

MIDLAND PUBLIC SHOOOLS

600 E. Carpenter Street
Midland, MI 48640

MIDLAND HIGH SCHOOL STADIUM LOCKER/TOILET BUILDING HVAC & CONTROLS REPLACEMENT

DATE: 01/22/2024 ISSUANCE: BIDS/PERMITS

MECHANICAL:

M0.0SB MECHANICAL GENERAL INFORMATION
M1.1SB MECHANICAL PLANS – STADIUM LOCKER–TOILET BUILDING

ELECTRICAL:

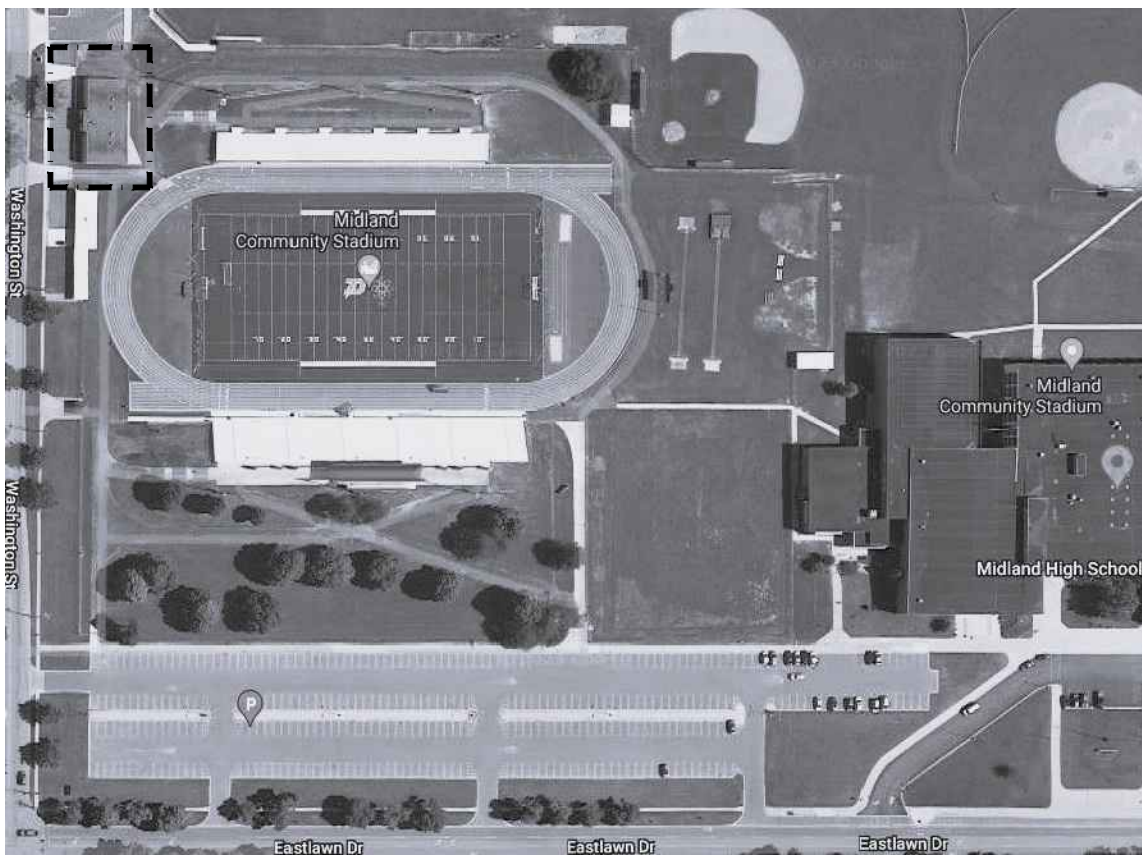
E0.0SB ELECTRICAL GENERAL INFORMATION
E1.1SB ELECTRICAL PLANS – STADIUM LOCKER–TOILET BUILDING



MEP ENGINEERS:



LOCATION:
MIDLAND HIGH SCHOOL STADIUM
LOCKER/TOILET BUILDING
1301 Eastlawn Dr.
Midland, MI 48642



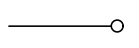
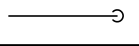
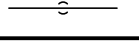
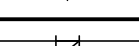
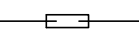
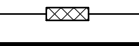
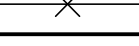
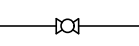
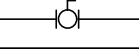
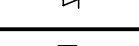
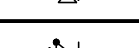
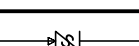
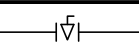
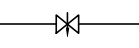
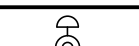
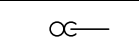
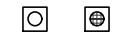
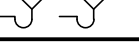
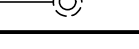
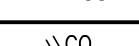
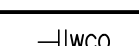
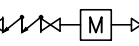
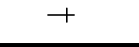
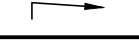
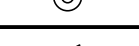
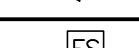
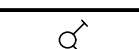
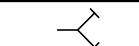
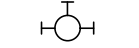
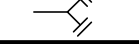
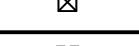
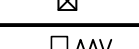
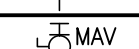
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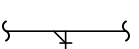
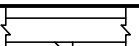
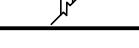
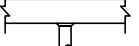
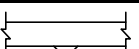
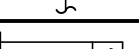
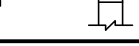
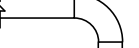
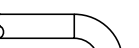
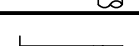
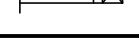
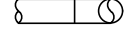
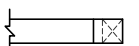
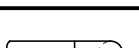
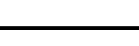
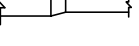
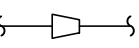
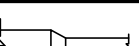
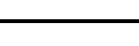
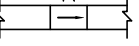
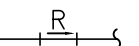
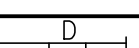
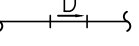
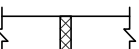
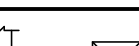
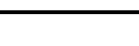
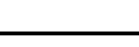
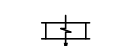
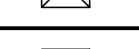
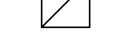
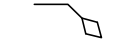
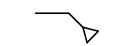
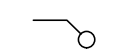
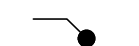
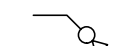
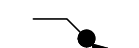
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Date: Jan 23, 2024, 10:28am Layout: M0.0SB Plotted by: jwg

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

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

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

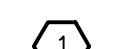
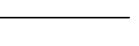
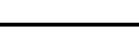
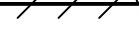
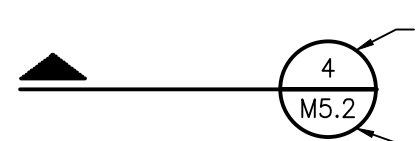
MECHANICAL PIPING SYMBOLS	
ABBREV.	DESCRIPTION
	PIPE ELBOW UP
	PIPE ELBOW DOWN
	PIPE TEE DOWN
	DIRECTION OF FLOW
	UNION
	STRAINER
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	FLEXIBLE CONNECTION
	PIPE ANCHOR
	PIPE GUIDE
	PIPE CAP OR PLUG
	ISOLATION VALVE
	CIRCULATING PUMP
	GLOBE VALVE
	BALL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

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

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

APPLICABLE CODES AND REGULATIONS	
YEAR	CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
2015	MICHIGAN MECHANICAL CODE
2015	MICHIGAN UNIFORM ENERGY CODE
2015	INTERNATIONAL FUEL GAS CODE
2009	ICC/ANSI ACCESSIBLE AND USABLE BUILDING & FACILITIES
–	AMERICANS WITH DISABILITIES ACT ACCESSIBILITIES GUIDELINE (ADA-AG)

DRAWING INDEX	
SHT NO	DESCRIPTION
M0.0SB	MECHANICAL GENERAL INFORMATION
M1.1SB	MECHANICAL PLANS – STADIUM LOCKER-TOILET BUILDING

DRAWING NOTATION	
SYMBOL	DESCRIPTION
	NEW WORK KEY NOTE NO. 1
	DEMOLITION KEY NOTE NO. 1
EE-1	EQUIPMENT TAG
S-1 10x10 100-2	AIR TERMINAL TAG: IE: DIFFUSER TYPE = S-1 NECK SIZE = 10x10 CFM = 100 (TYPICAL FOR 2)
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	POINT OF NEW CONNECTION
	SECTION NO. 4 SHEET M5.2 ON WHICH SECTION DRAWN
	SECTION NO. 6 SECTION SCALE: 1/4" = 1' – 0" SHEET M5.2 ON WHICH SECTION IS CUT (ENLARGED PARTIAL PLAN SIMILAR)



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SES Project #23 0939 01

CLIENT:

MIDLAND PUBLIC SCHOOLS
600 East Carpenter Street
Midland, MI 48640

PROJECT:

**MIDLAND PUBLIC SCHOOLS
MIDLAND HIGH SCHOOL
STADIUM LOCKER / TOILET
BUILDING HVAC &
CONTROLS REPLACEMENT**
1301 Eastlawn Dr.
Midland, MI 48642

Seal:

ISSUED FOR:

BIDS/PERMITS 01/22/24

ISSUED

DATE

DESIGNER:

JWG

ENGINEER:

NCS

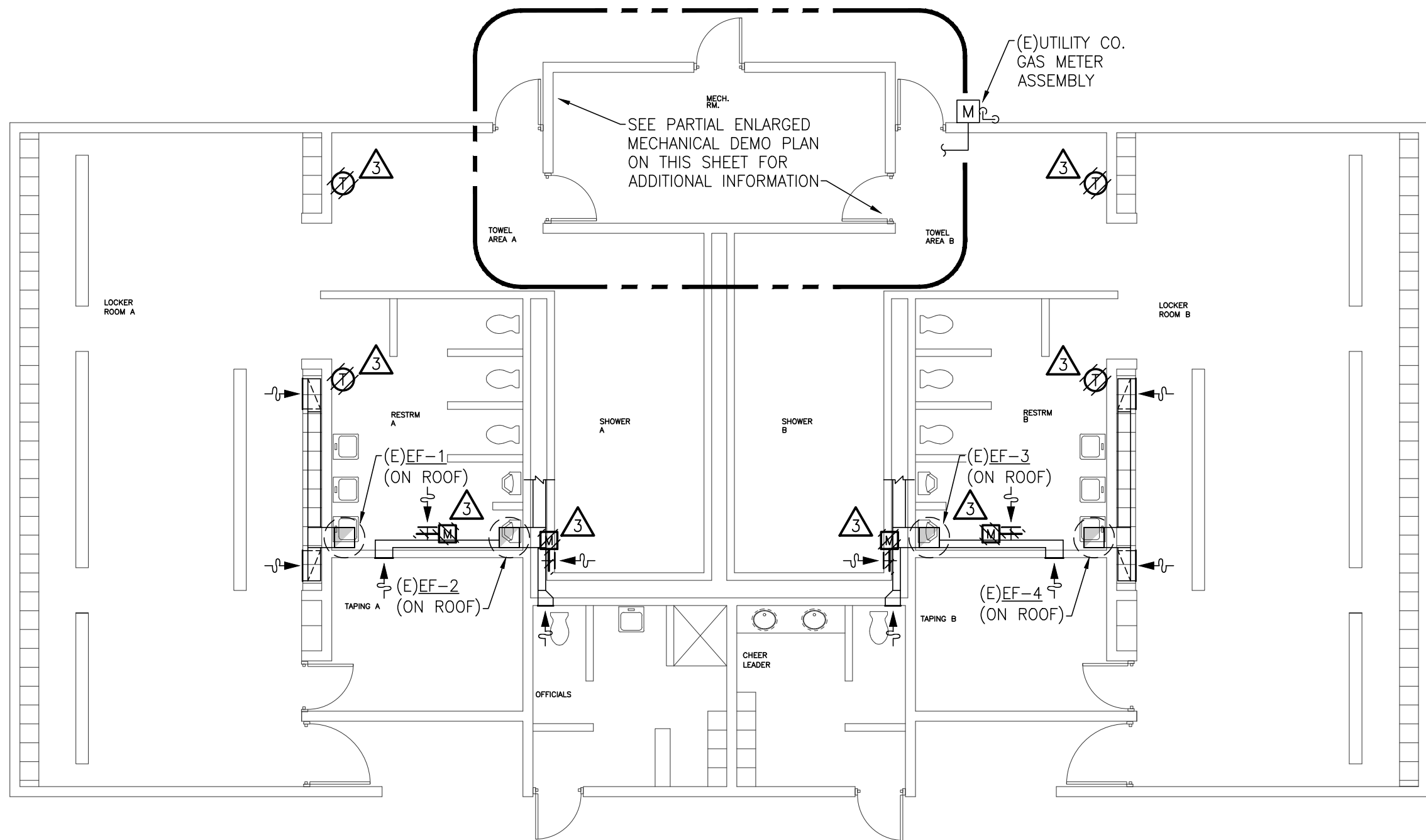
SHEET TITLE:

**MECHANICAL GENERAL
INFORMATION**

SHEET NUMBER:

M0.0SB

Drawing: S:\03_0939_01_Midland Public Schools_Misc_Mechanical Projects\03_0939_01_M1.1SB.dwg
Date: Jan 23, 2024, 10:28am Layout: M1.1SB
Plotted by: jwg



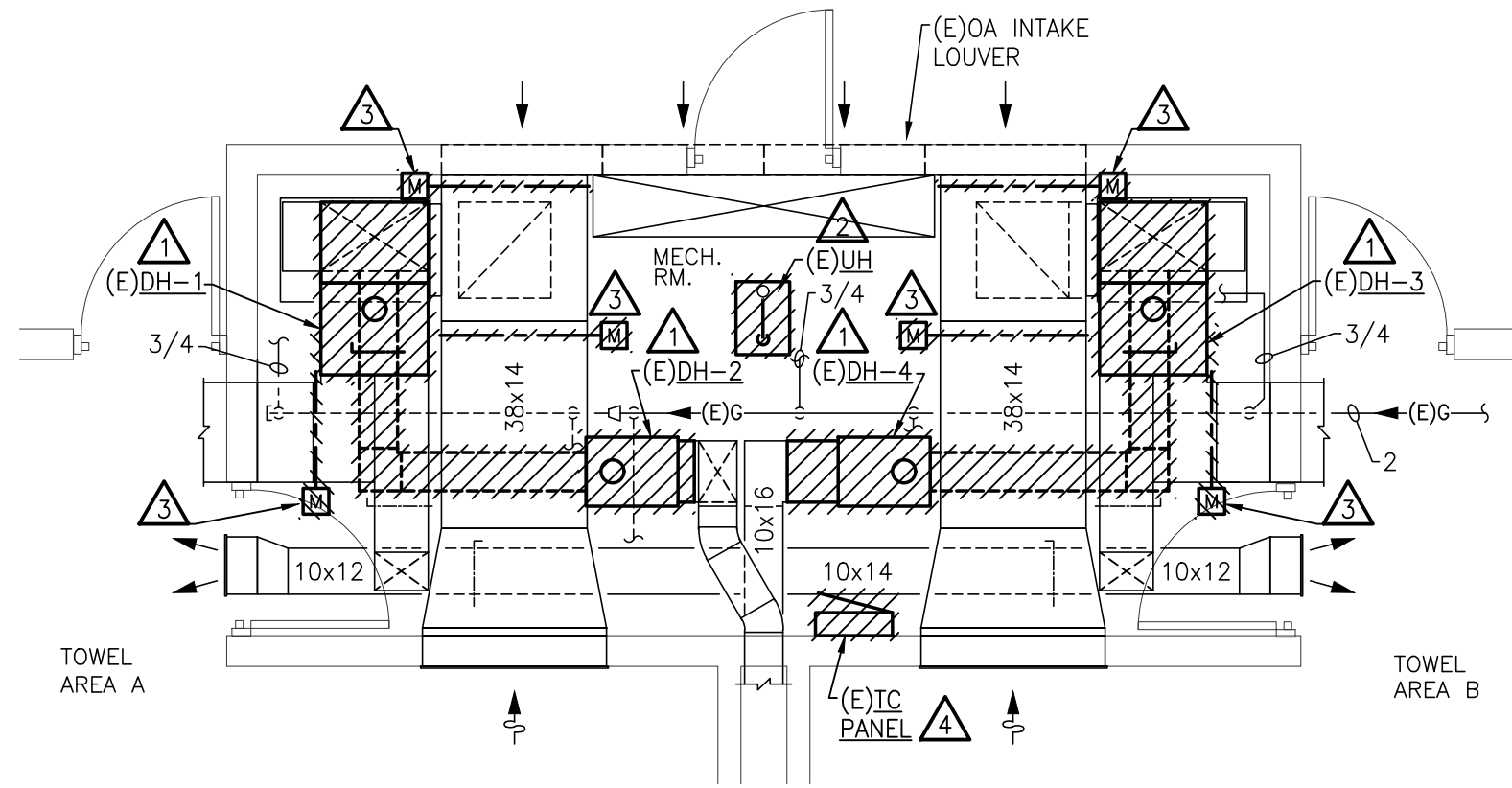
MECHANICAL DEMO PLAN
SCALE: 1/8" = 1'-0"

MECHANICAL DEMOLITION NOTES

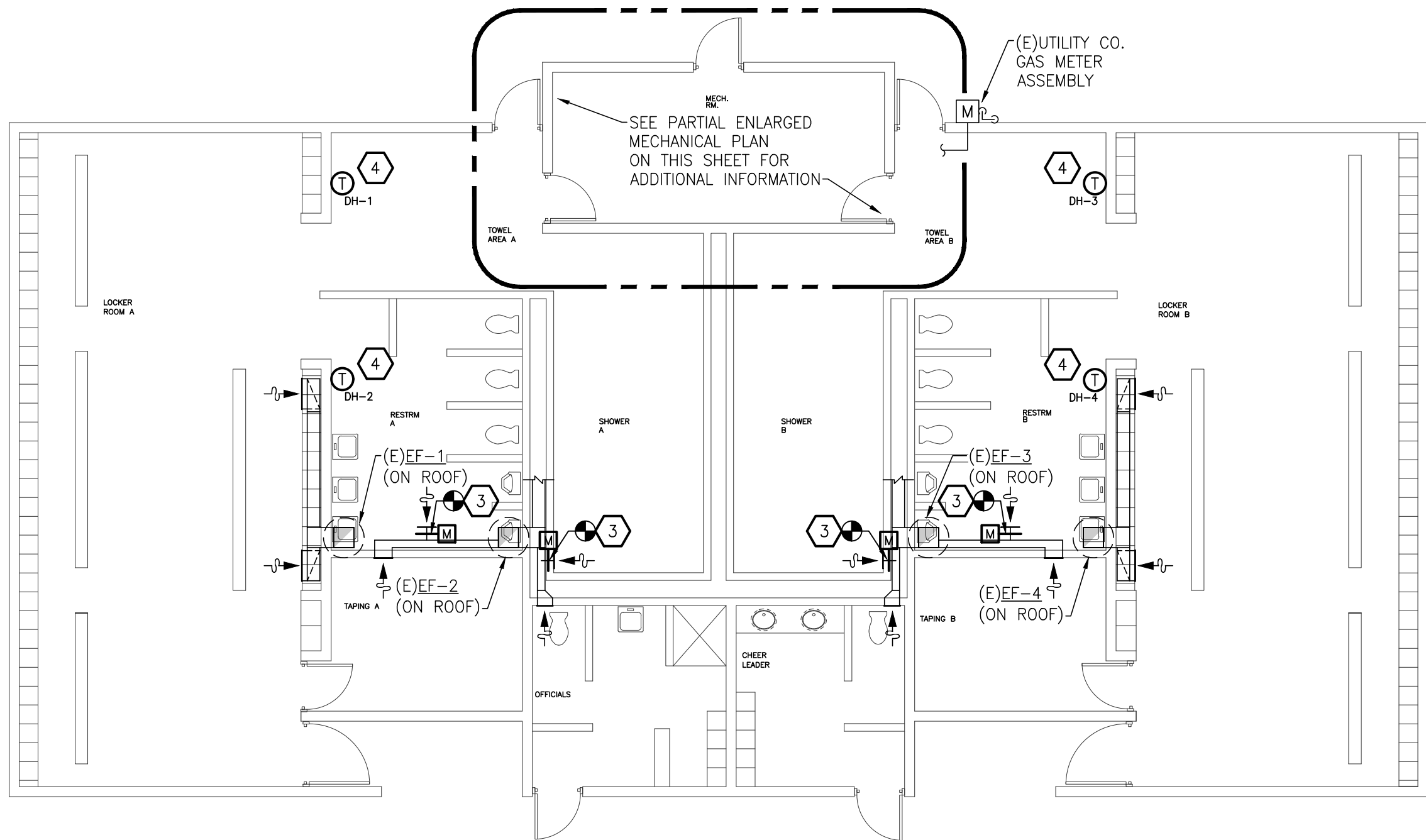
- THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
- PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY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

DEMOLITION KEYED NOTES

- REMOVE EXISTING GAS FIRED DUCT HEATER AND FLUE THRU ROOF. DISCONNECT EXISTING GAS PIPING AND REMOVE AS NECESSARY TO PREPARE FOR CONNECTIONS TO NEW EQUIPMENT. REMOVE DUCTWORK AS INDICATED AND PREPARE FOR THE CONNECTIONS.
- REMOVE EXISTING GAS FIRED UNIT HEATER AND FLUE THRU ROOF. DISCONNECT EXISTING GAS PIPING AND REMOVE AS REQUIRED. PREPARE FOR CONNECTION TO NEW EQUIPMENT.
- REMOVE EXISTING CONTROL DEVICE AND PREPARE FOR NEW DEVICES IN SIMILAR LOCATION. CLEAN DAMPERS AND CONFIRM ALL EXISTING DAMPERS MOVE FREELY. VERIFY EXISTING DEVICE CONTROL SEQUENCE PRIOR TO DEMOLITION. NEW OPERATION TO MATCH EXISTING.
- EXISTING CONTROL PANEL TO BE REMOVED. ALL CONTROLS TO BE REPLACED WITH DDC.



PARTIAL ENLARGED MECHANICAL DEMO PLAN
SCALE: 1/4" = 1'-0"



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

HVAC GENERAL NOTES

- THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. PROVIDE HVAC SYSTEMS COMPLETE PER SPECIFICATION, SMACNA STANDARDS, AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, SPECIAL RADIUS OR MITERED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR STRUCTURAL CONDITIONS OR OTHER CONDITIONS.
- CONTRACTOR SHALL COORDINATE THEIR WORK WITH THE WORK OF ALL OTHER TRADES. ALL DUCTWORK IS TO BE ROUTED AS HIGH AS POSSIBLE. PROVIDE ACCESS AROUND ALL NEW EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. VERIFY ALL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK.
- DUCTWORK/PIPING SHALL BE ROUTED AS HIGH AS POSSIBLE AND SHALL NOT BE LOCATED OVER ELECTRICAL EQUIPMENT/PANELS. PROVIDE REQUIRED CLEARANCE IN FRONT OF ELECTRICAL EQUIPMENT. DUCTWORK/PIPING SHALL NOT INTERFERE WITH ELECTRICAL EQUIPMENT CLEARANCE.
- DUCTWORK/PIPING SHALL NOT BE INSTALLED IN A LOCATION THAT RESTRICTS THE ACCESS TO MECHANICAL DEVICES REQUIRING ACCESS.
- THE CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, ETC. FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS.
- COORDINATE FLOOR, WALL, ROOF PENETRATIONS, LOUVER SIZES, PAD LOCATIONS ETC. WITH ARCHITECTURAL TRADES. SEAL ALL PIPING AND DUCT PENETRATIONS.
- COORDINATE AND PROVIDE ACCESS TO BALANCING DAMPERS, ETC.
- BRANCH DUCTWORK TO GRILLES, REGISTERS AND DIFFUSERS SHALL BE THE SAME SIZE AS THE GRILLE, REGISTER OR DIFFUSER NECK SIZE WHERE NO DUCT SIZE IS INDICATED ON PLAN.
- FOR EQUIPMENT VALVING, COMPONENT, AND PIPING ARRANGEMENT, REFER TO PIPING DIAGRAMS AND DETAILS.
- PROVIDE CODE REQUIRED CLEARANCE/ACCESS DOORS FOR DAMPERS, VALVES, AND CLEANOUTS LOCATED IN WALLS OR ABOVE HARD CEILINGS. COORDINATE LOCATIONS WITH ARCHITECT. REFER TO ARCHITECTURAL PLANS FOR CEILING TYPES.
- DUCTWORK TO AND FROM UNITS SHALL BE EQUAL TO THE BOX CONNECTIONS SIZES UNLESS INDICATED OTHERWISE.
- CONNECTION TO EQUIPMENT SHALL BE VERIFIED WITH MANUFACTURER'S CERTIFIED DRAWINGS. TRANSITIONS TO ALL EQUIPMENT SHALL BE VERIFIED AND PROVIDED FOR EQUIPMENT FURNISHED.
- ROOF MOUNTED EQUIPMENT REQUIRING SERVICE SHALL BE LOCATED A MINIMUM OF 10 FEET FROM ROOF EDGES. WHERE EQUIPMENT CAN'T BE LOCATED AWAY FROM ROOF EDGE AND GUARD RAILS ARE NOT PROVIDED, PROVIDE PERMANENT FALL ARREST ANCHORAGE CONNECTION DEVICE THAT COMPLIES WITH ANSI/ASSE Z 359.1.

KEYED NOTES

- CONNECT DUCT HEATER TO EXISTING DUCTWORK/PLENUMS WITH TRANSITIONS AS REQUIRED. EXTENT OF DUCTWORK RECONFIGURATION MAY DIFFER FROM WHAT IS INDICATED, BASED ON CONNECTION SIZE AT NEW UNIT. FIELD VERIFY AND COORDINATE WITH EQUIPMENT CONNECTIONS. CONNECT GAS PIPING WITH DIRT LEG, UNION AND ISOLATION VALVE. EXTEND FLUE THRU ROOF AND TERMINATE WITH MANUFACTURER APPROVED VENT CAP.
- CONNECT UNIT HEATER TO EXISTING GAS PIPING WITH DIRT LEG, UNION AND GAS VALVE. EXTEND FLUE THRU ROOF AND TERMINATE WITH APPROVED VENT CAP.
- PROVIDE DDC CONTROL OF EXISTING DAMPERS. PROVIDE NEW DAMPER ACTUATOR TO OPERATE EXISTING DAMPER. EF-2 AND EF-3 DAMPERS OPEN ON FAN STOP, CLOSE ON FAN START. CONFIRM SEQUENCE OF DAMPER OPERATION WITH THE EXISTING SYSTEM PRIOR TO DEMOLITION.
- TO DUCT HEATER AS INDICATED. COORDINATE CONTROL INTERLOCK AND SEQUENCING WITH DAMPER OPERATION AND FACTORY PROVIDED DUCT HEATER CONTROLS. ALL NEW EQUIPMENT TO BE CONNECTED TO DISTRICT BMS.

GAS FIRED UNIT HEATER SCHEDULE																
UNIT ID	SERVICE	AIRFLOW (CFM)	EAT (°F)	LAT (°F)	INPUT (MBH)	OUTPUT (MBH)	GAS PRESS. MIN.- MAX. (IN WG)	BURNER TYPE	ELECTRICAL			DISCONNECT			MANUFACTURER/ MODEL NO.	REMARKS
									FLA	VOLTS	PHASE	FURN. BY	INST. BY	TYPE		
UH-1	MECH. ROOM	629	40	95	45	37.35	5-14	FAN ASSIST	2.4	115	1	E	E	SWITCH	REZNOR MODEL UDX SIZE 045	PROVIDE WITH DOWNTURN NOZZLE KIT
DH-1	LOCKER/TOWEL SIDE A	2665	40	95	200	160	5-14	GRAVITY	0.2	115	1	E	E	SWITCH	REZNOR MODEL X SIZE 200	
DH-2	SHOWER A /OFFICIALS	950	40	95	75	60	5-14	GRAVITY	0.2	115	1	E	E	SWITCH	REZNOR MODEL X SIZE 75	
DH-3	LOCKER/TOWEL SIDE B	2665	40	95	200	160	5-14	GRAVITY	0.2	115	1	E	E	SWITCH	REZNOR MODEL X SIZE 200	
DH-4	SHOWER B/ CHEERLEADER	950	40	95	75	60	5-14	GRAVITY	0.2	115	1	E	E	SWITCH	REZNOR MODEL X SIZE 75	

NOTES:

- TWO-STAGE GAS VALVE.



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CLIENT:

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600 East Carpenter Street
Midland, MI 48640

PROJECT:

MIDLAND PUBLIC SCHOOLS

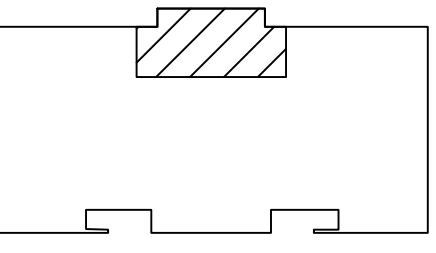
MIDLAND HIGH SCHOOL

STADIUM LOCKER / TOILET

BUILDING HVAC &

CONTROLS REPLACEMENT

1301 Eastlawn Dr.
Midland, MI 48642



KEY PLAN
NOT TO SCALE

Seal:

ISSUED FOR:

BIDS/PERMITS 01/22/24

ISSUED

DATE

DESIGNER:

JWG

ENGINEER:

NCS

SHEET TITLE:

MECHANICAL PLANS -
STADIUM LOCKER-TOILET
BUILDING

SHEET NUMBER:

M1.1SB

POWER SYMBOL LIST	
SYMBOL	DESCRIPTION
	CONDUIT DOWN
	CONDUIT UP
	DISCONNECT SWITCH – NON FUSED
	DISCONNECT SWITCH – FUSED
	DISCONNECT SWITCH – COMB. MOTOR STARTER
	ELECTRICAL PANEL
	GROUNDING ROD
	GROUND
	GROUNDING BAR
	JUNCTION BOX
	METER
	MOTOR – SINGLE PHASE
	MOTOR – THREE PHASE
	MOTOR RATED SWITCH
	POWER RECEPTACLE – SIMPLEX TYPE
	POWER RECEPTACLE – DUPLEX TYPE
	POWER RECEPTACLE – DUPLEX 6" ABOVE COUNTER
	POWER RECEPTACLE – USB/DUPLEX COMBO. DEVICE
	POWER RECEPTACLE – QUADRUPLEx TYPE
	POWER RECEPTACLE – RECESSED FLOOR TYPE
	POWER RECEPTACLE – POKE THRU TYPE
	POWER RECEPTACLE – SPECIALTY TYPE
	TIME CLOCK
	TRANSFORMER

NOTES:

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

FIRE ALARM SYMBOL LIST	
SYMBOL	DESCRIPTION
	AUDIBLE DEVICE/WALL MOUNTED
	VISUAL DEVICE/WALL MOUNTED
	COMBO AUDIBLE/VISUAL DEVICE/WALL MOUNTED
	AUDIBLE DEVICE/CEILING MOUNTED
	VISUAL DEVICE/CEILING MOUNTED
	COMBO AUDIBLE/VISUAL DEVICE/CEILING MOUNTED
	CO ALARM/SMOKE DETECTOR
	SMOKE DETECTOR
	CO ALARM
	DUCT MOUNTED SMOKE DETECTOR
	HEAT DETECTOR
	FIRE DEPARTMENT COMMUNICATION OUTLET
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	NEW COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
	NEW COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
	MANUAL PULL STATION
	FLOW SWITCH
	TAMPER SWITCH
	FIRE ALARM ANNUNCIATOR PANEL
	FIRE ALARM CONTROL PANEL
	INPUT/OUTPUT CONTROL MODULE

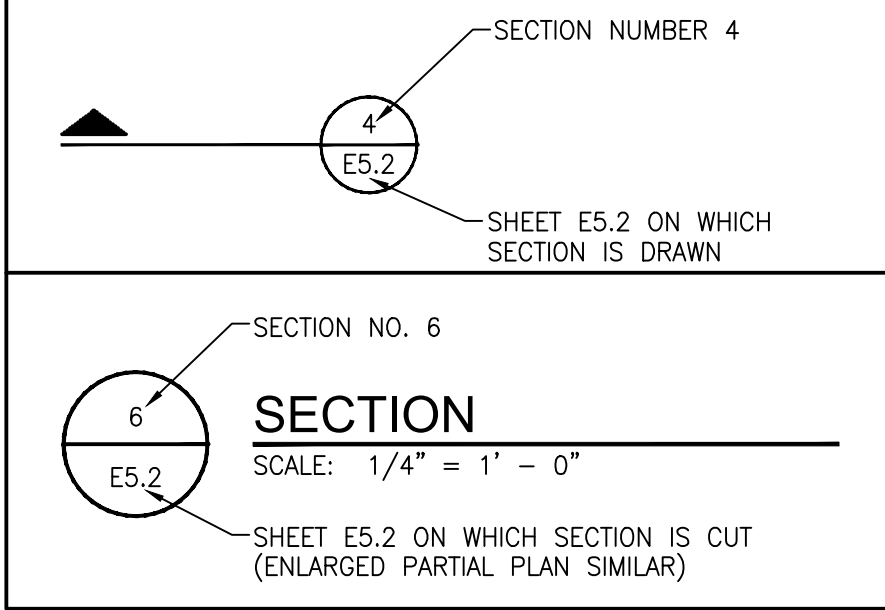
NOTES:

1. DRAWINGS INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.
2. FIRE DETECTION AND SIGNALING DEVICES ARE SHOWN FOR COORDINATION PURPOSES. FINAL SYSTEM DESIGN TO BE PERFORMED BY CONTRACTOR AND SUPPLIER FOR OFFICIAL SUBMISSION. COORDINATE ALL DEVICE QUANTITIES AND LOCATIONS WITH SUPPLIER PRIOR TO INSTALLATION. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY PATHWAYS, POWER SUPPLIES AND DEVICES PER SUPPLIER CONTRACT DOCUMENTS.

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

DRAWING INDEX	
SHT NO	DESCRIPTION
E0.0SB	ELECTRICAL GENERAL INFORMATION
E1.1SB	ELECTRICAL PLANS – STADIUM LOCKER–TOILET BUILDING

DRAWING NOTATION	
SYMBOL	DESCRIPTION
	LIGHTING FIXTURE TAG
	CONSTRUCTION KEY NOTE NUMBER 1
	DEMOLITION KEY NOTE NUMBER 1
	COPPER FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)
	ALUMINUM FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE)
EQUIPMENT	EQUIPMENT TAG
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	NEW OR MODIFIED UNDERGROUND WIRING
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	POINT OF NEW CONNECTION



APPLICABLE CODES AND REGULATIONS	
YEAR	CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN ENERGY CODE
2015	MICHIGAN RESIDENTIAL CODE
2015	MICHIGAN REHABILITATION CODE
2017	MICHIGAN ELECTRICAL CODE RULES, PART 8
2017	NATIONAL ELECTRICAL CODE (NFPA 70)
2013	NFPA 20
2013	NFPA 72
2013	NFPA 101
2013	NFPA 110
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES
1985	DETROIT ELEVATOR CODE



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Midland, MI 48642

Seal:

ISSUED FOR:

BIDS/PERMITS 01/22/24

_____	_____
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ISSUED

DATE

DESIGNER:

GBS

ENGINEER:

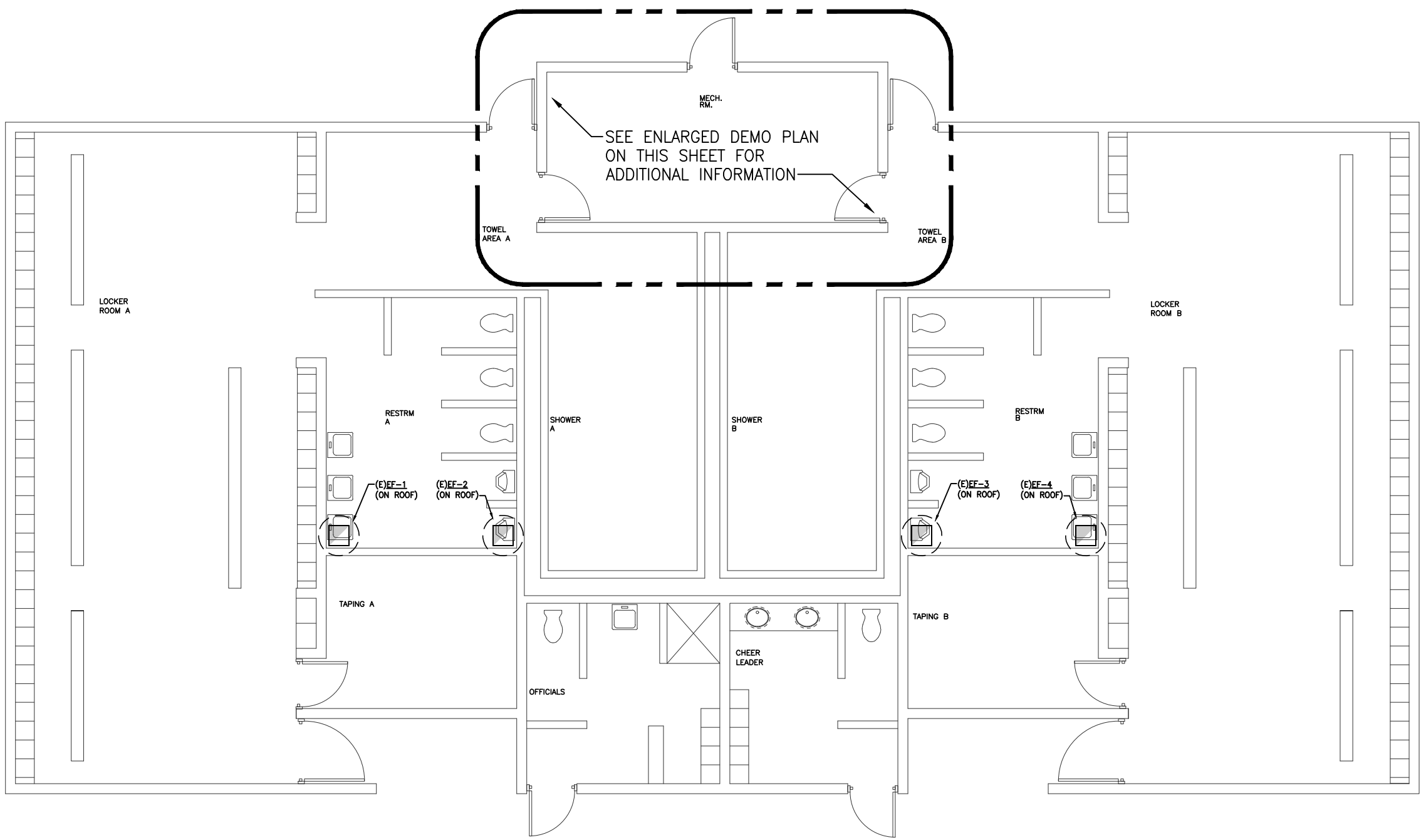
SET

SHEET TITLE:

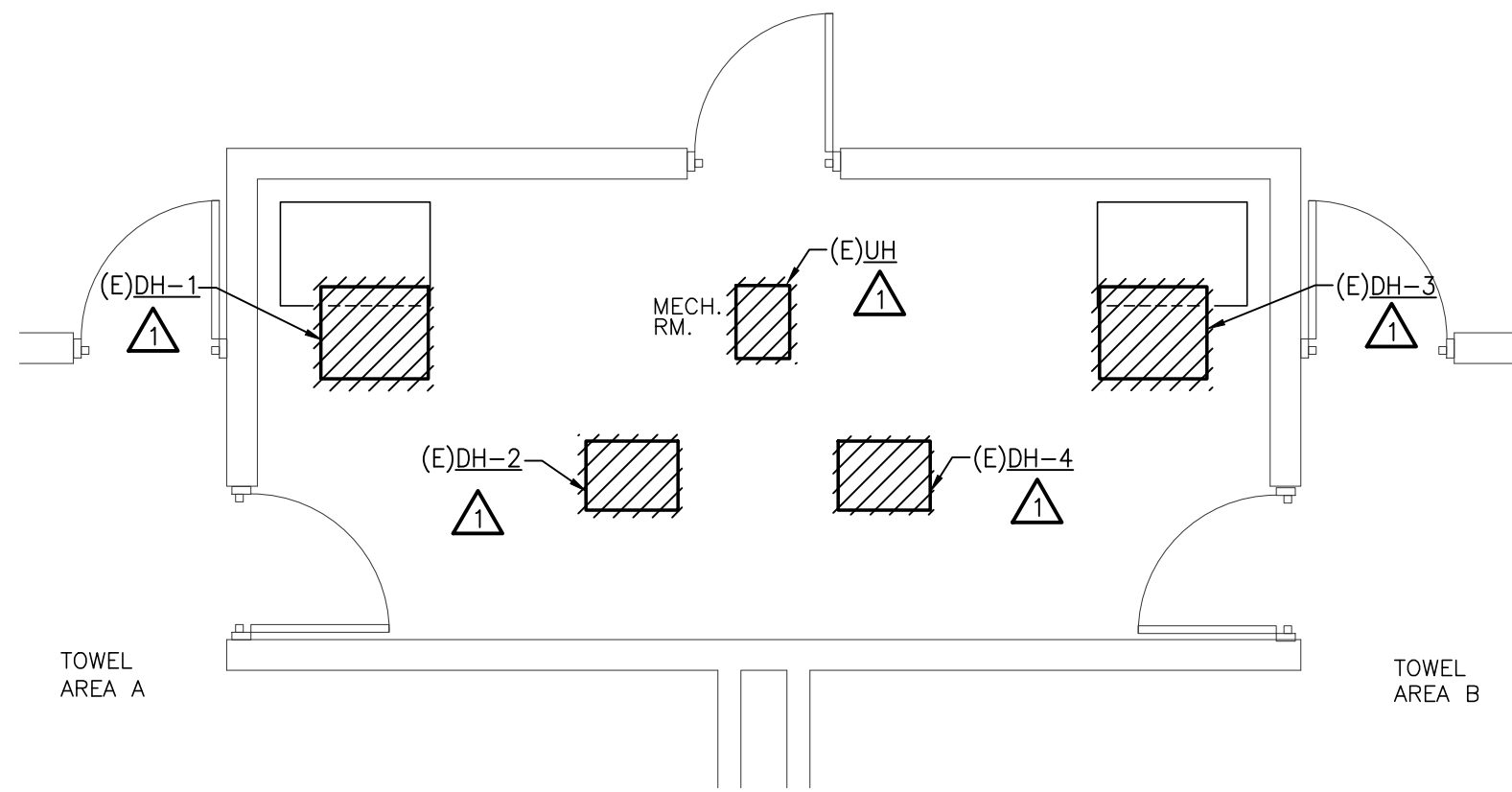
**ELECTRICAL GENERAL
INFORMATION**

SHEET NUMBER:

E0.0SB



ELECTRICAL DEMO PLAN
SCALE:1/8" = 1'-0"



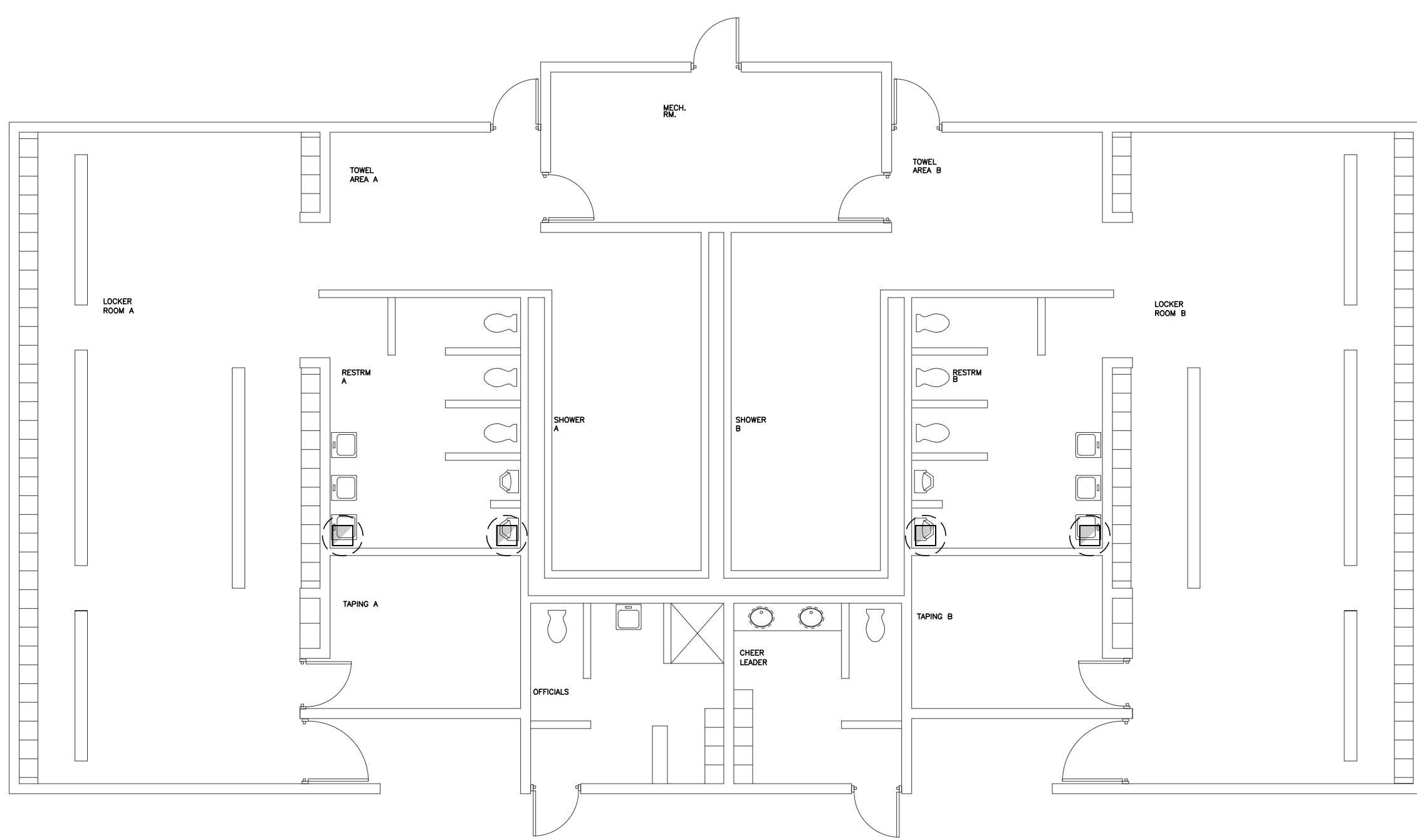
PARTIAL ENLARGED ELECTRICAL DEMO PLAN
SCALE:1/4" = 1'-0"

ELECTRICAL DEMOLITION NOTES

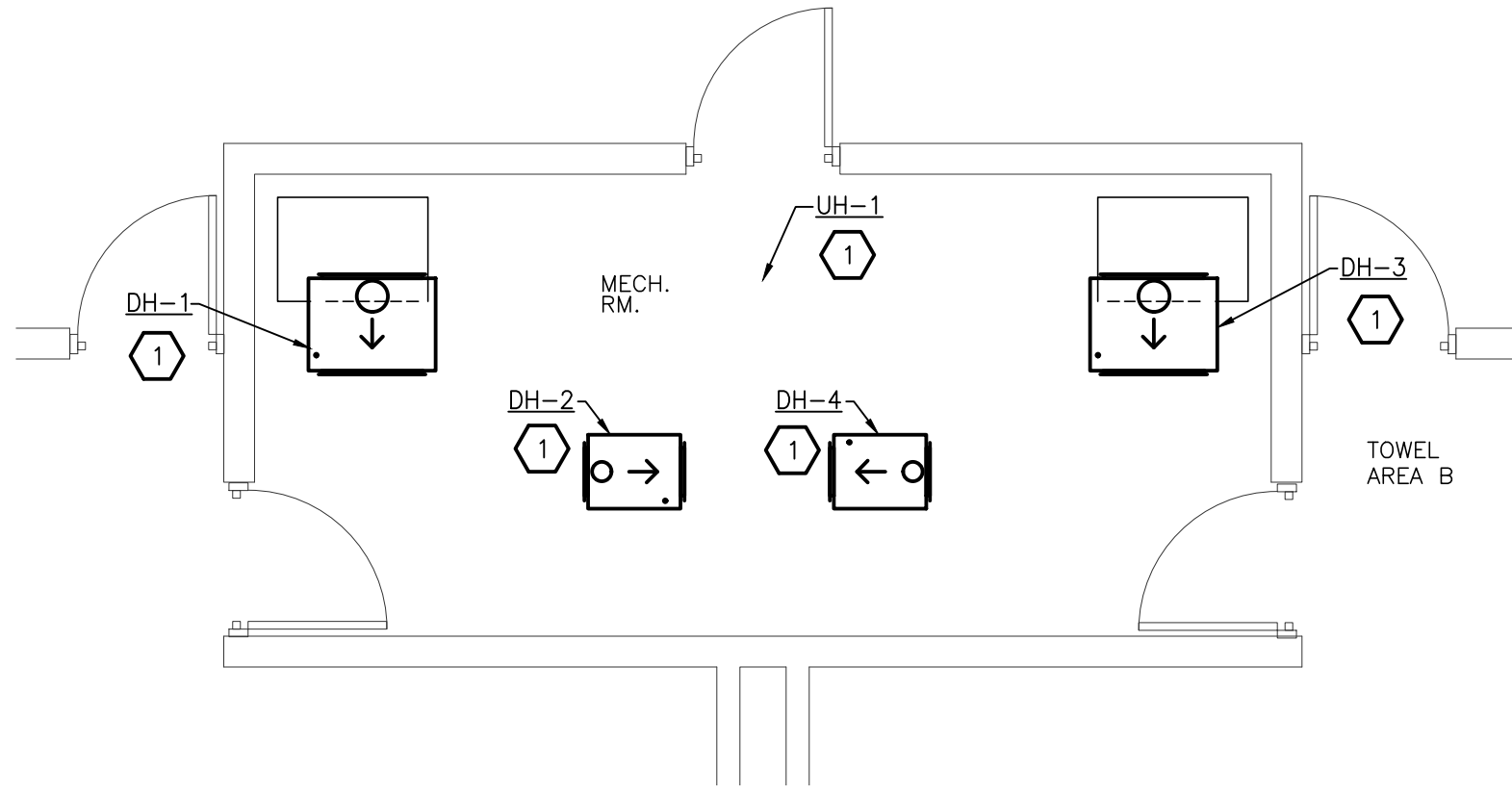
- VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- EXAMINE THE DRAWINGS OF OTHER TRADES, BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES.
- PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION OF DEVICES AND EQUIPMENT REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES.
- COORDINATE WITH NEW WORK PLANS, ONE LINE, AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- COORDINATE ANY SHUTDOWN OF EXISTING SERVICES AND EQUIPMENT REMAINING IN USE WITH OWNERS' REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COST TO PERFORM THIS WORK DURING EVENING AND WEEKENDS. INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER.
- REMOVE ALL CONDUIT AND WIRE BACK TO NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
- WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM DEVICES TO REMAIN; EXTEND CONDUIT AND WIRE AS REQUIRED TO MAINTAIN ELECTRICAL SERVICE.
- PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED AND WALL REMAINS INTACT. MARK ALL UNUSED CIRCUIT BREAKERS AS "SPARE".
- CONTRACTOR TO TAG ALL CIRCUITS AT BOTH ENDS AFFECTED BY THIS SCOPE OF WORK.
- CONTRACTOR SHALL PROVIDE UPDATED, TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS SCOPE OF WORK.
- CONTRACTOR SHALL VERIFY ALL UNDERGROUND AND IN-SLAB UTILITIES LOCATIONS PRIOR TO SAW CUTTING OR PENETRATING ANY FLOOR SLABS. CONTRACTOR SHALL REPAIR ALL UTILITIES DAMAGED BY SAW CUTTING.

DEMOLITION KEYED NOTES

- MECHANICAL EQUIPMENT TO REMOVED AND REPLACED WITH NEW. RETAIN CIRCUITING FOR CONNECTION TO NEW MECHANICAL EQUIPMENT.



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



PARTIAL ENLARGED ELECTRICAL PLAN
SCALE:1/4" = 1'-0"

POWER GENERAL NOTES

- ALL RECEPTACLES ON EXTERIOR, IN KITCHEN, IN CONCESSION, IN LABORATORY, AND WITHIN 6'-0" OF SINK OR OTHER WATER SUPPLY SHALL BE READILY ACCESSIBLE GFCI TYPE RECEPTACLE.
- ALL CONDUITS SERVING 120 VOLTS OR GREATER SHALL INCLUDE A GROUND WIRE.
- ALL CONDUITS SHALL BE ROUTED CONCEALED UNLESS NOTED OTHERWISE.
- ALL 120 VOLT CIRCUITS SHALL UTILIZE A SEPARATE NEUTRAL.

KEYED NOTES

- RECONNECT EXISTING CIRCUIT FROM DEMOLITION TO NEW EQUIPMENT.



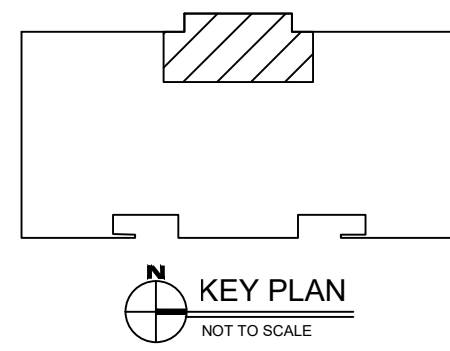
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SES Project #23 0939 01

CLIENT:

MIDLAND PUBLIC SCHOOLS
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PROJECT:

**MIDLAND PUBLIC SCHOOLS
MIDLAND HIGH SCHOOL
STADIUM LOCKER / TOILET
BUILDING HVAC &
CONTROLS REPLACEMENT**
1301 Eastlawn Dr.
Midland, MI 48642



Seal:

ISSUED FOR:
BIDS/PERMITS 01/22/24

ISSUED DATE

DESIGNER: GBS
ENGINEER: SET

SHEET TITLE:

**ELECTRICAL PLANS -
STADIUM LOCKER-TOILET
BUILDING**

SHEET NUMBER:

E1.1SB