.
- COORDINATE WITH OTHER TRADES TO PREVENT CONFLICTS WITH THE INSTALLATION OF MECHANICAL WORK. PROVIDE ADEQUATE SPACE FOR EQUIPMENT SERVICING AND COMPONENT REPLACEMENT.
- DIFFUSERS, REGISTERS, GRILLES, COOLING PIPING, DRAIN PIPING, HEATING PIPING, HEATING PUMPS AND FANS SHALL BE COORDINATED WITH OTHER TRADES BEFORE BEING INSTALLED. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH ARCHITECTURAL REFLECTED CEILING PLANS. FAILURE TO COORDINATE WORK WILL BE REDONE AT THE EXPENSE OF THE CONTRACTOR.
- SEAL ALL SPACE AROUND PIPING, WIRING AND DUCTWORK PENETRATIONS OF WALLS AND FLOORS WITH FIRESTOPPING MATERIAL. SEAL ALL EXTERIOR WALL AND ROOF PENETRATIONS WATER TIGHT.
- THE TRAP FOR AIR HANDLING UNITS, HEAT PUMPS AND OTHER HEATING EQUIPMENT SHALL NOT BE USED FOR TEMPORARY HEAT. CONTRACTOR SHALL COVER DUCTWORK OPENINGS DURING CONSTRUCTION WITH 1/4" POLY SHEETING, UNTIL THE TERMINAL DEVICES (LOUVER, DIFFUSER OR REGISTER) ARE IN PLACE.
- PROVIDE A WATER TIGHT DRAIN PAN THAT HAS A MINIMUM DEPTH OF 2 INCHES AT OUTSIDE AIR INTAKE CHAMBERS, RELIEF HOODS AND POWER ROOF VENTILATORS.
- ALL EQUIPMENT SHALL BE PERMANENTLY MARKED TO CLEARLY IDENTIFY THE AREA SERVED.
- ALL MOTORS SHALL BE MOUNTED SO THAT THE NAMEPLATE CAN BE READ WITHOUT REMOVING THE MOTOR FROM ITS MOUNTING.
- CONTRACTOR SHALL GIVE 7 DAY NOTICE TO THE ENGINEER TO WITNESS DUCT LEAKAGE TESTS ON SUPPLY, RETURN AND EXHAUST SYSTEMS. THE DESIGN ENGINEER AND OWNER SHALL DETERMINE THE FREQUENCY AND EXTENT OF TESTING IF ANY TESTS FAIL.
- THE TRAP FOR AIR HANDLING UNIT COIL DRAIN PANS SHALL BE DESIGNED TO HANDLE THE MAXIMUM STATIC PRESSURE OF THE SYSTEM. THE WATER SHALL FLOW OUT OF THE PAN AT THE SPECIFIED MAXIMUM STATIC PRESSURE WITHOUT THE PAN OVERFLOWING.
- PROVIDE HOUSEKEEPING PADS BELOW FLOOR MOUNTED EQUIPMENT. PADS ARE TO BE REINFORCED CONCRETE 4" THICK AND 3' BEYOND UNIT EDGES IN ALL DIRECTIONS.
- PROVIDE SLEEVES WHERE NEEDED FOR MECHANICAL WORK. COORDINATE LOCATION OF SLEEVES AND HOLD OUTS REQUIRED WITH THE GENERAL CONTRACTOR PRIOR TO SETTING OF FORMS, WALLS, AND OTHER STRUCTURAL MEMBERS.
- PROVIDE OFFSETS AND TRANSITIONS AS MAY BE REQUIRED TO INSTALL DUCTWORK. DEMOLITION AND PATCHING OF WALLS, FLOOR AND REMOVAL AND REPLACEMENT OF CEILING, REQUIRED TO INSTALL MECHANICAL EQUIPMENT, ARE TO BE COORDINATED BY, AND PAID FOR BY THE MECHANICAL CONTRACTOR.
- THIS CONTRACTOR SHALL PROVIDE COMPLETE FIRE CAULKING FOR ALL WALL, FLOOR AND CEILING PENETRATIONS. THIS INCLUDES ALL COOLING, HEATING AND PROCESS PIPING, CONTROL WIRING AND CONDUIT, ALL DUCTWORK, BREACHING, AIR INTAKE PENETRATIONS ETC. NECESSITATED BY HIS WORK.
- ALL GAS PIPING SHALL BE AIR TESTED IN ACCORDANCE WITH LOCAL CITY CODES, BUT IN NO CASE LESS THAN 25 POUND AIR TEST FOR THIRTY (30) MINUTES AT THE COMPLETION OF THE WORK. THE INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL BOARD OF FIRE UNDERWRITERS AND ALL STATE AND LOCAL CODES.
- PROVIDE ADDITIONAL VOLUME DAMPERS AS REQUIRED FOR BALANCING INDICATED AIR FLOWS.
- ROOFING REPAIRS FOR THE INSTALLATION OF MECHANICAL EQUIPMENT SHALL BE BY MECHANICAL. RUBBER ROOFING SHALL BE REPAIRED BY A CERTIFIED INSTALLER SO THAT ROOFING WARRANTY IS NOT VOIDED.
- THERMOSTATS IN PUBLIC AREA TO HAVE LOCK-OUT CAPABILITIES OR LOCKABLE THERMOSTAT COVER WITH GUARD.
- THIS SET OF DRAWINGS COMPRISE THE CONTRACT DOCUMENTS FOR THIS PROJECT AND AS SUCH EACH DISCIPLINE'S DRAWING SHEETS (ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL, AND SPECIALTY) SHALL BE REFERRED TO AND COORDINATED WITH EACH OTHER. IF CONFLICTS ARE NOTED BETWEEN THE DISCIPLINES, THEY ARE TO BE BROUGHT TO THE ARCHITECT OF RECORD'S ATTENTION TO BE RESOLVED. IT IS ESPECIALLY IMPORTANT TO REFERENCE AND COORDINATE WITH THE ARCHITECTURAL DRAWINGS.

GENERAL MECHANICAL DEMOLITION NOTES

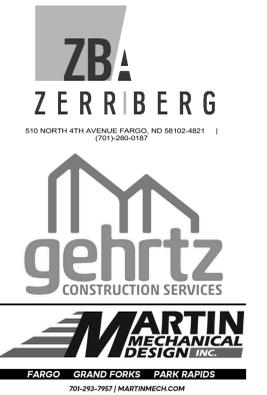
THE FOLLOWING NOTES APPLY TO ALL MECHANICAL SHEETS.

- OWNER HAS FIRST POSSESSION OF ANY AND ALL MECHANICAL EQUIPMENT AND ITEMS BEING REMOVED. IF OWNER DESIRES TO KEEP FIXTURES OR ANY REMOVED ITEMS, STORE WHERE DIRECTED BY OWNER. DISPOSE PROPERLY ANY ITEMS THE OWNER DOES NOT DESIRE TO KEEP.
- DEMOLITION DRAWINGS ARE COOPERATIVE IN NATURE. DRAWINGS WERE DEVELOPED USING RECORD DRAWINGS AND ON SITE INVESTIGATIONS. THE MECHANICAL CONTRACTOR (M.C.) IS RESPONSIBLE TO VISIT THE SITE TO VERIFY AND INVESTIGATE ALL CONDITIONS APPLICABLE FOR COMPLETION OF THE CONSTRUCTION WORK. A THOROUGH ON-SITE ANALYSIS OF EXISTING CONDITIONS PRIOR TO STARTING WORK TO ASCERTAIN THE FULL SCOPE OF THE DEMOLITION WORK IS REQUIRED.
- THE M.C. IS TO REPORT TO THE ENGINEER IMMEDIATELY IF ANY DISCREPANCIES OR DISCOVERIES ARE MADE DURING THE DEMOLITION PROCESS THAT CONFLICT WITH THE DRAWINGS.
- M.C. SHALL CONTACT THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES, ERRORS, OR OMISSIONS DISCOVERED IN THE DRAWINGS OR SPECIFICATIONS PRIOR TO PROCEEDING WITH THE WORK. OTHERWISE CORRECTION OF SUCH ITEMS IS THE RESPONSIBILITY OF THE CONTRACTOR.
- ANY WALLS, SURFACES, DOORS, FINISHES, ETC. TO REMAIN THAT ARE DAMAGED BY THE M.C. DURING CONSTRUCTION MUST BE PATCHED, REPAIRED OR REPLACED TO MATCH THE ADJACENT SURFACES.
- M.C. TO PATCH HOLES IN WALLS AND/OR CEILING LEFT BY DEMOLISHED MECHANICAL EQUIPMENT AND PIPING TO MATCH ADJACENT SURFACES.
- ALL WORK REQUIRING EXTENDED INCONVENIENCE TO THE OWNER SHALL BE COORDINATED WITH OWNER 7 DAYS PRIOR TO THE COMMENCEMENT OF WORK.
- REMOVE ALL ABANDONED OR UNUSED PIPE AND MATERIAL FROM PROJECT AND DISPOSE OF PROPERLY.

MECHANICAL PIPING SYMBOLS			
—	COLD WATER PIPING	☐	PUMP
—	HOT WATER PIPING	○	PIPE DOWN
—	CIRCULATING HOT WATER PIPING	○	PIPE UP
—	REVERSE OSMOSIS WATER PIPING	○	BOTTOM PIPE TAKE-OFF
—	SANITARY PIPING	○	TOP PIPE TAKE-OFF
—	SANITARY VENT PIPING	○	CAPPED PIPE
—	CONDENSATE PIPING	○	BALL VALVE
—	HEATING WATER SUPPLY	○	GATE VALVE
—	HEATING WATER RETURN	○	CHECK VALVE
—	CHILLED WATER SUPPLY	○	BACKFLOW PREVENTER
—	CHILLED WATER RETURN	○	BALANCING VALVE
—	HIGH PRESSURE STEAM	○	CONCENTRIC REDUCER
—	LOW PRESSURE STEAM	○	ECCENTRIC REDUCER
—	STEAM	○	UNION
—	COMPRESSED AIR	○	SAFETY VALVE
—	GAS	○	2-WAY MODULATING CONTROL VALVE
—	PROPANE GAS	○	3-WAY MODULATING CONTROL VALVE
—	OXYGEN	○	WATER FLOW MEASURING DEVICE
—	STORM DRAINAGE	○	STRAINER
—	STORM DRAINAGE - OVERFLOW	○	PRESSURE GAUGE
—	FUEL OIL SUPPLY	○	FLEX CONNECTION
—	FUEL OIL RETURN	○	THERMOSTAT
—	REFRIGERANT - LIQUID	○	NIGHT THERMOSTAT
—	REFRIGERANT - SUCTION	○	FLOAT SWITCH
—		○	FLOOR DRAIN
—		○	POINT OF CONNECTION (POC)
—		○	POINT OF DISCONNECTION (PODC)

MECHANICAL SYMBOLS	
	RECTANGULAR DUCT WITH ACOUSTICAL LINING
	FLEXIBLE CONNECTION IN DUCT
	SIDEWALL GRILLE OR REGISTER WITH TYPE, NECK SIZE, AND AIRFLOW INDICATED (SUPPLY)
	SIDEWALL GRILLE OR REGISTER WITH TYPE, NECK SIZE, AND AIRFLOW INDICATED (RETURN)
	SUPPLY REGISTER OR GRILLE
	EXHAUST OR RETURN REGISTER OR GRILLE
	SQUARE ELBOW WITH TURNING VANES
	STANDARD RADIUS ROUND ELBOW (RADIUS OF CENTERLINE OF DUCT EQUAL TO 1.5 x DUCT WIDTH OR DIAMETER)
	DEMOLITION WORK INDICATED BY CROSSHATCHED LINES OVER ITEMS TO BE REMOVED AS NOTED
	MANUAL VOLUME DAMPER
	FIRE DAMPER (FD)
	SMOKE DAMPER (SD)
	COMBINATION FIRE/SMOKE DAMPER (F/S)
	MOTOR OPERATED DAMPER
	RECTANGULAR DUCT TO CEILING DIFFUSER
	FLEXIBLE ROUND DUCT TO CEILING DIFFUSER
	DASHED LINE INDICATES EQUIPMENT ON ROOF
	POSITIVE PRESSURE DUCT - SUPPLY, RELIEF, ETC.
	NEGATIVE PRESSURE DUCT - RETURN, EXHAUST, OUTSIDE AIR, ETC.
	RISER THRU FLOOR OR ROOF ABOVE - POS. AND NEG. PRESSURE
	RECTANGULAR DUCT WITH SIZE INDICATED
	ROUND DUCT WITH SIZE INDICATED

MECHANICAL SHEET LIST	
SHEET NUMBER	SHEET NAME
M000	MECHANICAL COVER SHEET
M300	HVAC DEMO PLAN - FIRST FLOOR
M301	HVAC PLAN - FIRST FLOOR
M302	HVAC PLAN - ROOF
M500	MECHANICAL DETAILS & SCHEDULES
M600	MECHANICAL CONTROLS



I hereby certify that this drawing, specification or report was prepared by me or under my direct supervision and that I am a duly licensed Engineer under the laws of the State of Minnesota.

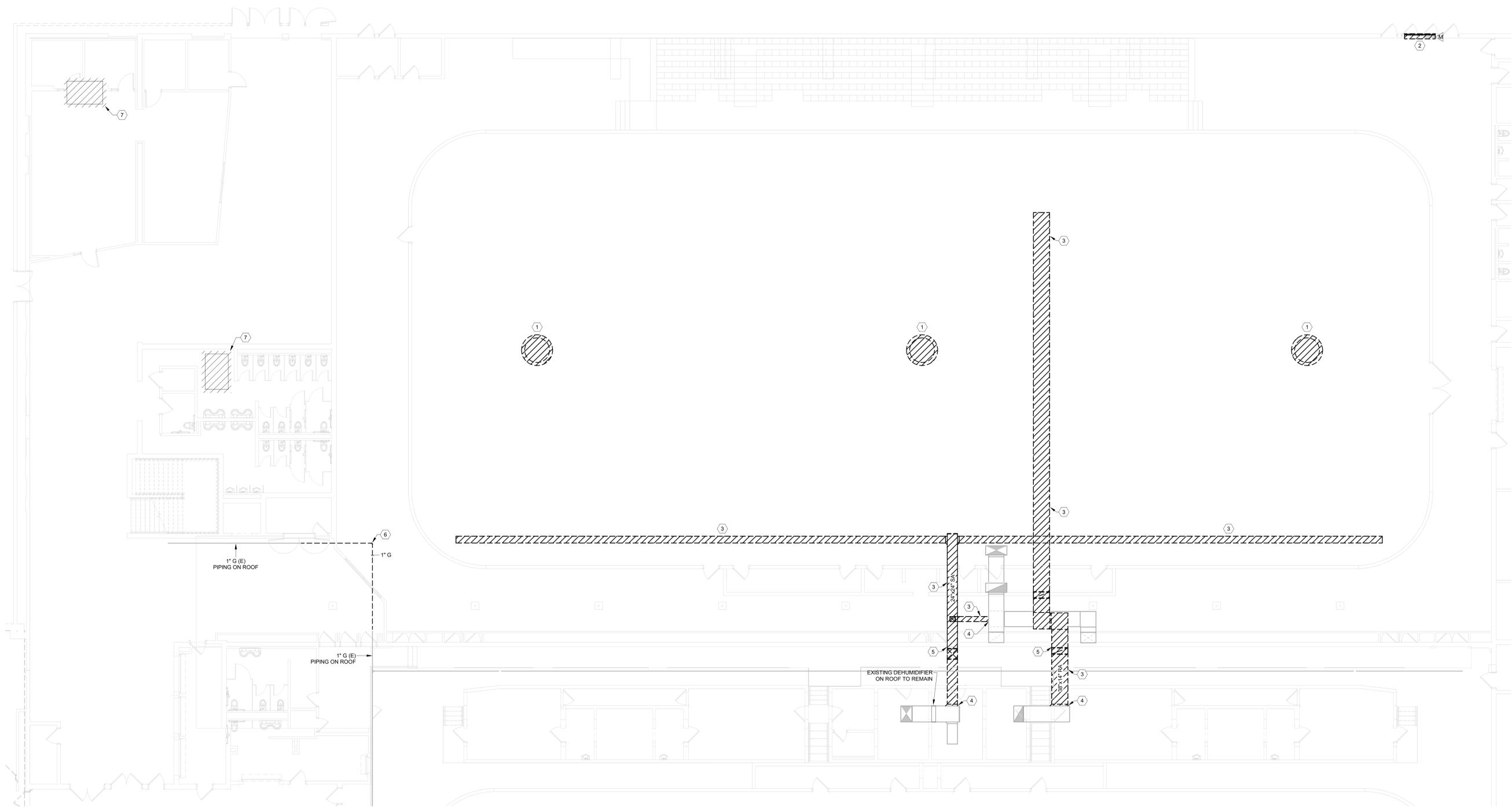
Date: 2026-01-21 Regl. No. 41118
 Signed: *Brian M Martin*
 BRIAN M MARTIN

REVISION SCHEDULE	
NUMBER	DESCRIPTION



MECHANICAL COVER SHEET

- MECHANICAL DEMOLITION KEY NOTES:**
- ① DEMOLISH EXISTING POWER ROOF VENTILATOR AND ROOF CURB, ASSOCIATED DUCTWORK, DAMPERS, AND CONTROLS, EXISTING ROOF DECK INFILL AND ROOF MEMBRANE REPAIR BY OTHERS.
 - ② REMOVE MOTORIZED DAMPER FROM EXISTING INTAKE LOUVER, FILL WALL OPENING WITH 4" REGID INSULATION, AND PROVIDE SHEET METAL CAP OVER LOUVER INTERIOR.
 - ③ DEMOLISH EXISTING DEHUMIDIFIER DUCTWORK, HANGERS, AND ACCESSORIES AS INDICATED.
 - ④ CAP EXISTING DUCTWORK TO REMAIN AT THESE LOCATIONS.
 - ⑤ REMOVE EXISTING LIFE SAFETY DAMPERS AS REQUIRED. INFILL OF EXISTING WALL ASSEMBLY BY OTHERS.
 - ⑥ DEMOLISH AND RELOCATE EXISTING ROOF TOP GAS PIPING AS INDICATED ON REMODEL PLANS.
 - ⑦ DIV. 23 TO DEMOLISH EXISTING CAPPED ROOF CURB AND DISPOSE OF. INFILL OF EXISTING ROOF DECK, NEW ROOF INSULATION AND MEMBRANE PATCHING BY OTHERS.



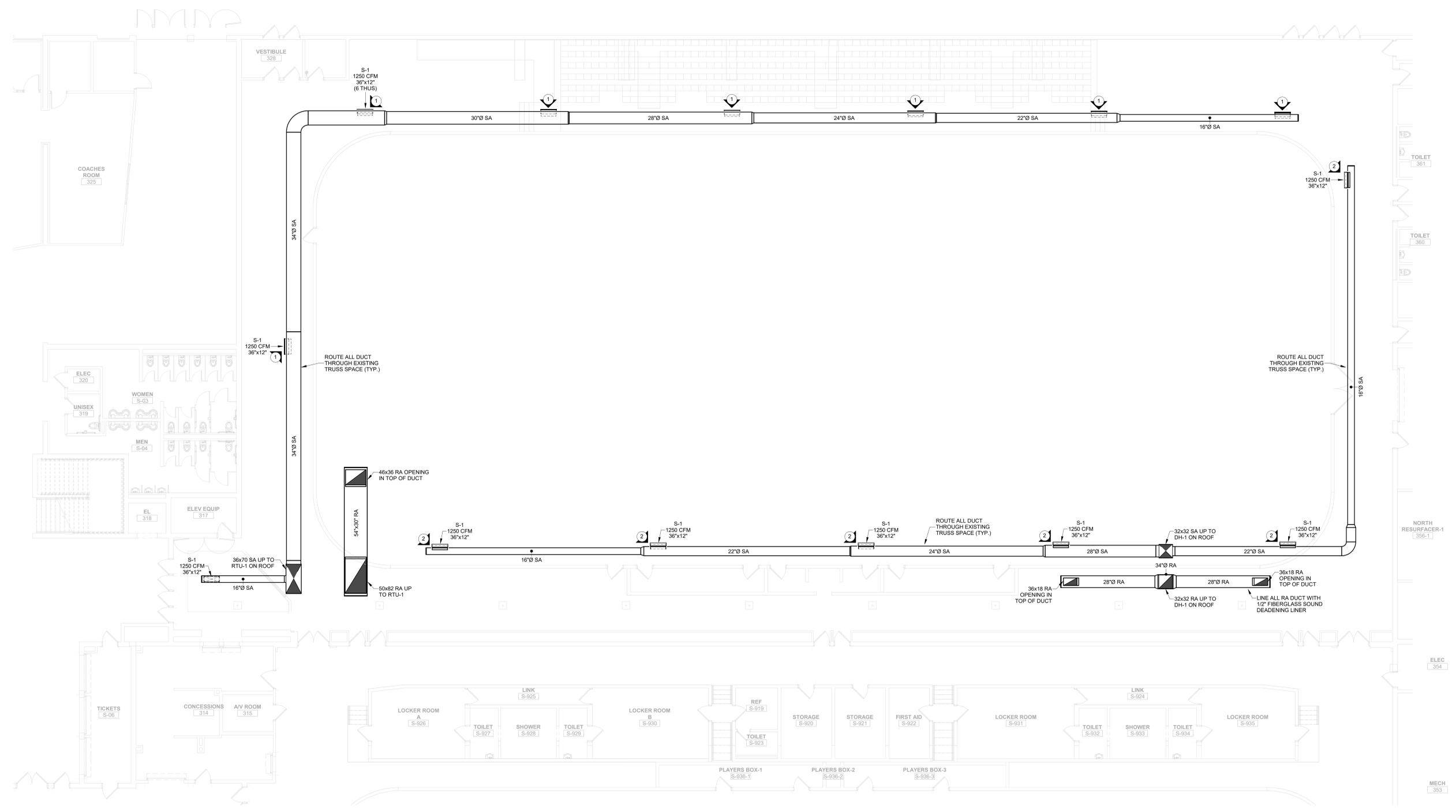
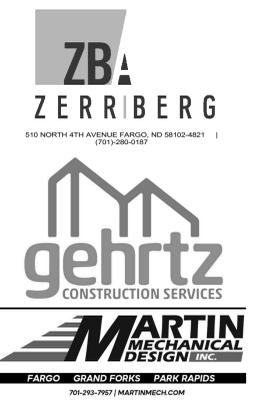
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Dated: 2026-01-21 Regt. No. 41118

Signed: *Brian M Martin*
 BRIAN M MARTIN

REVISION SCHEDULE		
NUMBER	DESCRIPTION	DATE

- MECHANICAL KEY NOTES:**
- 1 ALL DIFFUSERS DIRECTED AT OUTSIDE WALL TO BE INSTALLED AT 45 DEGREES BELOW HORIZONTAL.
 - 2 ALL DIFFUSERS DIRECTED OVER THE ICE RINK SHALL BE INSTALLED AT 30 DEGREES ABOVE HORIZONTAL TO DIRECT AIRFLOW ACROSS ROOF DECK.



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Dated: 2026-01-21 Regt. No. 41118

Signed: *Brian M Martin*
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REVISION SCHEDULE		
NUMBER	DESCRIPTION	DATE

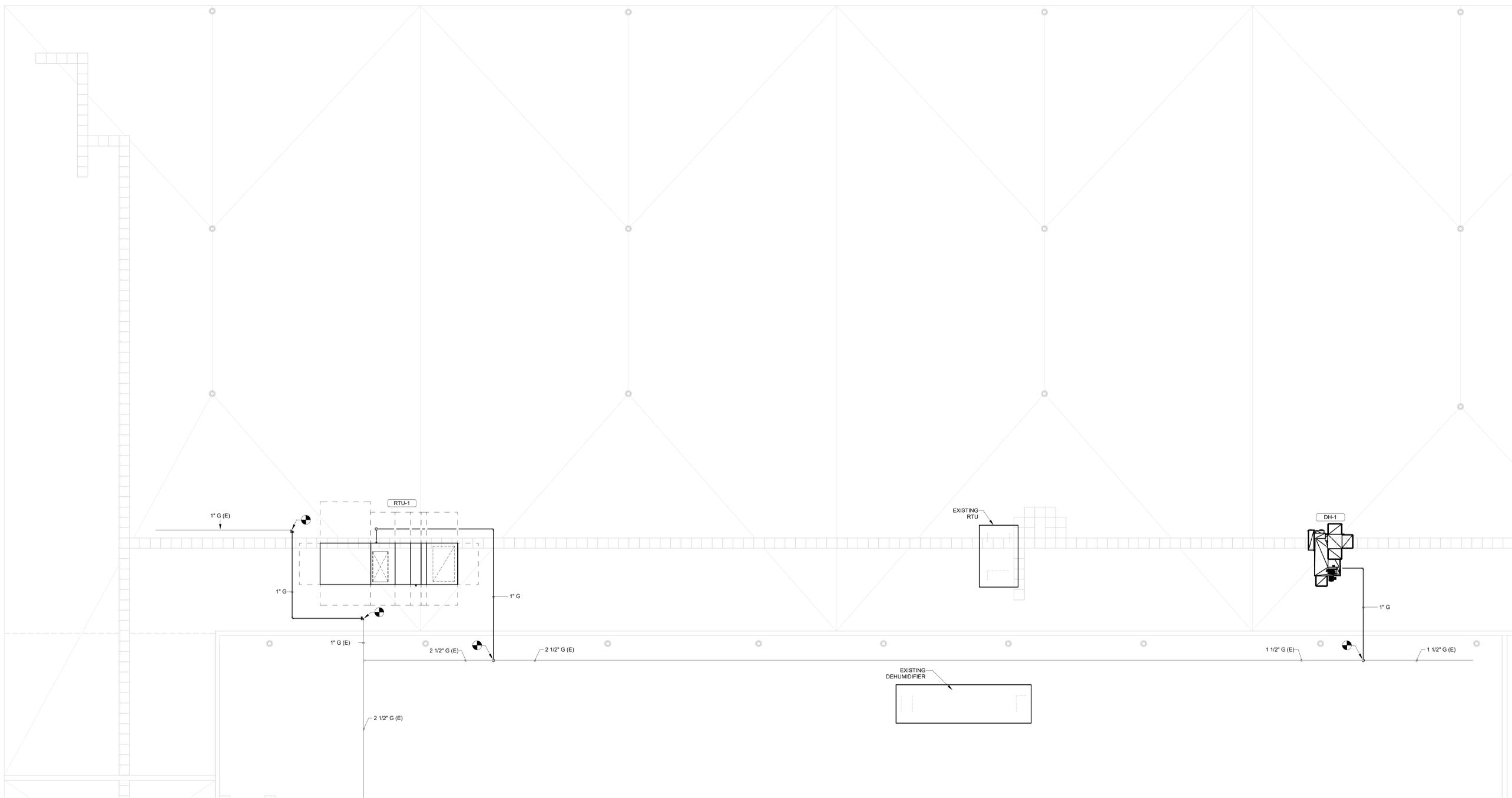


MOORHEAD
 AREA PUBLIC SCHOOLS

MAPS SPORTS CENTER
 NORTH RINK
 MECHANICAL
 UPGRADES
 MOORHEAD, MN

HVAC PLAN - FIRST FLOOR

1 FIRST FLOOR HVAC PLAN
 M301 1/8" = 1'-0"



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Dated: 2026-01-21 Regt. No. 41118

Signed: *Brian M Martin*
 BRIAN M MARTIN

REVISION SCHEDULE		
NUMBER	DESCRIPTION	DATE



MOORHEAD
 AREA PUBLIC SCHOOLS

MAPS SPORTS CENTER
 NORTH RINK
 MECHANICAL
 UPGRADES
 MOORHEAD, MN

HVAC PLAN - ROOF

Project No.: 2025-124
 Date: 2026
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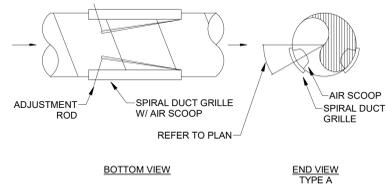
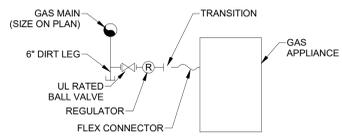
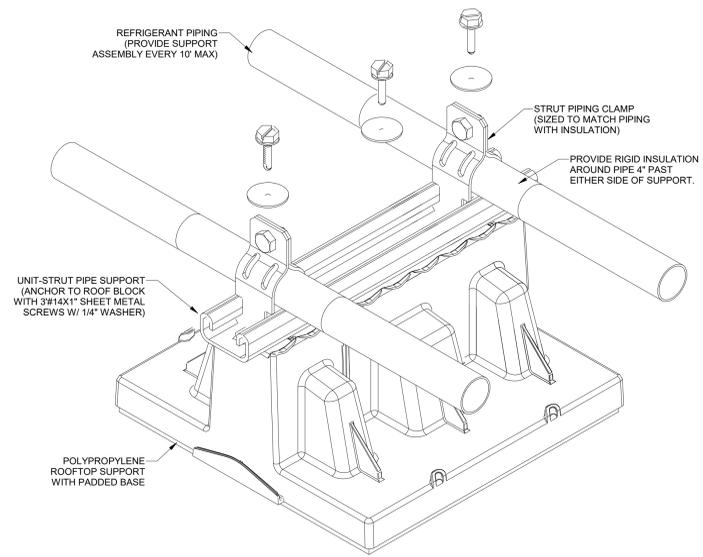
M302

PACKAGED GAS/DX ROOFTOP UNIT (RTU)	
SUPPLY FAN	RTU-1
AREA SERVED	NORTH RINK
MANUFACTURER	DAIKIN
MODEL	DPSA045
SUPPLY FAN	
CFM	10,000
MAX OA CFM	6,500
ESP	2
FAN ARRAY	2x2 (4 TOTAL)
FAN WHEEL DIA.	17.5
MOTOR HP	2.2 PER FAN
TOTAL BHP	6.93
DRIVE	DIRECT ECM
FAN RPM @ DESIGN	1,559
MAX FAN RPM	1,755
VFD	INTEGRATED
COOLING	
NOM TONS	50
REFRIGERANT	R32
TOTAL CAP	542,231 BTUH
SENSIBLE CAP	350,805 BTUH
EAT DB/WB	82/68
LAT DB/WB	51.6/50.5
AMBIENT CONDITIONS DB/WB	95/75
IEER	16.7
STAGES	4
CIRCUITS	2
HEATING	
FUEL	NAT. GAS
EAT	-10
LAT	76
BURNER	STAINLESS STEEL
MODULATION	10-100%
INPUT (MBH)	1,125
OUTPUT HIGH/LOW (MBH)	931/93.1
HOT GAS REHEAT	
TOTAL CAPACITY	217,879 BTUH
EAT	49.9
LAT	70
FILTERS	
FILTER TYPE	PLEATED
FILTER EFFICIENCY	2" MERV 8 / 4" MERV 13
FILTER AREA (FT ²)	51.1
FILTER FACE VELOCITY	196 FPM
QUANTITY	(8) 20x24; (8) 24x24
ELECTRICAL	
VOLTPH	460/60/3
MCA	105.8
MOCP	125
SCCR	65 KAIC
PHYSICAL	
WEIGHT	12,600 LBS
DIMENSIONS	317" L x 96-1/2" W x 102" H
REMARKS	ALL

- NOTES:
- THERMALLY BROKEN DOUBLE WALL R-13 UNIT CONSTRUCTION
 - PROVIDE UNIT WITH 24" TALL ROOF CURB, THROUGH BASE ELECTRICAL, UNPOWERED GFCI OUTLET.
 - PROVIDE IN-CURB TRANSISTIONS.
 - DISCONNECT PROVIDED BY DIVISION 26.
 - PROVIDE DUAL ENTHALPY ECONOMIZER WITH POWERED RELIEF.
 - REFRIGERATION MONITORING SENSOR PACKAGE
 - PROVIDE WITH STAINLESS STEEL HEAT EXCHANGER.
 - PROVIDE WITH HOT GAS REHEAT CONTROL FOR HUMIDITY CONTROL.
 - HINGED ACCESS DOORS
 - PROVIDE WITH BACNET CONTROLS INTERFACE.
 - FACTORY WIRED CO2 DEMAND CONTROLLED VENTILATION SYSTEM.

DESICCANT DEHUMIDIFIER SCHEDULE	
TAG	DH-1
AREA SERVED	NORTH RINK
MAKE	DAIKIN
MODEL	DH-S0-148-G
DESICCANT TYPE	SILICA GEL
MOISTURE REMOVAL	
PROCESS AIR STREAM	
CFM	7,500
ESP	2.0
FAN HP	1.5
EAT (DB/WB)	68.5/56.4
LAT (DB/LAT)	100.4/61.6
FILTER TYPE	PLEATED
FILTER EFFICIENCY	MERV 8
FACE VELOCITY	450 FPM
FILTER SIZE	(3) 18x25x2 (2) 14x25x2
REACTIVATION AIR STREAM	
CFM	2,025
ESP	1.0
FAN HP	5
EAT (DB/WB)	82.3/7.5
LAT (DB/LAT)	134.7/101.6
REACTIVATION TYPE	DIRECT FIRED GAS BURNER
FUEL	NAT GAS
MAX BURNER HEAT	338 MBH
FILTER TYPE	PLEATED
FILTER EFFICIENCY	MERV 8
FILTER SIZE	(1) 24x24x2
ELECTRICAL	
VOLTAGE	460/3/60
FLA	23.5
MCA	30
MOCP	45
PHYSICAL	
WEIGHT	3,275 LBS
DIMENSIONS	134" L x 106" W x 83" H
NOTES:	
1. PREMIUM EFFICIENCY MOTORS TEFC	
2. PROVIDE BACNET COMMUNICATION CAPABILITY	
3. 2" DOUBLE WALL CONSTRUCTION	
4. 24" TALL ROOF CURB	

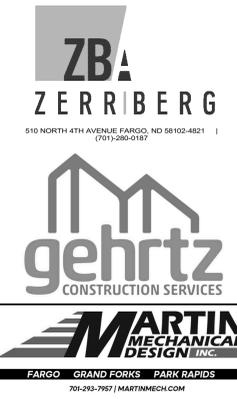
DIFFUSER SCHEDULE	
TAG	S-1
MAKE	PRICE
MODEL	SDGE
FACE	LOUVERED
MOUNTING	DUCT
NG	-25
COLOR	BY ARCH
OBDD	AIR SCOOP
REMARKS	1,2,3
NOTES	
1. VERIFY FRAME TYPE AND LOCATION WITH ARCHITECT.	
2. SUBMITTAL TO INCLUDE ROOM SCHEDULE INDICATING DETAILS FOR UNITS IN EACH ROOM.	
3. PRESSURE DROP NOT TO EXCEED 0.10" W.C., NG RATING NOT TO EXCEED 30 dB WITH ROOM dB OF 10.	



1 ROOFTOP PIPING SUPPORT DETAIL
M500 NO SCALE

2 TYPICAL CONNECTION TO GAS APPLIANCE
M500 NO SCALE

3 SPIRAL DUCT GRILLE MOUNTING DETAIL (TYPE A)
M500 NO SCALE



I hereby certify that this drawing, specification or report was prepared by me or under my direct supervision and that I am a duly licensed Engineer under the laws of the State of Minnesota.

Dated: 2026-01-21 Regt. No. 41118

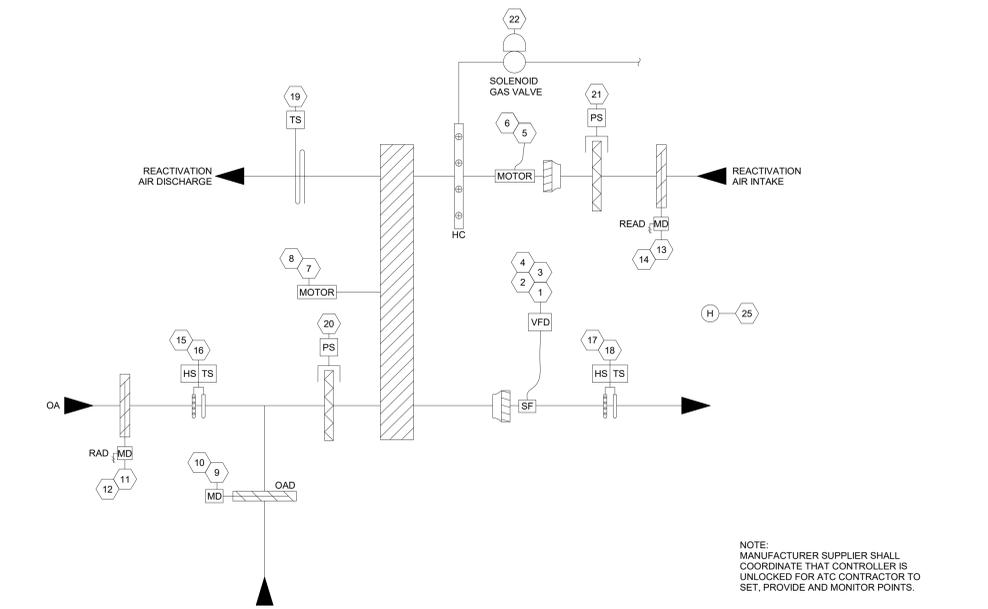
Signed: *Brian M Martin*
BRIAN M MARTIN

REVISION SCHEDULE		
NUMBER	DESCRIPTION	DATE

MOORHEAD
AREA PUBLIC SCHOOLS

MAPS SPORTS CENTER
NORTH RINK
MECHANICAL UPGRADES
MOORHEAD, MN

MECHANICAL DETAILS & SCHEDULES



SEQUENCE OF OPERATIONS:

OCCUPIED:

- WITH "OCCUPIED" VENTILATION MODE SELECTED AND SAFETY CIRCUITS NORMAL, SUPPLY FAN OPERATES CONTINUOUSLY, OUTSIDE AIR DAMPER DRIVES 20% (ADJUSTABLE) OPEN. ON A CALL FOR DEHUMIDIFICATION, REACTIVATION FAN, DESICCANT ROTOR DRIVE AND REACTIVATION BURNER ARE ENERGIZED AS REQUIRED TO MAINTAIN DESIRED HUMIDITY LEVEL.

IAQ:

- WITH ANY VENTILATION MODE SELECTED, EXCEPT OFF, AND SAFETY CIRCUITS NORMAL, WHEN THE CUSTOMERS INDOOR AIR QUALITY CONTACT IS CLOSED, THE SUPPLY FAN OPERATES CONTINUOUSLY, OUTSIDE AIR DAMPER DRIVES 100% OPEN. ON A CALL FOR DHUMIDIFICATION, REACTIVATION FAN, DESICCANT ROTOR DRIVE AND REACTIVATION BURNER ARE ENERGIZED AS REQUIRED TO ATTEMPT TO MAINTAIN DESIRED HUMIDITY LEVEL.
- TEMPERATURE AND HUMIDITY SET POINTS ARE ADJUSTED VIA CONTROLLER USER INTERFACE. DDC CONTROLLER ALARM INDICATIONS ARE VISABLE VIA CONTROLLER USER INTERFACE.

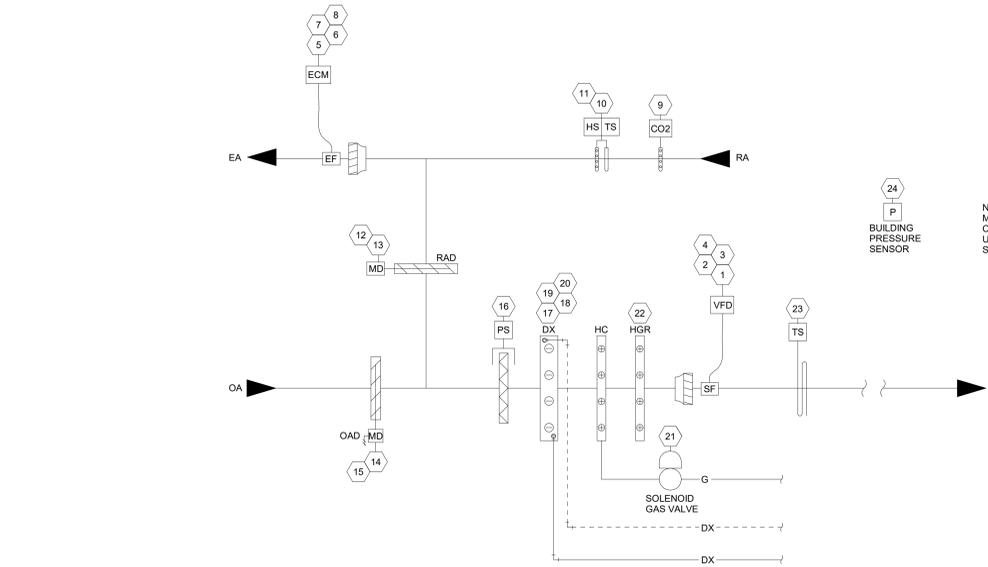
DEHUMIDIFIER REACTIVATION ENABLE:

- REACTIVATION BURNER IGNITION AND FLAME MANAGEMENT ON GAS FIRED UNITS ARE CONTROLLED VIA A DEDICATED FLAME SAFEGUARD SYSTEM AND PROVEN VIA FLAME RECTIFICATION. PRE-IGNITION INTERLOCKS INCLUDE REACTIVATION AIRFLOW DIFFERENTIAL PRESSURE PROVING SWITCH, AND MANUAL RESET HIGH TEMPERATURE LIMIT SWITCH.

DEHUMIDIFIER REACTIVATION BURNER CONTROL:

- AS MOISTURE LOAD CHANGES, DESICCANT ROT (REACTIVATION OUTLET TEMPERATURE) IS MAINTAINED. AS THE MOISTURE LOAD INCREASES THE HEATER WILL INCREASE MODULATION AND AS THE MOISTURE LOAD DECREASES THE HEATER WILL DECREASE MODULATION. THE RIT (REACTIVATION INLET TEMPERATURE) WILL BE LIMITED.

2 VAV AHU CONTROL SCHEMATIC
NO SCALE



SEQUENCE OF OPERATIONS:

SCHEDULING:

- PROVIDE 7-DAY SCHEDULE WITH 2 START/TOP EVENTS PER DAY.

UNOCCUPIED OPERATION:

- PROVIDE A COMBINATION SPACE TEMPERATURE/HUMIDITY SENSOR AND CONFIGURE THE UNIT TO USE NIGHT SETBACK OFFSETS FOR HEATING AND COOLING CALLS AND THE NORMAL TEMPERATURE.
- OUTDOOR AIR DAMPER WILL BE CLOSED EXCEPT IF THE UNIT IS IN UNOCCUPIED ECONOMIZER FREE COOLING MODE.
- IF THERE IS NO CALL FOR HEATING OR COOLING, OR IF NIGHT SETBACK OPERATION HAS NOT BEEN CONFIGURED, THE UNIT WILL BE OFF.

COOLING MODE:

- ANYTIME THE RETURN AIR TEMPERATURE RISES ABOVE THE RETURN AIR SET POINT OF 60°F (ADJ.) SYSTEM COMPRESSORS WILL STAGE AS REQUIRED TO MAINTAIN DESIRED RETURN AIR TEMPERATURE.
- EACH STAGE MUST MEET ITS MINIMUM OFF TIME (ADJ.) BEFORE IT IS ALLOWED TO ENERGIZE AND SUCCESSIVE STAGES CAN ENERGIZE IF THE SAT RISES ABOVE THE ACTIVE SUPPLY AIR COOLING SETPOINT FOR THE COOLING STAGE UP DELAY PERIOD (ADJ.).
- MECHANICAL COOLING IS DISABLED IF THE OUTDOOR AIR TEMPERATURE (OAT) FALLS 1° BELOW THE COOLING LOCKOUT SETPOINT AND WILL REMAIN DISABLED UNTIL THE OAT RISES 1° ABOVE THE COOLING LOCKOUT SETPOINT. IF THE OAT DISABLES MECHANICAL COOLING WHILE IT IS CURRENTLY OPERATING, MECHANICAL COOLING WILL STAGE OFF AS MINIMUM RUN TIMES AND STAGE DOWN DELAYS ARE SATISFIED.
- IF THE ECONOMIZER IS ENABLED IT WILL FUNCTION AS THE FIRST STAGE OF COOLING (SEE ECONOMIZER SECTION).

HEATING MODE:

- ANYTIME THE RETURN AIR TEMPERATURE FALLS BELOW THE RETURN AIR SET POINT OF 50°F (ADJ.) GAS BURNER WILL ENERGIZE AND MODULATE TO MAINTAIN A DISCHARGE AIR TEMPERATURE OF 80°F UNTIL RETURN AIR TEMPERATURE SENSOR HAS BEEN SATISFIED.

DEHUMIDIFICATION MODE:

- DEHUMIDIFICATION IS ENABLED WHEN THE RETURN AIR HUMIDITY RISES ABOVE THE RETURN AIR HUMIDITY ENABLE/Hi RESET SETPOINT AND IS DISABLED WHEN THE RETURN AIR HUMIDITY FALLS BELOW THE DISABLE/LO RESET SETPOINT AND PROVIDE A RETURN AIR TEMPERATURE/HUMIDITY SENSOR.
- DEHUMIDIFICATION SHALL BE SELECTED AS A PRIORITY MODE TO BE ACTIVE ANYTIME THE HUMIDITY IS ABOVE THE RETURN AIR HUMIDITY SETPOINT, OTHERWISE IT IS ONLY AVAILABLE WHEN HEATING AND COOLING DEMANDS ARE SATISFIED A VENT MODE OPTION SHOWN ABOVE.
- ONCE IN DEHUMIDIFICATION, THE UNIT WILL MODULATE AND STAGE COMPRESSORS BASED ON THE UNIT CONFIGURATION IN ORDER MAINTAIN THE EVAPORATOR COIL SUCTION (SATURATION) TEMPERATURE AT THE COIL SUCTION (SATURATION) TEMPERATURE SETPOINT.
- PROVIDE A COIL SUCTION PRESSURE SENSOR FACTORY INSTALLED.
- DEHUMIDIFICATION REHEAT IS ALWAYS CONTROLLED TO THE APPROPRIATE ACTIVE SUPPLY AIR TEMPERATURE SETPOINT WHICH WILL BE DEPENDENT ON WHETHER YOU ARE IN COOLING DEHUMIDIFICATION, HEATING DEHUMIDIFICATION, OR VENT DEHUMIDIFICATION. DURING VENT MODE DEHUMIDIFICATION THE SUPPLY AIR TEMPERATURE SETPOINT IS CALCULATED TO BE HALF-WAY BETWEEN THE HVAC MODE SETPOINTS.
- PROVIDE MODULATING GAS REHEAT.

1 PACKAGED GAS/DX RTU CONTROL SCHEMATIC
NO SCALE

DESICCANT DEHUMIDIFIER POINT SCHEDULE						
TAG	POINT DESCRIPTION	POINT TYPE			NOTES	
		AI	DI	AO/DO NETWORK		
1	SF STATUS				BACnet 2,7	
2	SF ALARM				BACnet 2,7	
3	SF SPEED COMMAND				BACnet 2,7	
4	SF SPEED FEEDBACK				BACnet 2,7	
5	REACT AIR STATUS				BACnet 2,7	
6	REACT AIR ALARM				BACnet 2,7	
7	WHEEL MOTOR STATUS				BACnet 2,7	
8	WHEEL MOTOR ALARM				BACnet 2,7	
9	OAD COMMAND				BACnet 2,7	
10	OAD FEEDBACK				BACnet 2,7	
11	RAD COMMAND				BACnet 2,7	
12	RAD FEEDBACK				BACnet 2,7	
13	READ COMMAND				BACnet 2,7	
14	READ FEEDBACK				BACnet 2,7	
15	RA TEMPERATURE				BACnet 2,7	
16	RA HUMIDITY				BACnet 2,7	
17	SA TEMPERATURE				BACnet 2,7	
18	SA HUMIDITY				BACnet 2,7	
19	REAC AIR TEMPERATURE				BACnet 2,7	
20	FILTER SWITCH				BACnet 2,7	
21	FILTER SWITCH				BACnet 2,7	
22	MODULATING GAS VALVE POSITION				BACnet 2,7	
23	SPACE HUMIDITY				BACnet 3	

NOTES:

- VFD PROVIDED AND MOUNTED BY FACTORY
- PROVIDE GRAPHICAL USER INTERFACE (GUI) STATUS
- PROVIDE ALARM AT END USER CONTROL WORKSTATION IN GUI
- PROVIDE ENTHALPY CALCULATION FOR THE PURPOSE OF ECONOMIZER MODE
- PROVIDE GUI SET POINT AND OVERRIDES OF THIS POINT
- PROVIDE LOW DISCHARGE AIR TEMPERATURE ALARM
- POINTS TO BE GENERATED FROM FACTORY CONTROLLER BACNET...
- ALL CONTROL VALVES TO BE PROVIDED BY ATC

PACKAGED GAS/DX RTU POINT SCHEDULE						
TAG	POINT DESCRIPTION	POINT TYPE			NOTES	
		AI	DI	AO/DO NETWORK		
1	SF STATUS				BACnet 2,7	
2	SF ALARM				BACnet 2,7	
3	SF SPEED COMMAND				BACnet 2,7	
4	SF SPEED FEEDBACK				BACnet 2,7	
5	EF STATUS				BACnet 2,7	
6	EF ALARM				BACnet 2,7	
7	EF SPEED COMMAND				BACnet 2,7	
8	EF SPEED FEEDBACK				BACnet 2,7	
9	RA CARBON DIOXIDE				BACnet 2,7	
10	RA TEMPERATURE				BACnet 2,7	
11	RA HUMIDITY				BACnet 2,7	
12	RAD COMMAND				BACnet 2,7	
13	RAD FEEDBACK				BACnet 2,7	
14	OAD DAMPER COMMAND				BACnet 2,7	
15	OAD DAMPER FEEDBACK				BACnet 2,7	
16	FILTER SWITCH				BACnet 2,7	
17	COOLING STAGE 1				BACnet 2,7	
18	COOLING STAGE 2				BACnet 2,7	
19	COOLING STAGE 3				BACnet 2,7	
20	COOLING STAGE 4				BACnet 2,7	
21	MODULATING GAS VALVE POSITION				BACnet 2,7	
22	HOT GAS REHEAT COIL ENERGIZED				BACnet 2,7	
23	SA TEMPERATURE				BACnet 2,7	
24	SPACE DIFFERENTIAL PRESSURE				BACnet 3	

NOTES:

- VFD PROVIDED AND MOUNTED BY FACTORY
- PROVIDE GRAPHICAL USER INTERFACE (GUI) STATUS
- PROVIDE ALARM AT END USER CONTROL WORKSTATION IN GUI
- PROVIDE ENTHALPY CALCULATION FOR THE PURPOSE OF ECONOMIZER MODE
- PROVIDE GUI SET POINT AND OVERRIDES OF THIS POINT
- PROVIDE LOW DISCHARGE AIR TEMPERATURE ALARM
- POINTS TO BE GENERATED FROM FACTORY CONTROLLER BACNET COMMUNICATION
- ALL CONTROL VALVES TO BE PROVIDED BY ATC

VENTILATION MODE:

- THIS MODE IS ONLY AVAILABLE IN THE OCCUPIED MODE OF OPERATION ON UNITS CONFIGURED FOR CONTINUOUS SUPPLY FAN OPERATION AND IS GENERATED ANYTIME THERE IS NO DEMAND FOR HEATING OR COOLING.
- THE FAN WILL OPERATE AT THE MINIMUM VENT SPEED (USER ADJ.).

ECONOMIZER OPERATION:

- ENABLED WHEN OUTDOOR AIR (OA) DRYBULB, WETBULB, OR DEWPOINT TEMPERATURE FALLS BELOW THE ECONOMIZER ENABLE SETPOINT BY 1° AND THE OA TEMPERATURE IS AT LEAST 5° BELOW THE RETURN AIR TEMPERATURE (IF A RETURN AIR TEMPERATURE SENSOR IS BEING USED).
- ECONOMIZER OPERATION IS DISABLED WHEN THE OA TEMPERATURE RISES 1° ABOVE THE ECONOMIZER ENABLE SETPOINT OR IF THE OA TEMPERATURE RISES 1° ABOVE THE RETURN AIR TEMPERATURE (IF AVAILABLE).
- WETBULB OR DEWPOINT OPERATION REQUIRES AN OUTDOOR HUMIDITY SENSOR.
- ECONOMIZER ACTS AS 1ST STAGE OF COOLING AND CONTROLS TO THE ACTIVE SUPPLY AIR COOLING SETPOINT. IF THE ECONOMIZER REACHES 100% AND THE SUPPLY AIR TEMPERATURE IS STILL ABOVE SETPOINT, MECHANICAL COOLING IS ALLOWED TO STAGE UP WHILE THE ECONOMIZER IS HELD AT THE FULL OPEN POSITION.
- AN ECONOMIZER MINIMUM POSITION CAN BE CONFIGURED IN THE CONTROLLER.
- ECONOMIZER DAMPER IS CLOSED DURING UNOCCUPIED MODE, EXCEPT WHEN UNOCCUPIED FREE COOLING IS USED DURING NIGHT SETBACK OPERATION.

EMERGENCY SHUTDOWN:

- A 24 VAC WET CONTACT INPUT IS AVAILABLE TO BE USED WITH A N.C. SMOKE DETECTOR, FIRESTAT, OR OTHER SHUTDOWN CONDITION OCCURS. IF THIS CONTACT OPENS, IT WILL INITIATE IMMEDIATE SHUTDOWN OF THE VCB-X AND WILL GENERATE AN ALARM CONDITION.

TEMPERATURE PROTECTION:

- ACTIVATED WHEN THE SUPPLY AIR TEMPERATURE (SAT) RISES ABOVE THE HIGH CUTOFF TEMPERATURE (IMMEDIATE) OR DROPS BELOW THE LOW CUTOFF TEMPERATURE (FOR 10 MINUTES) BOTH OF WHICH ARE USER ADJUSTABLE. THIS MODE SHUTS OFF THE UNIT (WITH A 3 MINUTE FAN OFF DELAY) UNTIL THE MODE IS CANCELLED.

OUTDOOR AIR LOCKOUTS:

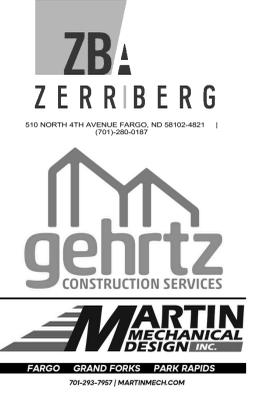
- MECHANICAL COOLING IS DISABLED WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW THE COOLING LOCKOUT SETPOINT.
- MECHANICAL HEATING IS DISABLED WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE THE HEATING LOCKOUT SETPOINT.

DEMAND CONTROL VENTILATION:

- THE CO2 DETECTOR MONITORS THE RETURN AIRFLOW FOR CARBON DIOXIDE AND MODULATES THE OUTDOOR AIR AND RETURN AIR DAMPERS AS REQUIRED. AT 400 PPM THE OA CFM SHALL AT A MINIMUM POSITION OF 0 CFM. AT 1,000 PPM THE OA CFM SHALL BE AT THE MAXIMUM CFM AS LISTED ON THE PRODUCT SCHEDULE.

POWERED EXHAUST FAN:

- RINK BUILDING PRESSURE SHALL BE MONITORED RELATIVE TO ADJACENT SPACE. UNIT EXHAUST FAN SHALL MODULATE SPEED TO MAINTAIN A -0.05 WC (ADJ.) RELATIVE TO THE ADJACENT SPACES.



I hereby certify that this drawing, specification or report was prepared by me or under my direct supervision and that I am a duly licensed Engineer under the laws of the State of Minnesota.

Dated: 2026-01-21 Regt. No. 41118

Signed: *Brian M Martin*

BRIAN M MARTIN

REVISION SCHEDULE		
NUMBER	DESCRIPTION	DATE

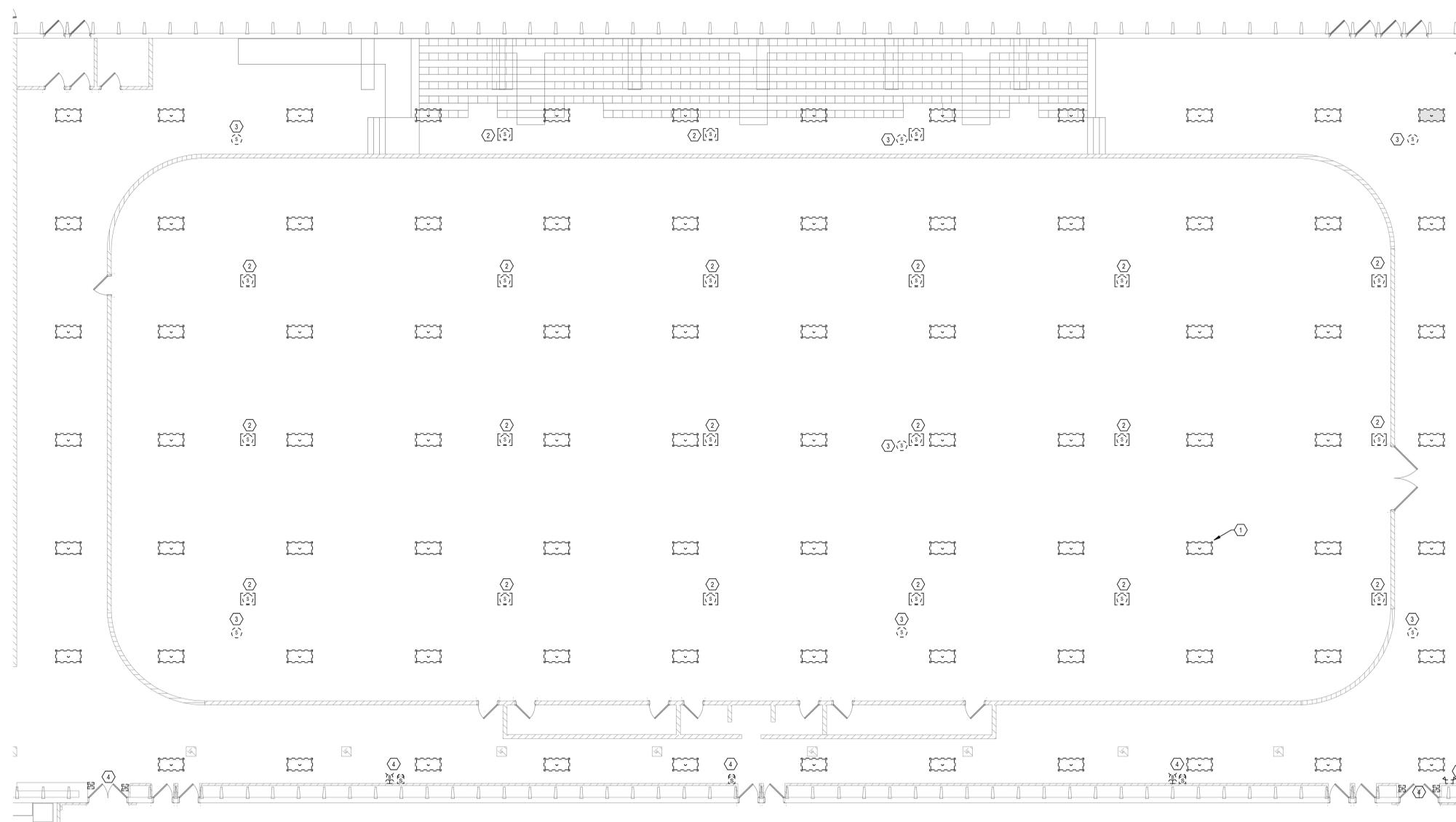
MOORHEAD AREA PUBLIC SCHOOLS

MAPS SPORTS CENTER
NORTH RINK
MECHANICAL UPGRADES
MOORHEAD, MN

MECHANICAL CONTROLS

PLAN NOTES:

- 1 REMOVE ALL EXISTING 2X4 HIGH BAY FLOURESCENT FIXTURES SHOWN. REMOVE MOUNTING HARDWARE. WIRING TO REMAIN.
- 2 REMOVE EXISTING SOUND SYSTEM SPEAKER. WIRING TO REMAIN.
- 3 REMOVE EXISTING SPEAKER, REMOVE ASSOCIATED CONDUIT AND WIRING.
- 4 DISCONNECT AND REMOVE EXISTING FIRE ALARM DEVICES AND ASSOCIATED CONDUIT TO ALLOW FOR INSTALLATION OF NEW FIRE WALL SALVAGE DEVICES FOR REINSTALLATION.
- 5 DISCONNECT AND REMOVE EXISTING EMERGENCY LIGHT AND ASSOCIATED CONDUIT TO ALLOW FOR INSTALLATION OF NEW FIRE WALL SALVAGE LIGHT FOR REINSTALLATION.



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Print Name: Michael A. Berger
 Signature: [Signature]
 Date: 01-21-2026 License #: 40294

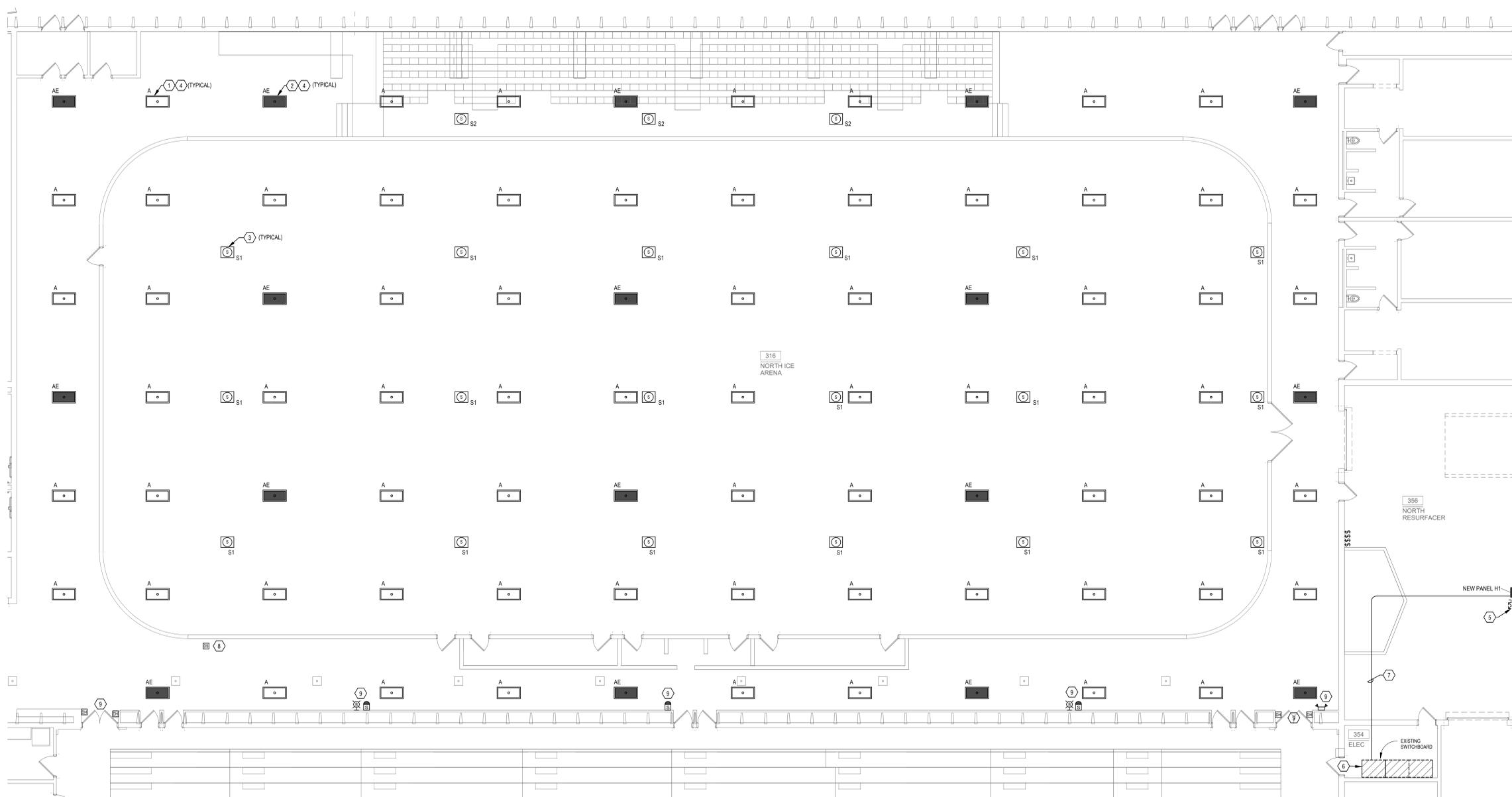
REVISION SCHEDULE		
NUMBER	DESCRIPTION	DATE

PLAN NOTES:

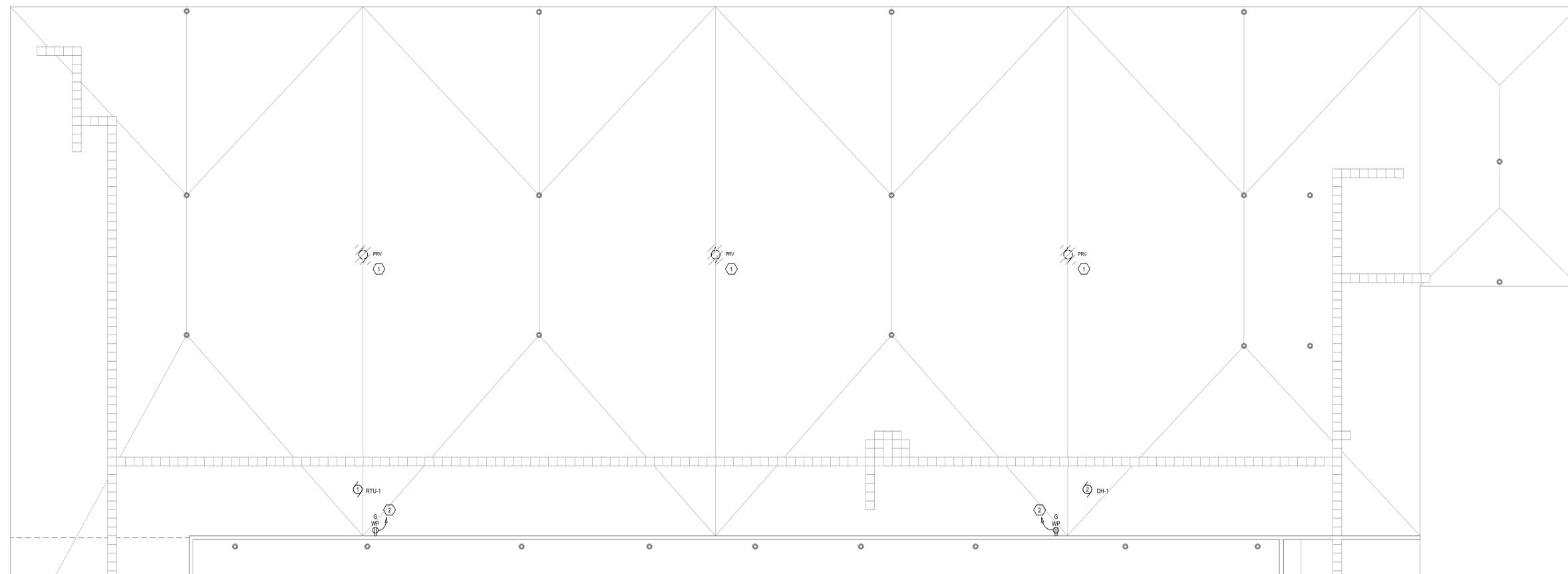
- 1 RECONNECT TYPE 'A' FIXTURES TO EXISTING LIGHTING CIRCUITS AND CONTROLS.
- 2 RECONNECT TYPE 'AE' FIXTURES TO EXISTING LIGHTING CIRCUITS AND CONTROLS. PROVIDE 'UNSWITCHED' CONNECTION TO CIRCUIT TO POWER EMERGENCY PORTION OF FIXTURE.
- 3 INSTALL NEW TYPE 'S1' AND 'S2' SPEAKERS TO REPLACE EXISTING. RECONNECT TO EXISTING WIRING.
- 4 PROVIDE AIRCRAFT CABLE TO INSTALL NEW TYPE 'A' AND TYPE 'AE' FIXTURES AT SAME ELEVATION AS EXISTING FIXTURES.
- 5 REMOVE EXISTING STARTERS FOR THE POWER ROOF VENTILATORS BEING REMOVED. REMOVE EXISTING TEMPERATURE CONTROL PANELS (3) AND HORNS TO INSTALL NEW PANEL, H1.
- 6 REMOVE THE (2) 200 AMP BREAKERS FOR THE NORTH CHARGER AND SOUTH CHARGER AND PROVIDE A NEW 250 AMP BREAKER TO FEED PANEL H1. MOVE THE CIRCUITS FOR THE CHARGERS TO PANEL H1.
- 7 PROVIDE 2 1/2 INCH CONDUIT WITH #250 KCMIL PLUS #4 GROUND.
- 8 PROVIDE DUCT SMOKE DETECTOR IN RETURN DUCT FOR RTU-4. CONNECT TO EXISTING FOIGRINELL FIRE ALARM SYSTEM.
- 9 REINSTALL DEVICES, WIRING AND CONDUIT FOLLOWING INSTALLATION OF FIRE WALL.

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 Print Name: Michael A. Berger
 Signature: [Signature]
 Date: 01-21-2026 License #: 40294

REVISION SCHEDULE		
NUMBER	DESCRIPTION	DATE



1 MAIN LEVEL FLOOR PLAN - ELECTRICAL
 SCALE: 1/8" = 1'-0"



- PLAN NOTES**
- ① DISCONNECT EXISTING POWER ROOF VENTILATOR. REMOVE ASSOCIATED STARTER AND CONDUIT WIRING BACK TO SOURCE.
 - ② CONNECT TO NEAREST ADEQUATE 120 VOLT RECEPTACLE CIRCUIT.

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 Signature: [Signature]
 Date: 01-21-2026 License #: 40294

REVISION SCHEDULE		
NUMBER	DESCRIPTION	DATE



MAPS SPORTS CENTER
 NORTH RINK
 MECHANICAL
 UPGRADES
2300 4th Ave S, Moorhead, MN 56560

ROOF PLAN - ELECTRICAL

Project No.: 25-029
 Date: 01-21-2026

E3.01

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



Zerr Berg Architects/Gehrtz Construction Services

Printed on Thu Jan 22, 2026 at 01:46 pm CST

Job #: 25-029 MAPS Sports Center North Rink Mechanical Upgrades
 2400 4th Ave S
 Moorhead, Minnesota 56560

Drawings Included In Sports Center

Drawing No.	Drawing Title	Revision	Drawing Date	Received Date	Set
Architectural					
A3.00	A3.00 COVER, ROOF PLAN, INTERIOR ELEVATION, VICINITY PLAN	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
A3.01	PROJECT FLOOR PLANS AND RCP	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
Electrical					
E0.01	SYMBOLS LEGEND & LUMINAIRE SCHEDULE	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
E1.01	ELECTRICAL DEMOLITION PLAN	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
E2.01	MAIN FLOOR PLAN - ELECTRICAL	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
E3.01	ROOF PLAN - ELECTRICAL	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
Mechanical					
M000	MECHANICAL COVER SHEET	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
M300	HVAC DEMO PLAN - FIRST FLOOR	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
M301	HVAC PLAN - FIRST FLOOR	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
M302	HVAC PLAN - ROOF	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
M500	MECHANICAL DETAILS & SCHEDULES	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
M600	MECHANICAL CONTROLS	0	01/21/2026	01/22/2026	Bid Set (01/21/26)
Structural					
S2.01	EXISTING ROOF FRAMING PLAN	0	01/21/2026	01/22/2026	Bid Set (01/21/26)