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BANGOR TOWNSHIP SCHOOLS

MECHANICAL UPGRADES

3359 E. MIDLAND ROAD
BAY CITY, MICHIGAN

CENTRAL - SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
STRUCTURAL		
C-S0.0	STRUCTURAL GENERAL NOTES	X
C-S3.1	FRAMING PLAN - UNIT A	X
C-S6.0	FRAMING SECTIONS AND DETAILS	X
MECHANICAL		
C-M1.0	UNIT 'A' MECHANICAL DEMOLITION PLAN	X
C-M3.0	UNIT 'A' OVERHEAD MECHANICAL PLAN	X
C-M3.1	UNIT 'B' OVERHEAD MECHANICAL PLAN	X
C-M3.2	UNIT 'C' OVERHEAD MECHANICAL PLAN	X
C-M3.3	BOILER ROOM PLAN - ENLARGED	X
C-M8.0	SCHEDULES, DETAILS, AND NOTES	X
ELECTRICAL		
C-E0.0	GENERAL NOTES	X
C-E1.0	OVERALL DEMOLITION PLAN	X
C-E4.0	OVERALL POWER PLAN	X
C-E4.1	BOILER ROOM POWER & DEMOLITION PLAN	X
C-E6.0	ONE-LINE DIAGRAM	X
C-E7.0	PANEL SCHEDULES	X

CHRISTA McAULIFFE - SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
M-M1.0	OVERALL MECHANICAL PLAN - DEMOLITION	X
M-M3.0	UNIT 'A' OVERHEAD MECHANICAL PLAN	X
M-M3.1	UNIT 'B' OVERHEAD MECHANICAL PLAN	X
M-M3.2	UNIT 'C' OVERHEAD MECHANICAL PLAN	X
M-M3.3	UNIT 'D' OVERHEAD MECHANICAL PLAN	X
M-M3.4	ENLARGED BOILER ROOM PLANS	X
M-M8.0	MECHANICAL SCHEDULES	X
M-M8.1	MECHANICAL SCHEDULES	X
ELECTRICAL		
M-E0.0	GENERAL NOTES	X
M-E1.0	DEMOLITION DRAWINGS	X
M-E4.0	UNIT 'A' POWER PLAN	X
M-E4.1	UNIT 'B' POWER PLAN	X
M-E4.2	UNIT 'C' POWER PLAN	X
M-E4.3	UNIT 'D' POWER PLAN	X
M-E4.4	BOILER ROOM DEMOLITION & POWER PLAN	X
M-E6.0	ONE-LINE DIAGRAM	X
M-E7.0	PANEL SCHEDULES	X
M-E7.1	PANEL SCHEDULES	X

EDISON - SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
E-M1.0	OVERHEAD MECHANICAL PLAN - DEMO	X
E-M3.0	OVERHEAD MECHANICAL PLAN	X
E-M8.0	SCHEDULES & DETAILS	X
ELECTRICAL		
E-E0.0	GENERAL NOTES	X
E-E1.0	DEMOLITION PLAN	X
E-E4.0	POWER PLAN	X
E-E6.0	ONE-LINE DIAGRAM	X

JOHN GLENN - SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
STRUCTURAL		
G-S0.0	STRUCTURAL GENERAL NOTES	X
G-S3.1	ROOF FRAMING PLAN	X
G-S4.0	FRAMING ELEVATIONS	X
MECHANICAL		
G-M1.0	OVERHEAD MECHANICAL PLAN - DEMOLITION	X
G-M1.1	OVERHEAD MECHANICAL PLAN - DEMOLITION	X
G-M3.0	UNIT 'A' OVERHEAD MECHANICAL PLAN	X
G-M3.1	UNIT 'B' & 'C' OVERHEAD MECHANICAL PLAN	X
G-M3.2	UNIT 'D' & 'E' OVERHEAD MECHANICAL PLAN	X
G-M3.3	UNIT 'F' OVERHEAD MECHANICAL PLAN	X
G-M3.4	UNIT 'G' & 'H' OVERHEAD MECHANICAL PLAN	X
G-M3.5	UNIT 'J' OVERHEAD MECHANICAL PLAN	X
G-M3.6	UNIT 'K' WEST OVERHEAD MECHANICAL PLAN	X
G-M3.7	UNIT 'K' EAST OVERHEAD MECHANICAL PLAN	X
G-M3.8	UNIT 'A' AUDITORIUM OVERHEAD MECHANICAL	X
G-M3.9	ENLARGED BOILER ROOM PLANS	X
G-M8.0	MECHANICAL SCHEDULES AND NOTES	X
G-M8.1	MECHANICAL DETAILS	X
G-M8.2	PIPING SCHEMATICS	X
G-M8.3	PIPING SCHEMATICS	X
ELECTRICAL		
G-E0.0	GENERAL NOTES	X
G-E1.0	DEMOLITION PLAN UNITS A - H	X
G-E1.1	DEMOLITION PLAN UNITS J & K	X
G-E4.0	UNIT 'A' POWER PLAN	X
G-E4.1	UNIT 'B/C' POWER PLAN	X
G-E4.2	UNIT 'D/E' POWER PLAN	X
G-E4.3	UNIT 'F' POWER PLAN	X
G-E4.4	UNIT 'G/H' POWER PLAN	X
G-E4.5	UNIT 'J' POWER PLAN	X
G-E4.6	UNIT K (WEST) POWER PLAN	X
G-E4.7	UNIT K (EAST) POWER PLAN	X
G-E4.8	UNIT L' (MEZZANINE) POWER PLAN	X
G-E4.9	BOILER ROOM DEMOLITION & POWER PLAN	X
G-E6.0	ONE-LINE DIAGRAM	X
G-E7.0	PANEL SCHEDULES	X
G-E7.1	PANEL SCHEDULES	X
G-E7.3	PANEL SCHEDULES	X

LINCOLN - SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
L-M1.0	UNIT 'A' MECHANICAL PLAN - DEMO	X
L-M1.1	UNIT 'B' MECHANICAL PLAN - DEMO	X
L-M3.0	UNIT 'A' MECHANICAL PLAN	X
L-M3.1	UNIT 'B' MECHANICAL PLAN	X
L-M3.2	BOILER ROOM MECHANICAL PLAN	X
L-M8.0	SCHEDULES AND NOTES	X
ELECTRICAL		
L-E0.0	GENERAL NOTES	X
L-E1.0	UNIT 'A' DEMOLITION PLAN	X
L-E1.1	UNIT 'B' DEMOLITION PLAN	X
L-E4.0	UNIT 'A' POWER PLAN	X
L-E4.1	UNIT 'B' POWER PLAN	X
L-E4.2	BOILER ROOM POWER & DEMOLITION PLAN	X
L-E6.0	ONE-LINE DIAGRAM	X

NORTH - SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
N-M1.0	OVERHEAD MECHANICAL DEMOLITION PLAN	X
N-M3.0	OVERHEAD MECHANICAL PLAN	X
N-M8.0	SCHEDULES & DETAILS	X
ELECTRICAL		
N-E0.0	GENERAL NOTES	X
N-E1.0	DEMOLITION DRAWINGS	X
N-E4.0	OVERALL POWER PLAN	X
N-E6.0	ONE-LINE DIAGRAM	X

WEST ELEMENTARY - SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
W-M3.0	UNIT 'A' OVERHEAD MECHANICAL PLAN	X
W-M3.1	UNIT 'B' OVERHEAD MECHANICAL PLAN	X
W-M3.2	BOILER ROOM MECHANICAL PLAN	X
W-M3.3	SCHEDULES, DETAILS, AND NOTES	X
ELECTRICAL		
W-E0.0	GENERAL NOTES	X
W-E4.0	UNIT 'B' POWER PLAN	X
W-E4.1	BOILER ROOM POWER & DEMOLITION PLAN	X
W-E6.0	ONE-LINE DIAGRAM	X

PROJECT INFORMATION

BUILDING CODE COMPLIANCE
- 2015 MICHIGAN BUILDING CODE (MBC)
- 2018 MICHIGAN PLUMBING CODE (MPC)
- 2015 MICHIGAN MECHANICAL CODE (MMC)
- 2017 NATIONAL ELECTRICAL CODE (NEC)
- 2018 INTERNATIONAL FIRE CODE (IFC)
- 2012 NFPA 101 LIFE SAFETY CODE (LSC)

USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP E - EDUCATIONAL GROUP

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- ALLOWED - 2
- ACTUAL - 1

BUILDING AREA [TBL 506.2]
- ALLOWABLE - 14,400 SFT/ FLR
- ACTUAL - REF. INDIVIDUAL COVER SHEET FOR SFT

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB, II(000)

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- NO SPRINKLER SYSTEM

OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- NO CHANGE

CORRIDORS [SEC 1020, TBL 1020.1]
- 1HR RATING

CONTACT INFORMATION

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CODE AUTHORITY:
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LANSING, MI 48909
(517) 241-9328

MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF FIRE SERVICES/PLAN REVIEW DIVISION
PO BOX 30700
LANSING, MI 48909
(517) 241-8847

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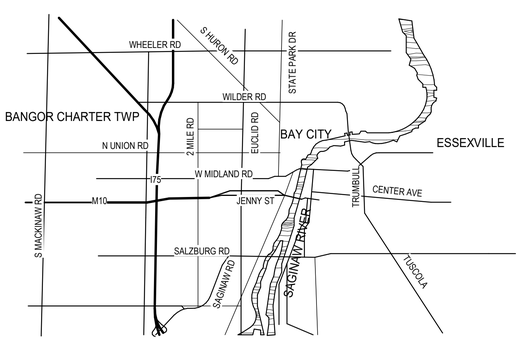
LOCATION MAP



WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

COVER SHEET

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: T. MIETZ
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

SHEET
CS

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BANGOR TOWNSHIP SCHOOLS

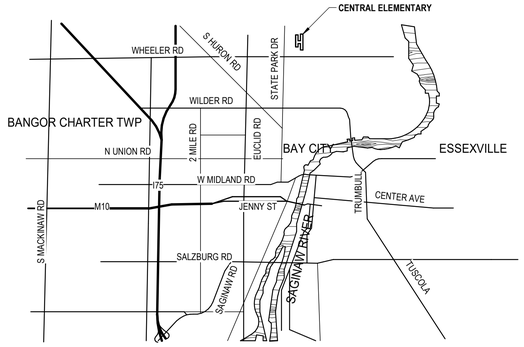
CENTRAL ELEMENTARY
MECHANICAL UPGRADES

208 STATE PARK DRIVE
BAY CITY, MICHIGAN

SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
STRUCTURAL		
C-S0.0	STRUCTURAL GENERAL NOTES	X
C-S3.1	FRAMING PLAN - UNIT A	X
C-S6.0	FRAMING SECTIONS AND DETAILS	X
MECHANICAL		
C-M1.0	UNIT 'A' MECHANICAL DEMOLITION PLAN	X
C-M3.0	UNIT 'A' OVERHEAD MECHANICAL PLAN	X
C-M3.1	UNIT 'B' OVERHEAD MECHANICAL PLAN	X
C-M3.2	UNIT 'C' OVERHEAD MECHANICAL PLAN	X
C-M3.3	BOILER ROOM PLAN - ENLARGED	X
C-M8.0	SCHEDULES, DETAILS, AND NOTES	X
ELECTRICAL		
C-E0.0	GENERAL NOTES	X
C-E1.0	OVERALL DEMOLITION PLAN	X
C-E4.0	OVERALL POWER PLAN	X
C-E4.1	BOILER ROOM POWER & DEMOLITION PLAN	X
C-E6.0	ONE-LINE DIAGRAM	X
C-E7.0	PANEL SCHEDULES	X

LOCATION MAP



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USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP E - EDUCATIONAL GROUP

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- ALLOWED - 2
- ACTUAL - 1

BUILDING AREA [TBL 506.2]
- ALLOWABLE - 14,400 SFT/ FLR
- ACTUAL - 39,600 SFT

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB, II(000)

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- NO SPRINKLER SYSTEM

OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- NO CHANGE

CORRIDORS [SEC 1020, TBL 1020.1]
- 1HR RATING

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
CENTRAL ELEMENTARY
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

COVER SHEET

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: T. MIETZ
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

SHEET
CS

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STRUCTURAL GENERAL NOTES

GENERAL

1. THIS BUILDING RENOVATION HAS BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MICHIGAN BUILDING CODE, 2015 EDITION.
2. THE OWNER WILL EMPLOY QUALIFIED SPECIAL INSPECTORS TO PERFORM INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE MICHIGAN BUILDING CODE, EXCEPT AS NOTED BELOW. SPECIAL INSPECTIONS WILL BE PERFORMED FOR THE FOLLOWING:
   A. STEEL.
      I. STEEL SPECIAL INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH AISC 360.
3. WHEN "PROFESSIONAL ENGINEER" IS REFERRED TO IN THE FOLLOWING NOTES, IT DENOTES A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN, QUALIFIED TO PERFORM THE WORK.
4. THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS, THE OWNERS REQUIREMENTS FOR ACCESS TO THE SITE AND CONTINUED OPERATIONS DURING CONSTRUCTION.
5. THE PLAN, DETAIL DIMENSIONS & ELEVATIONS RELATIVE TO THE EXISTING STRUCTURE HAVE BEEN TAKEN FROM AVAILABLE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY SUCH DIMENSIONS, ELEVATIONS & DETAILS AS NECESSARY AND MAKE APPROVED ADJUSTMENTS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIAL.
6. THE CONTRACTOR SHALL SUBMIT STRUCTURAL STEEL AND METAL DECK SHOP DRAWINGS PRIOR TO FABRICATION. ALLOW (2) WEEKS FOR ENGINEER REVIEW.
7. THE STRUCTURE SHALL BE CONSIDERED TO BE IN AN UNSTABLE CONDITION UNTIL ALL FLOOR, WALL AND ROOF STRUCTURES ARE COMPLETED. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR STABILITY AND TO RESIST LATERAL LOADS DURING ERECTION.
8. ALL NON LOAD BEARING WALLS, EXCEPT INDICATED SHEAR WALLS, SHALL BE CONSTRUCTED TO ALLOW FOR VERTICAL DEFLECTION OF THE STRUCTURE ABOVE.

DIVISION 5 - STRUCTURAL STEEL

1. THE LATEST REVISION OF THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING, FABRICATION AND ERECTION OF ALL STRUCTURAL STEEL.
   A. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) AISC 360, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
   B. AISC 303, CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES.
2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM MATERIAL SPECIFICATIONS:
   A. W AND WT SHAPES: ASTM A992, GRADE 50 (Fy = 50 KSI).
   B. MISCELLANEOUS SHAPES AND PLATES: ASTM A36 (Fy = 36 KSI).
   C. PIPE: ASTM A53, GRADE B, TYPE E OR S (Fy = 35 KSI).
   D. HOLLOW STRUCTURAL SECTIONS: ASTM A500, GRADE B (Fy = 46 KSI).
   E. ALL COLUMN ANCHOR RODS SHALL BE ASTM F1554 (Fy = 36 KSI).
3. ALL WELDING SHALL BE PERFORMED USING THE ELECTRIC ARC METHOD IN ACCORDANCE WITH THE LATEST REVISION OF THE AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE". E70XX ELECTRODES CONFORMING TO AWS A5.1 OR A5.5 SHALL BE USED FOR SHIELDED METAL ARC METHOD & FX7-ECXX FLUX - ELECTRODE COMBINATION CONFORMING TO AWS A5.17 FOR SUBMERGED ARC METHOD.
4. ALL BOLTS SHALL BE 3/4" DIAMETER ASTM F3125 GRADE A325 TYPE N BOLTS. ALL BOLTED CONNECTIONS SHALL BE SNUG-TIGHT BEARING TYPE BOLTS UNLESS NOTED OTHERWISE.
5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING SIZES, DESIGN VALUES, MATERIALS, DIMENSIONS AND CONNECTIONS.
6. ALL CONNECTIONS NOT SPECIFICALLY DETAILED, SHALL BE DESIGNED AND DETAILED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER. DETAILING SHALL BE PERFORMED USING RATIONAL ENGINEERING DESIGN AND STANDARD PRACTICE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE GENERAL DETAILS SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND DO NOT INDICATE THE REQUIRED NUMBER OF BOLTS OR WELD SIZES, UNLESS SPECIFICALLY NOTED.
7. ALL BEAM CONNECTIONS ARE TO CONFORM TO AISC STANDARD TWO ANGLE WEB CONNECTIONS CAPABLE OF SUPPORTING 66% OF THE TOTAL UNIFORM LOAD CAPACITY OF THE BEAM OR FOR LOADS INDICATED ON DRAWING. NO CONNECTION SHALL CONSIST OF LESS THAN TWO 3/4" DIAMETER BOLTS OR A WELD DEVELOPING LESS THAN 10 KIPS.
8. ALL FIELD CONNECTIONS SHALL BE BOLTED UNLESS NOTED OTHERWISE. FIELD WELDING IS NOT ALLOWED EXCEPT WHERE SPECIFICALLY INDICATED OR APPROVED.
9. ALL SHOP AND FIELD WELDS SHALL BE VISUALLY INSPECTED PER AWS D1.1. ALL DEFICIENT OR NON CONFORMING ITEMS SHALL BE REPORTED TO THE ENGINEER WHO WILL DETERMINE THE CORRECTIVE ACTION REQUIRED.
10. ALL BEAMS SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. PROVIDE CAMBERS AS INDICATED ON THE DRAWINGS.
11. PRIME PAINT ALL STRUCTURAL STEEL WITH FABRICATOR'S STANDARD LEAD AND CHROMATE- FREE, NONASPHALTIC, RUST-INHIBITING PRIMER COMPLYING WITH MASTER PAINTER INSTITUTE (MPI) #79. APPLY PRIMER ACCORDING TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND AT RATE RECOMMENDED BY SSPC TO PROVIDE A MINIMUM DRY FILM THICKNESS OF 1.5 MILS. USE PRIMING METHODS THAT RESULT IN FULL COVERAGE OF JOINTS, CORNERS, EDGES, AND EXPOSED SURFACES. TOUCH-UP DAMAGED OR MISSING PAINT AFTER STEEL ERECTION IS COMPLETE. OMIT PAINT AT: HOLES FOR SLIP CRITICAL CONNECTIONS, AT STEEL TO BE FIRE PROOFED, AT STEEL ENCASED IN CONCRETE AND ON THE TOP FLANGE OF STEEL BEAMS WITH SHEAR CONNECTIONS.
12. PROVIDE AND HAVE IN PLACE ADEQUATE LATERAL BRACING AND VERTICAL SUPPORTS FOR THE SAFE ERECTION AND TRUE ALIGNMENT OF THE STRUCTURAL STEEL. THIS CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE SAFE ERECTION AND TEMPORARY BRACING OF STRUCTURAL STEEL.
13. VERIFY NUMBER AND SIZE OF OPENINGS IN ROOF, WALLS AND FLOOR WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS. SEE DETAILS, AND SPECIFICATIONS, FOR STRUCTURAL REQUIREMENTS. VERIFY ALL INFORMATION WITH THE APPROPRIATE CONTRACTOR.
14. ALL DIMENSIONS RELATED TO STRUCTURAL STEEL USED TO SUPPORT EQUIPMENT OR FRAME OPENINGS SHALL BE VERIFIED WITH CERTIFIED AND APPROVED SHOP DRAWINGS OF PURCHASED EQUIPMENT PRIOR TO DETAILING AND FABRICATION.
15. ALL EDGES OF METAL DECK SHALL BE SUPPORTED AT A CHANGE IN DECK SPAN WHETHER SHOWN ON DRAWINGS OR NOT. PROVIDE TUBE STEEL OR A DOUBLE ANGLE BETWEEN JOIST OR STRUCTURAL STEEL AND METAL DECK.
16. ALL FREE EDGES OF METAL DECK SHALL BE SUPPORTED WITH AN EDGE ANGLE L3x3x1/4 OR OTHER SUITABLE SUPPORT. THIS SHALL BE PROVIDED WHETHER SHOWN ON DRAWINGS OR NOT.

DIVISION 5 - STEEL DECK

1. THE LATEST REVISION OF THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING, MANUFACTURING AND ERECTION OF STEEL DECK.
   A. STEEL DECK INSTITUTE (SDI) MOC3, MANUAL OF CONSTRUCTION WITH STEEL DECK.
   B. SDI FDDM, FLOOR DECK DESIGN MANUAL.
   C. SDI RDDM, ROOF DECK DESIGN MANUAL.
2. ALL ROOF DECK SHALL BE AS FOLLOWS:
   A. ALL ROOF DECK SHALL BE 3" DEEP 20 GA WIDE RIB GALVANIZED DECK. 3N BY VULCRAFT OR AN APPROVED EQUAL.
   B. FASTEN ROOF DECK TO ALL SUPPORTS AND AT PERIMETER WITH 5/8" DIAMETER PUDDLE WELDS. B. 6" O.C. AT SUPPORTS AND 6" O.C. AT PERIMETER. FASTEN SIDE LAPS WITH #10 TEK SCREWS, 2 MIN PER SPAN.
3. PROVIDE ADDITIONAL SUPPORT FRAMING AT OPENINGS IN ROOF AND FLOOR PER TYPICAL DETAILS. COORDINATE LOCATIONS WITH APPROPRIATE TRADES.
4. THE CONTRACTOR SHALL FURNISH ALL ACCESSORIES INCLUDING CLOSURES, "Z" CLOSURES, COLUMN CLOSURES, SCREED ANGLES, GIRDER FILLERS, CANT STRIP, FILLER SHEET AND REINFORCING CHANNEL, AS REQUIRED.
5. ALL DECKING SHALL BE WELDED TO STRUCTURAL STEEL BY QUALIFIED WELDERS USING PRE-QUALIFIED PROCEDURES. THE ERECTOR SHALL ESTABLISH A WELDING PROCEDURE FOR THE PLUG WELD OF THE STEEL DECKING TO THE STRUCTURAL STEEL FOR THE PARTICULAR GAGE USED. PRIOR TO THE START OF ERECTION OF THE STEEL DECK, EACH WELDER SHALL BE QUALIFIED USING THIS PROCEDURE AS WITNESSED BY THE OWNER'S TESTING AGENCY.
6. NO LOADS SHALL BE PERMITTED TO BE HUNG FROM ANY ROOF DECK. ALL HANGERS FOR CEILINGS, DUCTWORK, ELECTRICAL CONDUIT, PIPING, ETC. SHALL BE HUNG DIRECTLY FROM STRUCTURAL STEEL WORK OR SUPPLEMENTARY MEMBERS.

DESIGN CRITERIA

MICHIGAN BUILDING CODE 2015 (ASCE 7-10)
RISK CATEGORY III

ROOF DEAD LOADS (ASSUMED)	
• ROOFING & INSULATION	10 PSF
• STEEL	4 PSF
• ROOF DECK	3 PSF
• MISCELLANEOUS	8 PSF
TOTAL	**25 PSF**
ROOF LIVE LOADS	
• MINIMUM LOAD	20 PSF
SNOW LOADS	
• IMPORTANCE FACTOR	I_s = 1.1
• GROUND SNOW LOAD	P_g = 35 PSF
• SNOW EXPOSURE FACTOR	C_e = 1.0
• THERMAL FACTOR	C_t = 1.0
• FLAT USE SNOW	P_f = 27 PSF (TYPICAL ROOF)
• SNOW DRIFT PER ASCE 7	
WIND LOADS	
• BASIC WIND SPEED	120 MPH (3 SEC GUST)
• EXPOSURE CATEGORY	B
• COMPONENTS AND CLADDING PER ASCE 7	
SEISMIC DESIGN DATA	
• SITE CLASS	D
• RESPONSE COEFFICIENTS	SD_S = 0.071 SD_1 = 0.062
• SEISMIC DESIGN CATEGORY	A

ABBREVIATIONS

@	AT
A.B.	ANCHOR BOLT
ADD'L	ADDITIONAL
A.F.F.	ABOVE FINISHED FLOOR
B.C.	BOTTOM CHORD
B.O.	BOTTOM OF
B.O.D.	BOTTOM OF DECK
B.O.F.	BOTTOM OF FOOTING
B.O.S.	BOTTOM OF STEEL
B.O.T.	BOTTOM OF TRUSS
B.S.	BOTH SIDES
BM	BEAM
BOTT	BOTTOM
BRG	BEARING
C.L.	CENTER LINE
CJ	CONTROL JOINT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CSJ	CONSTRUCTION JOINT
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DWG	DRAWING
EA	EACH
ELEV	ELEVATION
EQ	EQUAL
EX	EXISTING
F.S.	FAR SIDE
F.V.	FIELD VERIFY
FIN	FINISH
FLG	FLANGE
FLR	FLOOR
FDN	FOUNDATION
FT	FOOT
FTG	FOOTING
GA	GAGE
G.L.	GIRT LINE
H.P.	HIGH POINT
HORIZ	HORIZONTAL
k	KIPS
LG	LONG
L.P.	LOW POINT
LL	LIVE LOAD
L.L.H.	LONG LEG HORIZONTAL
L.L.V.	LONG LEG VERTICAL
LN	LINE
MAX	MAXIMUM
MTL	METAL
MIN	MINIMUM
MISC	MISCELLANEOUS
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
NO	NUMBER
O.C.	ON CENTER
OPP	OPPOSITE
PC	PIECE
PL	PLATE
PLCS	PLACES
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
REF	REFERENCE
REINF	RINFORC-ED, -ING, EMENT
REQ'D	REQUIRED
SCHED	SCHEDULE
SECT	SECTION
SIM	SIMILAR
SPA	SPACES
STD	STANDARD
STL	STEEL
T.O.	TOP OF
T.O.C.	TOP OF CONCRETE
T.O.F.	TOP OF FOOTING
T.O.M.	TOP OF MASONRY
T.O.S.	TOP OF STEEL
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W.P.	WORK POINT
W/	WITH
WWR	WELDED WIRE REINFORCEMENT

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BANGOR SCHOOLS
MECHANICAL UPGRADES
CENTRAL
BAY CITY, MICHIGAN

STRUCTURAL GENERAL NOTES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03-30-23

CHCK'D BY: E. MANNOR
DES'D BY: E. MANNOR
DRAWN BY: E. FREDERICK
PROJ #: 21-1719-0435

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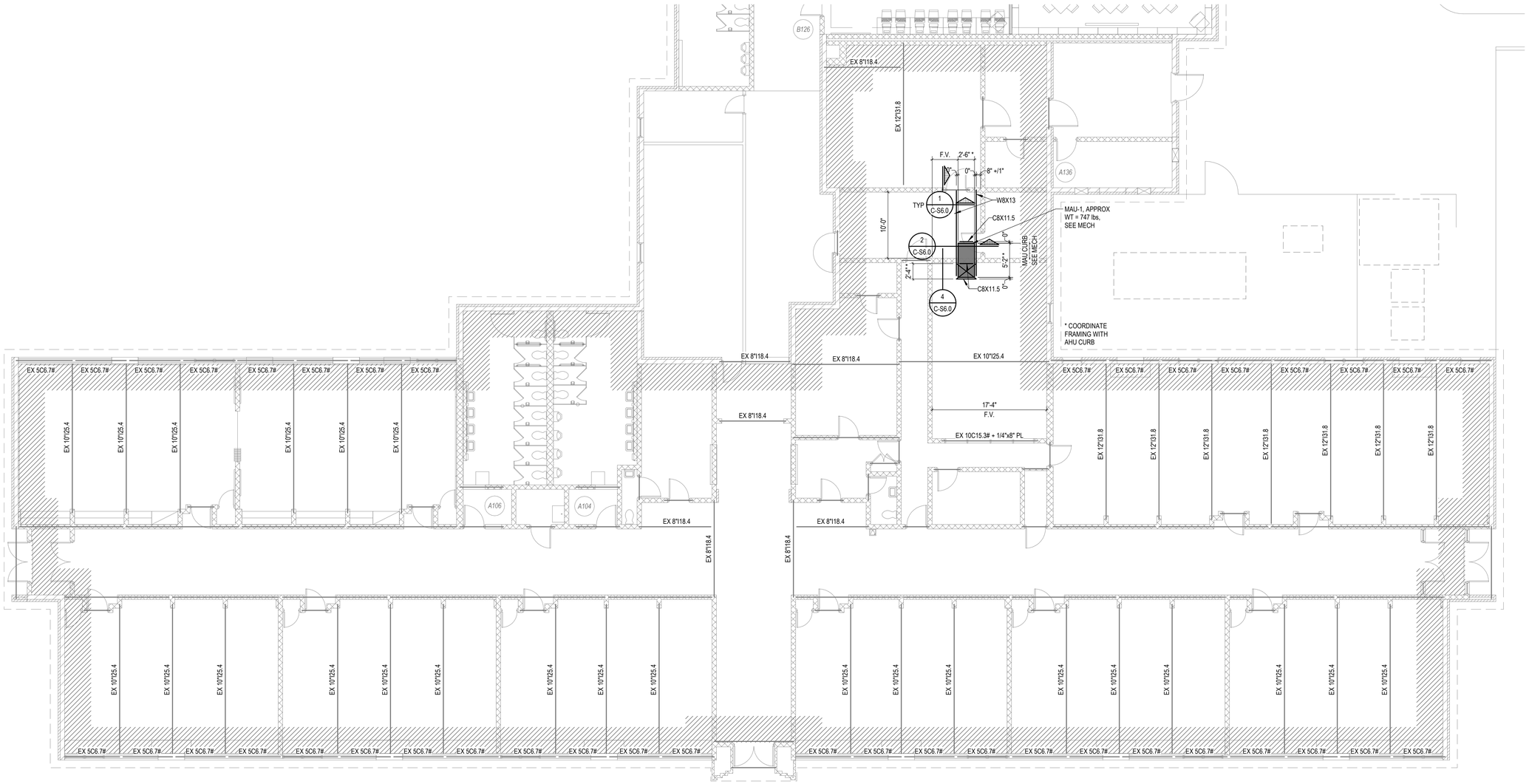
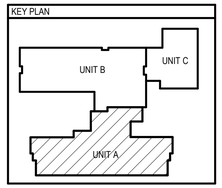


ROOF FRAMING PLAN

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

NOTE: UNIT A ROOF DECK IS APPROX 2 1/2" THK GYPSUM

KEY PLAN



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MECHANICAL UPGRADES
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FRAMING PLAN - UNIT A

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03-30-23

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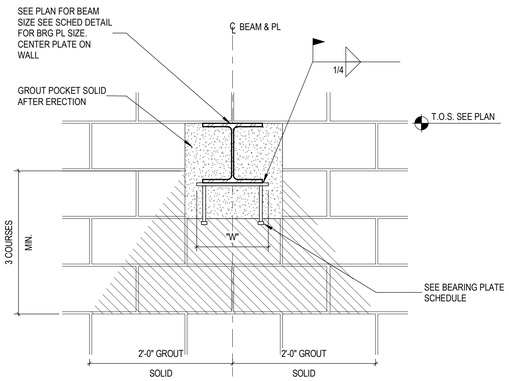
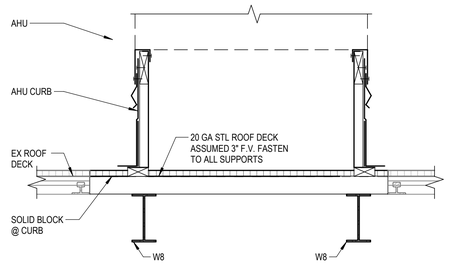
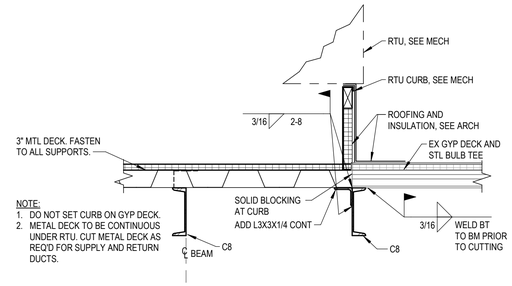


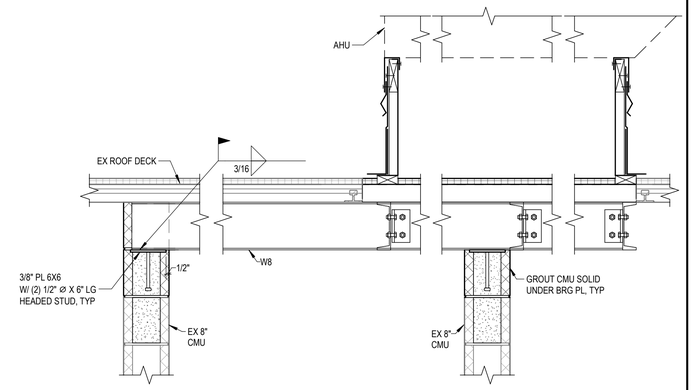
1 C-S6.0 TYP BEAM PERPENDICULAR TO WALL
SCALE: 1" = 1'-0"



2 C-S6.0 DETAIL
SCALE: 1" = 1'-0"
NOTE:
FOR USE IF EX ROOF DECK IS BULB TEE W/ GYPSUM OR, TECTUM OR SIMILAR F.V. BEFORE FABRICATING ANY STEEL



3 C-S6.0 DETAIL
SCALE: 1" = 1'-0"
NOTE:
FOR USE IF EX ROOF DECK IS BULB TEE W/ GYPSUM OR, TECTUM OR SIMILAR F.V. BEFORE FABRICATING ANY STEEL



4 C-S6.0 DETAIL
SCALE: 1" = 1'-0"
NOTE:
EX ROOF CONST NOT KNOWN F.V. PRIOR TO FABRICATING STEEL FRAMING TO SUPPORT NEW AHU

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CENTRAL
BAY CITY, MICHIGAN

FRAMING SECTIONS AND DETAILS

NO.	STATUS / REVISIONS	DATE
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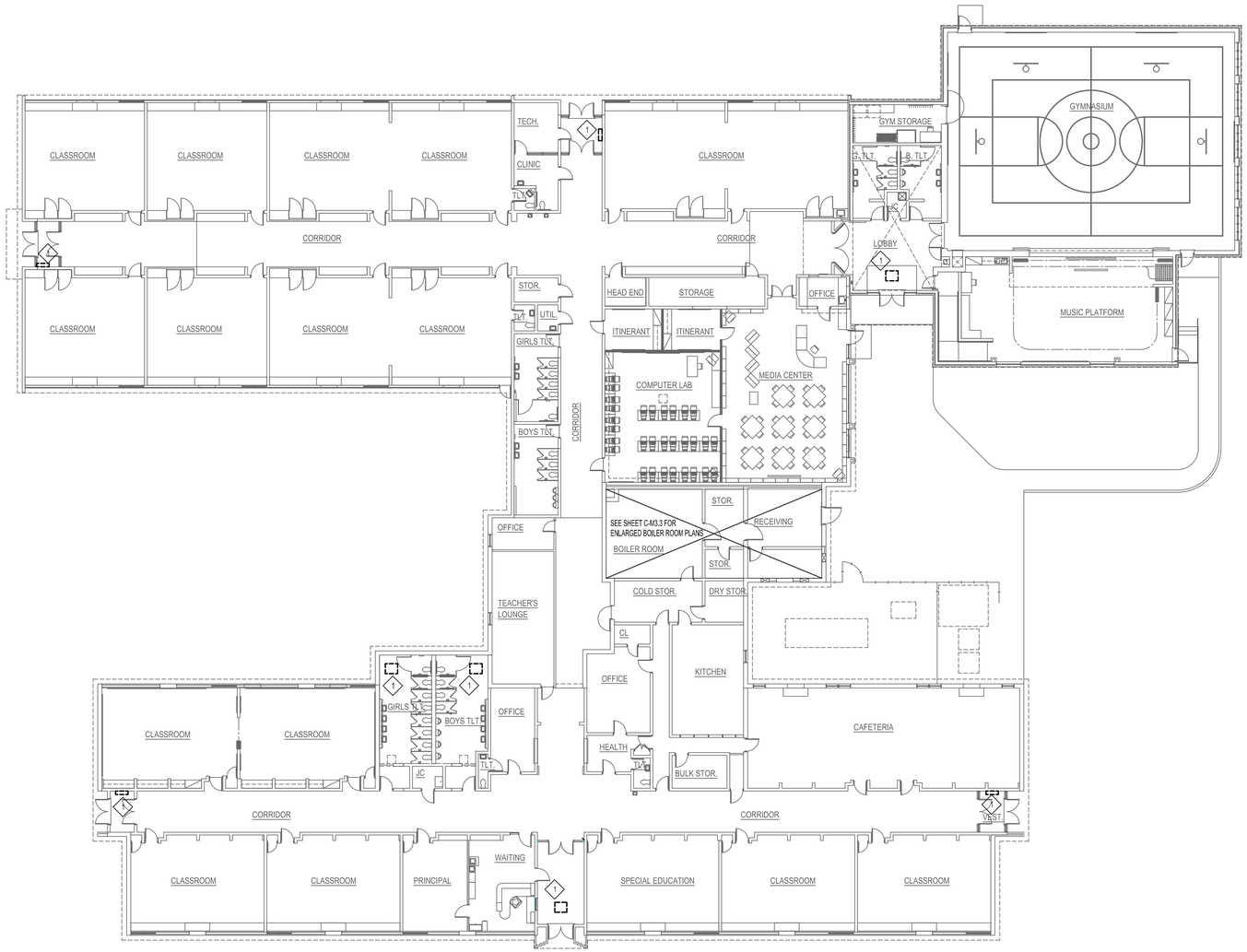
MECHANICAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING CABINET UNIT HEATER. MAINTAIN EXISTING CONTROL WIRING, HHWS, AND HHWR ROUGH-INS FOR CONNECTION TO NEW UNIT.

GENERAL DEMOLITION NOTES

1. ALL SURFACES DISTURBED OR HOLES CREATED DUE TO DEMOLITION TO BE PATCHED TO MATCH SURROUNDING SURFACE.
2. ALL MATERIALS RESULTING FROM DEMOLITION OPERATION SHALL BE ROMPTLY REMOVED FROM PREMISES AND LEGALLY DISPOSED OF.
3. CONTRACTOR TO CONTACT OWNER PRIOR TO REMOVAL AND TURN OVER TO OWNER ANY EQUIPMENT OR MATERIALS REQUESTED.
4. PIPE CAPPING TO BE DONE WITH MATERIALS TO MATCH EXISTING PIPING.
5. ALL ROOF PATCHING TO BE COORDINATED WITH OWNER TO MAINTAIN EXISTING ROOFING WARRANTY.



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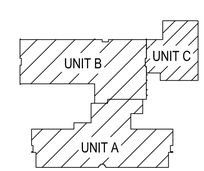
OVERHEAD MECHANICAL DEMOLITION PLAN

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



KEY PLAN

NOT TO SCALE

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MECHANICAL UPGRADES
CENTRAL
BAY CITY, MICHIGAN

UNIT 'A' MECHANICAL DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
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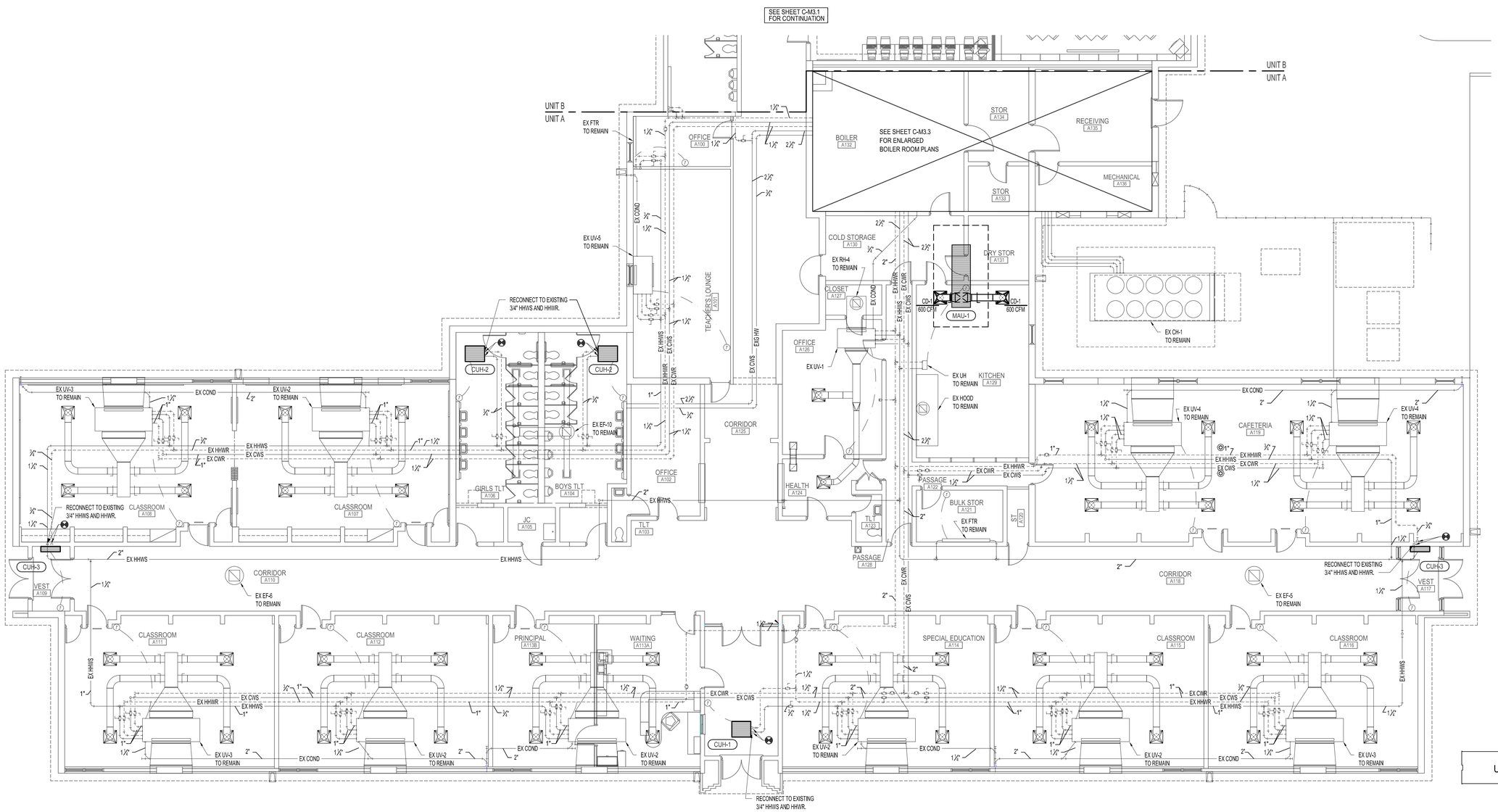

UNIT A OVERHEAD MECHANICAL PLAN

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

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BANGOR SCHOOLS MECHANICAL UPGRADES

CENTRAL

BAY CITY, MICHIGAN

UNIT 'A' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHK'D BY: J. WHEELER

DES'D BY: R. MEYER

DRAWN BY: A. BERZLEY

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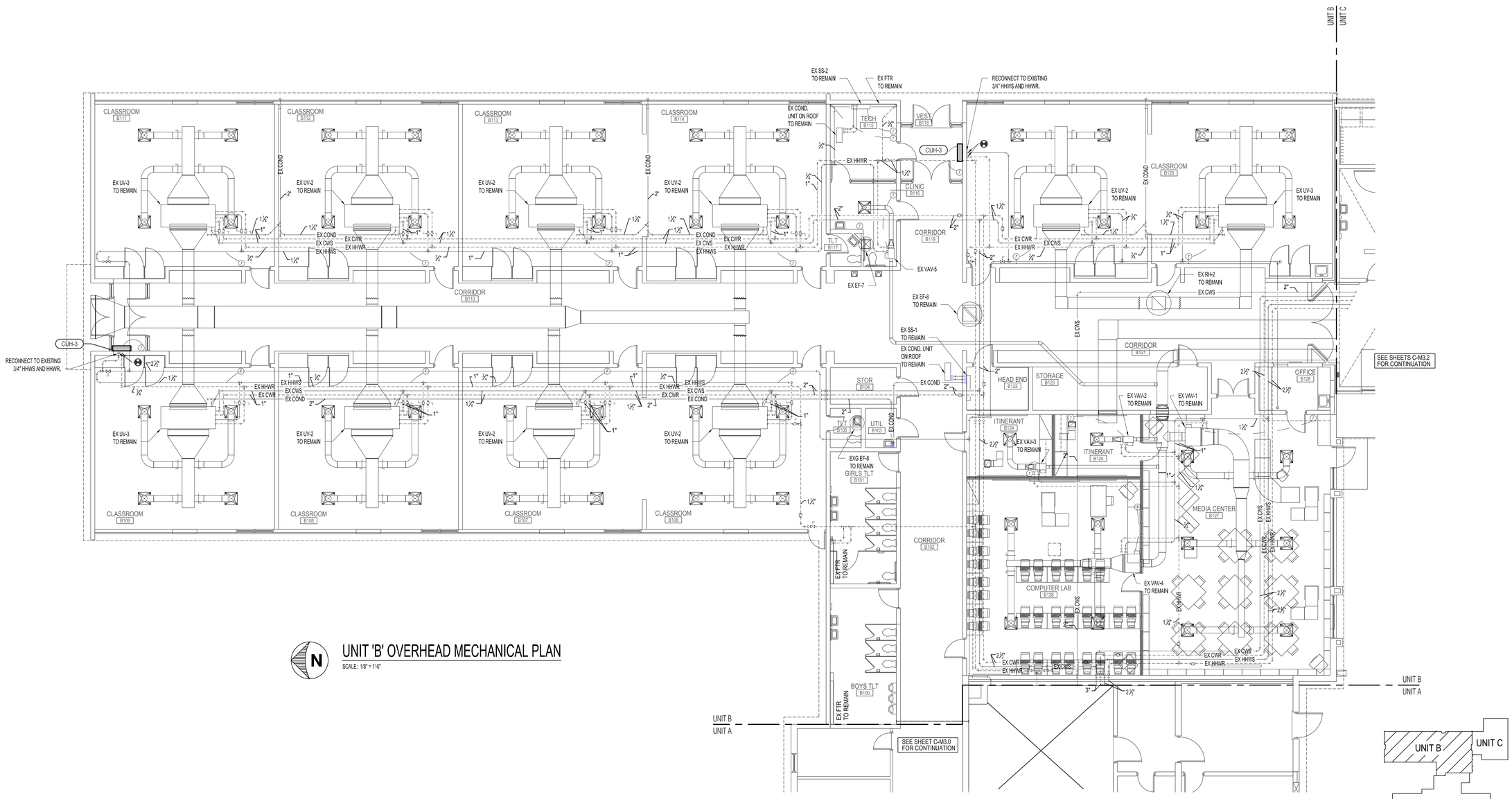
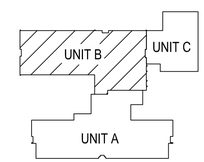


UNIT 'B' OVERHEAD MECHANICAL PLAN

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



KEY PLAN

NOT TO SCALE

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BANGOR SCHOOLS
MECHANICAL UPGRADES
CENTRAL
BAY CITY, MICHIGAN

UNIT 'B' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

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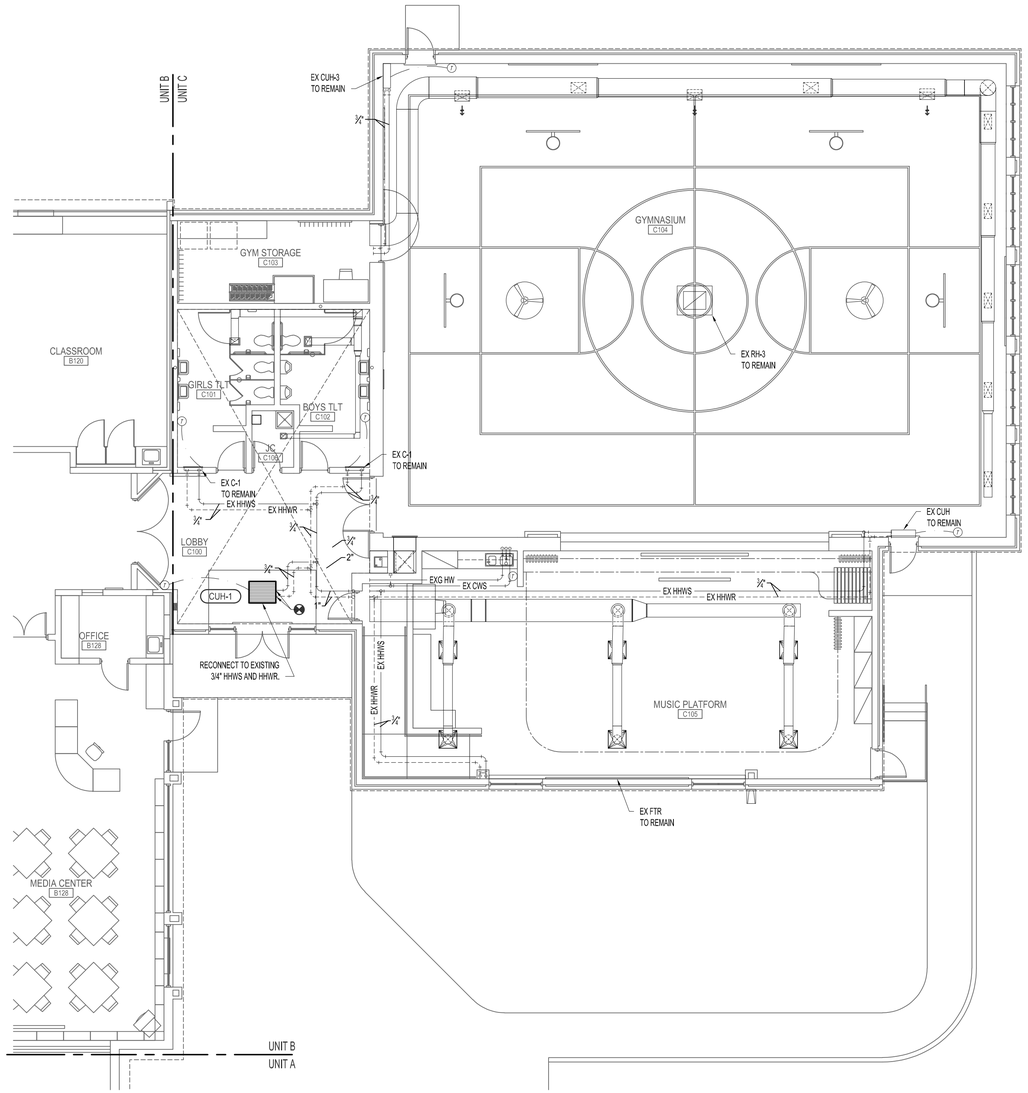

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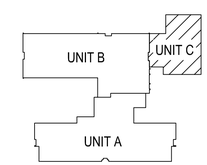
UNIT 'C' OVERHEAD MECHANICAL PLAN

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



KEY PLAN

NOT TO SCALE

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MECHANICAL UPGRADES
CENTRAL
BAY CITY, MICHIGAN

UNIT 'C' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
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	ISSUED FOR BIDS	03/30/2023

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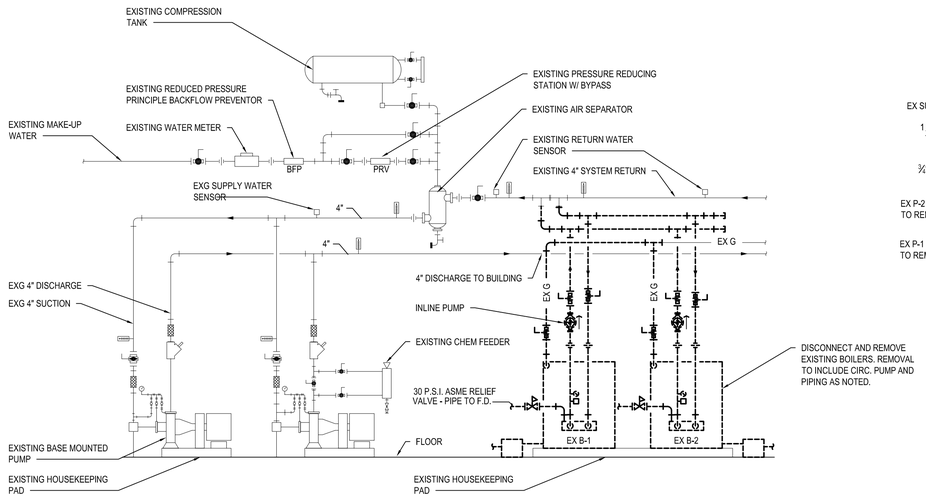
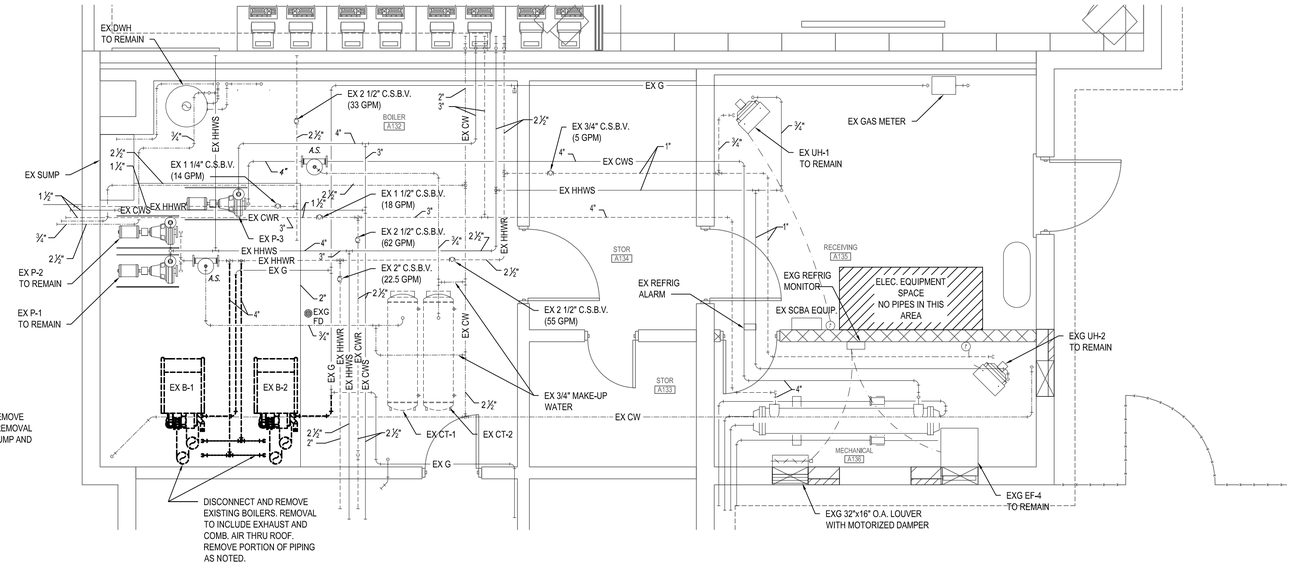


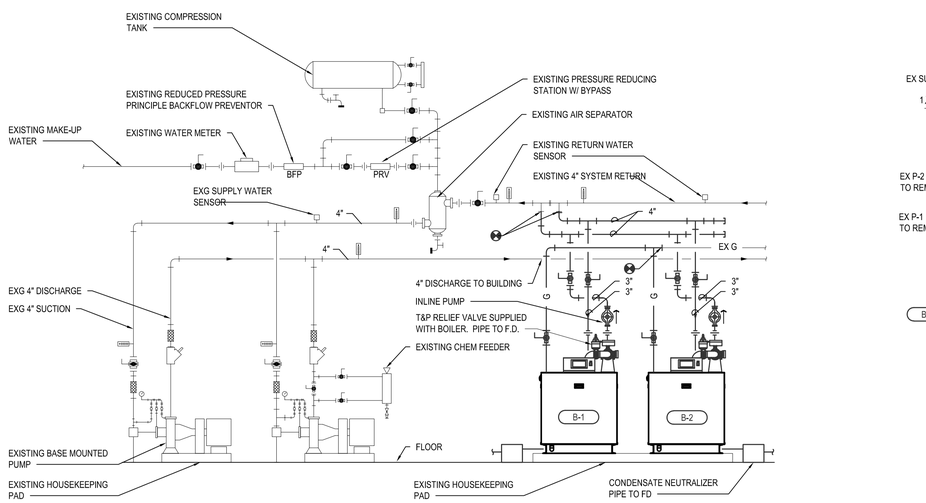
1 C-M3.3 BOILER PIPING SCHEMATIC - DEMOLITION

NO SCALE



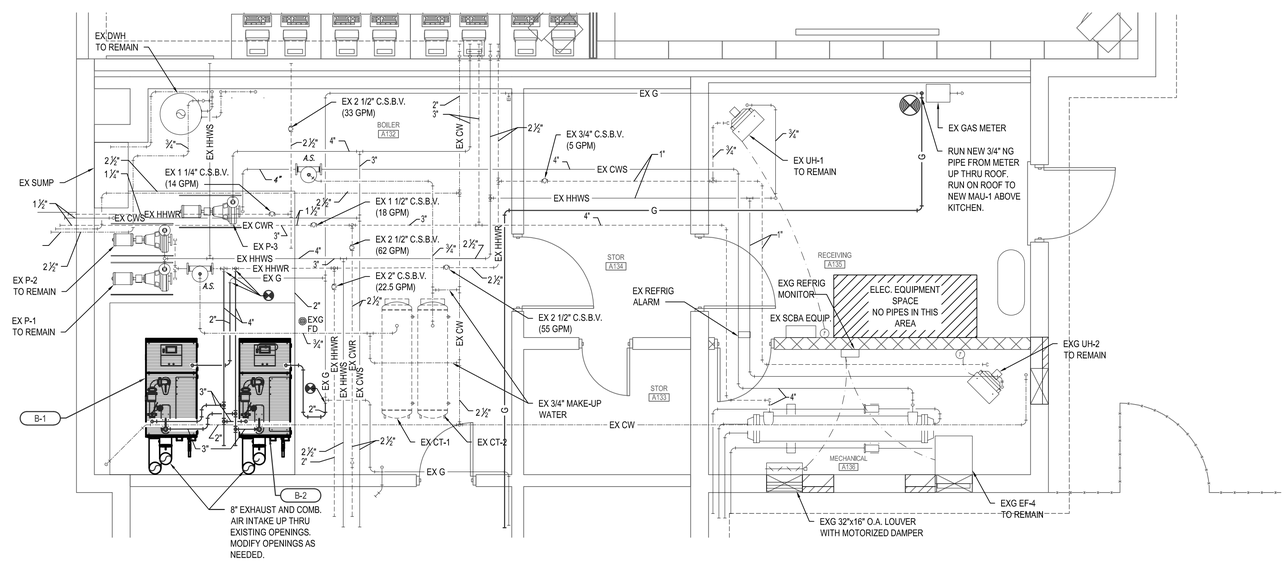
N BOILER ROOM MECHANICAL DEMOLITION PLAN

SCALE: 1/4" = 1'-0"



2 C-M3.3 BOILER PIPING SCHEMATIC - REVISIONS

NO SCALE



N BOILER ROOM MECHANICAL RENOVATION PLAN

SCALE: 1/4" = 1'-0"

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BANGOR SCHOOLS MECHANICAL UPGRADES

CENTRAL

BAY CITY, MICHIGAN

BOILER ROOM PLAN - ENLARGED

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

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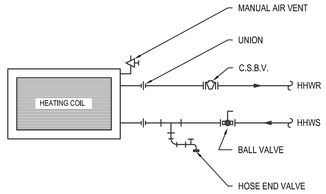
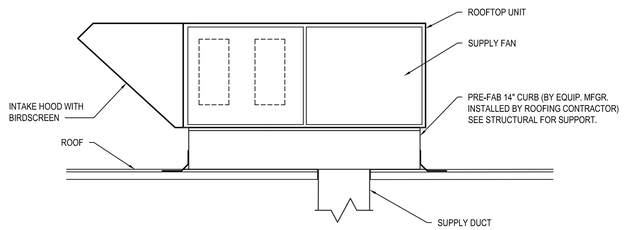
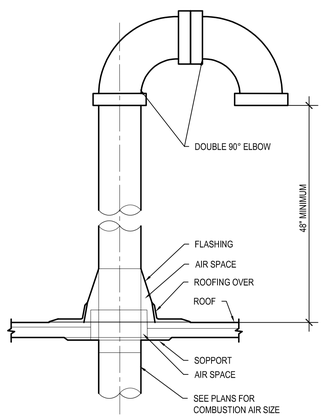


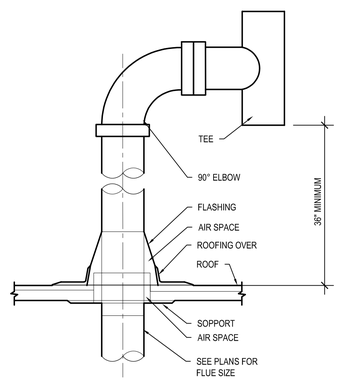
1 C-M8.0 CABINET UNIT HEATER PIPING SCHEMATIC
NO SCALE



2 C-M8.0 TYPICAL MAKE-UP AIR UNIT DETAIL
NO SCALE



3 C-M8.0 COMBUSTION AIR INTAKE TERMINATION
NO SCALE



4 C-M8.0 FLUE VENT TERMINATION
NO SCALE

CABINET UNIT HEATER SCHEDULE

180°E.W.T.
60°E.A.T.

SEE 1 C-M8.0

MARK	TYPE	AREA	CFM	MBH	GPM	FT.P.D.	H.P.	V/Ø	MODEL	REMARKS
CUH-1	HORIZ. RECESSED	ENTRANCE	531	35	1.5	3.2	1/14	115/1	FFBE060	
CUH-2	HORIZ. RECESSED	ENTRANCE	342	26.4	2.5	7.1	1/20	115/1	FFBE040	
CUH-3	WALL MOUNTED	ENTRANCE	133	11.9	1.5	9.9	1/30	115/1	FFBE020	

BASED ON TRANE "FORCE-FLO"

BOILER SCHEDULE

SEE 2 C-M3.3

MARK	TYPE	MBH		VENT DIA "	AIR INLET DIA "	GAS TRAIN ASSEMBLY	V/Ø	AMPS	MODEL	REMARKS
		INPUT	OUTPUT							
B-1 & 2	CONDENSING	1500	1420	8"	8"	I.R.I.	115/1	19.3	AMP-1500	

BASED ON THERMAL SOLUTIONS WITH FACTORY MOUNTED AND WIRED CIRC PUMP AND NEUTRALIZATION KIT.

MAKE-UP AIR UNIT SCHEDULE

DESIGN TEMPERATURES SUMMER : OUTDOOR = 87°/72° LAT = 68°
WINTER : OUTDOOR = 0°

SEE 1 C-M8.0

MARK	AREA	LOCATION	TSP (IN WC)	CFM	HEATING		MIN. O.A. CFM	ARRANGEMENT		H.P.	V/Ø	DISCONNECT BY	MODEL	REMARKS
					MBH IN	MBH OUT		INLET	DISCHARGE					
MAU-1	KITCHEN	ROOF	1.2	1200	95.8	88.1	1200	FRONT	BOTTOM	1/2	208/3	EC	DGX-P109-H12-MF	

BASED ON GREENHECK
PROVIDE INLET DAMPER, BIRDSCREEN AND WASHABLE FILTER.

GRILLES, REGISTERS & DIFFUSERS SCHEDULE

MARK	MANUFACTURER	MODEL	DESCRIPTION	NECK SIZE	FACE SIZE	FRAME	FINISH	MATERIAL	REMARKS
CD-1	PRICE INDUSTRIES	SCDA	SUPPLY DIFFUSER	12"Ø	24"x24"	3	WHITE	STEEL	

MECHANICAL SYMBOLS LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISH FLOOR	RA	RETURN AIR
AGA	AMERICAN GAS ASSOCIATION	RAR	RETURN AIR REGISTER
AHU	AIR HANDLING UNIT	SA	SUPPLY AIR
ASME	AMERICAN SOCIETY OF MECH. ENGINEERS	SAR	SUPPLY AIR REGISTER
BTUH	BRITISH THERMAL UNITS PER HOUR	S.C.C.V.	SELF CONTAINED CONTROL VALVE
CA	COMBUSTION AIR	S.P.	STATIC PRESSURE
CD	CEILING DIFFUSER	TCC	TEMPERATURE CONTROL CONTRACTOR
CFM	CUBIC FEET PER MINUTE	UH	UNIT HEATER
COND	CONDENSATE	U.L.	UNDERWRITERS LABORATORIES
C.S.B.V.	CIRCUIT SETTER BALANCE VALVE	U.N.O.	UNLESS NOTED OTHERWISE
CUH	CABINET UNIT HEATER	UV	UNIT VENTILATOR
CWS	CHILLED WATER SUPPLY	WH	WATER HEATER
CWR	CHILLED WATER RETURN	WM	WATER METER
EAR	EXHAUST AIR REGISTER	WTD	WATER TEMPERATURE DROP
EAT	ENTERING AIR TEMPERATURE	WTR	WATER TEMPERATURE RISE
EC	ELECTRIC CONTRACTOR		CHECK VALVE
EF	EXHAUST FAN		BALANCE VALVE (CIRCUIT SETTER)
EWT	ENTERING WATER TEMPERATURE		CONTROL VALVE
EX	EXISTING		PRESSURE AND TEMPERATURE RELIEF VALVE
FD	FLOOR DRAIN		THREE-WAY VALVE
FFE	FINISHED FLOOR ELEVATION		HOSE END VALVE
FPF	FINS PER FOOT		BALL VALVE
FT.P.D.	FEET OF PRESSURE DROP		BUTTERFLY VALVE
FTR	FIN-TUBE RADIATION	PRV	PRESSURE REDUCING VALVE
G	GAS	BFP	BACKFLOW PREVENTOR
GC	GENERAL CONTRACTOR		UNION
GPM	GALLONS PER MINUTE		STRAINER
HHWR	HEATING HOT WATER RETURN		MANUAL AIR VENT
HHWS	HEATING HOT WATER SUPPLY	FS	FLOW SWITCH
HP	HORSE POWER		GAUGE
LAT	LEAVING AIR TEMPERATURE		THERMOMETER
LWT	LEAVING WATER TEMPERATURE		CONNECT TO EXISTING
MC	MECHANICAL CONTRACTOR	H	HUMIDISTAT
OA	OUTSIDE AIR	T	THERMOSTAT
			PUMP (INLINE)

MECHANICAL GENERAL NOTES

1. ALL WORK TO COMPLY WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND ORDINANCES
2. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING.
3. SEAL ALL DUCT JOINTS.
4. PROVIDE ACCESS PANELS TO ALL VALVES, DAMPERS, TRAPS, FILTERS, EQUIPMENT, ETC.
5. COORDINATE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND CEILING MOUNTED EQUIPMENT WITH THE REFLECTED CEILING PLAN.
6. DUCT SIZES NOTED REPRESENT NET FREE INTERIOR DIMENSIONS.
7. PROVIDE BALANCE DAMPERS IN EACH SUPPLY AND EXHAUST DUCT BRANCH.
8. ALL ROUND DUCTWORK TO BE SPIRAL TYPE UNLESS NOTED OTHERWISE.
9. HEATING PIPING TO BE MINIMUM 3/4" DIAMETER.
10. VERIFY MOUNTING HEIGHTS OF WALL CAPS AND LOUVERS WITH ARCHITECTURAL DRAWINGS.
11. ALL VALVES SHOWN ON FLOOR PLANS ARE IN ADDITION TO ALL VALVES SHOWN ON PIPING SCHEMATICS.
12. REFER TO PIPING SCHEMATIC DETAILS FOR UNIONS, VALVES, AIR VENTS, THERMOMETERS, ETC. REQUIRED AT SPECIFIC PIECES OF EQUIPMENT.
13. ALL ROOF CURBS FOR MECHANICAL EQUIPMENT TO BE MINIMUM 16" ABOVE FINISHED ROOF SURFACE.
14. EQUIPMENT, DUCTS, PIPING, ETC. TO BE SUPPORTED FROM PANEL POINTS OF STRUCTURAL MEMBERS. NO MECHANICAL ITEMS TO BE SUPPORTED FROM DECKING. CONCENTRATED MECHANICAL LOADS TO BE DISTRIBUTED OVER TWO OR MORE JOISTS. CONCENTRATED LOADING ON A SINGLE STRUCTURAL MEMBER IS TO BE AVOIDED.
15. SUPPLY AIR DIFFUSERS MAY BE CONNECTED WITH A MAXIMUM 5 FEET OF INSULATED FLEXIBLE DUCT WHEN DUCT IS CONCEALED. ALL RETURN AIR REGISTERS AND EXHAUST AIR REGISTERS TO BE DUCTED WITH SHEET METAL.
16. NEW THERMOSTATS TO BE LOCATED AT OLD THERMOSTATS' LOCATIONS WHERE POSSIBLE. IF NEW T'STATS ARE NOT IN OLD LOCATIONS, THEN OLD LOCATION IS TO BE REMOVED AND WALL PATCHED TO MATCH EXISTING.
17. MECHANICAL CONTRACTOR TO COORDINATE WITH GENERAL ON REMOVAL, REINSTALLATION, AND PATCHING OF EXISTING CEILINGS WHERE ACCESS IS NEEDED FOR INSTALLATION OF NEW EQUIPMENT, PIPING, ETC.
18. MECHANICAL CONTRACTOR TO COORDINATE WITH OWNER FOR ALL NEW ROOFING WORK TO MAINTAIN EXISTING ROOFING WARRANTY.

NOTE: EQUIPMENT LISTED IN SCHEDULES IS NOT TO BE USED FOR THE SOLE PURPOSE OF OBTAINING QUANTITIES. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES UTILIZING THESE SCHEDULES AND CAREFUL REVIEW OF LAYOUT DRAWINGS.

WILLIAM A. KIBBE & ASSOCIATES, INC.
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BANGOR SCHOOLS
MECHANICAL UPGRADES
CENTRAL
BAY CITY, MICHIGAN

SCHEDULES, DETAILS, AND NOTES

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

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CIRCUIT CONDUIT & CONDUCTOR SCHEDULE

FUSE/CIRCUIT BREAKER - AMP/POLE	PHASE/NEUTRAL (NOTE 3)	GROUND	CONDUIT
15A/1P & 20A/1P	2 - 12 AWG	1 - 12 AWG	3/4"
15A/2P & 20A/2P	2 OR 3 - 12 AWG	1 - 12 AWG	3/4"
15A/3P & 20A/3P	3 OR 4 - 12 AWG	1 - 12 AWG	3/4"
25A/1P & 30A/1P	2 - 10 AWG	1 - 10 AWG	3/4"
25A/2P & 30A/2P	2 OR 3 - 10 AWG	1 - 10 AWG	3/4"
25A/3P & 30A/3P	3 OR 4 - 10 AWG	1 - 10 AWG	3/4"
35A/1P & 40A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
35A/2P & 40A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
35A/3P & 40A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
40A/1P & 45A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
40A/2P & 45A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
40A/3P & 45A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
60A/1P	2 - 6 AWG	1 - 10 AWG	3/4"
60A/2P	2 OR 3 - 6 AWG	1 - 10 AWG	3/4"
60A/3P	3 OR 4 - 6 AWG	1 - 10 AWG	1"
70A/1P	2 - 4 AWG	1 - 8 AWG	1"
70A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
70A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
80A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
80A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
90A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
90A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
100A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
100A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
110A/2P	2 OR 3 - 2 AWG	1 - 6 AWG	1 1/4"
110A/3P	3 OR 4 - 2 AWG	1 - 6 AWG	1 1/4"
125A/2P	2 OR 3 - 1 AWG	1 - 6 AWG	1 1/4"
125A/3P	3 OR 4 - 1 AWG	1 - 6 AWG	1 1/2"
150A/2P	2 OR 3 - 1/0 AWG	1 - 6 AWG	1 1/2"
150A/3P	3 OR 4 - 1/0 AWG	1 - 6 AWG	2"
175A/2P	2 OR 3 - 2/0 AWG	1 - 6 AWG	2"
175A/3P	3 OR 4 - 2/0 AWG	1 - 6 AWG	2"
200A/2P	2 OR 3 - 3/0 AWG	1 - 6 AWG	2"
200A/3P	3 OR 4 - 3/0 AWG	1 - 6 AWG	2"
225A/2P	2 OR 3 - 4/0 AWG	1 - 4 AWG	2"
225A/3P	3 OR 4 - 4/0 AWG	1 - 4 AWG	2 1/2"
250A/2P	2 OR 3 - 250 MCM	1 - 4 AWG	2 1/2"
250A/3P	3 OR 4 - 250 MCM	1 - 4 AWG	3"
300A/2P	2 OR 3 - 350 MCM	1 - 4 AWG	3"
300A/3P	3 OR 4 - 350 MCM	1 - 3 AWG	3"
350A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
350A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"
400A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
400A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"

NOTES:

1. PROVIDE CIRCUIT CONDUCTOR AND CONDUIT SIZES INDICATED ABOVE UNLESS OTHERWISE NOTED.
2. CONDUCTOR SIZING BASED UPON 75C THWN INSULATED COPPER CONDUCTORS.
3. FOR TWO AND THREE POLE CIRCUITS PROVIDE NEUTRAL CONDUCTOR IF REQUIRED BY EQUIPMENT SERVED.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, 18" A.F.F. TO TOP
GFCI	DUPLEX RECEPTACLE GFI, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, CEILING MOUNTED
GFCI	DUPLEX RECEPTACLE GFI, CEILING MOUNTED
USB	DUPLEX RECEPTACLE USB, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, 6" ABOVE COUNTER
GFCI	DUPLEX RECEPTACLE GFI, 6" ABOVE COUNTER
	DUPLEX RECEPTACLE, FLOOR MOUNTED
GFCI	DUPLEX RECEPTACLE GFI , FLOOR MOUNTED
	SPECIALTY OUTLET, SEE DRAWINGS W/ MTG HT
	QUAD RECEPTACLE, 18" A.F.F. TO TOP
GFCI	QUAD RECEPTACLE GFI, 18" A.F.F. TO TOP
	QUAD RECEPTACLE, CEILING MOUNTED
GFCI	QUAD RECEPTACLE GFI, CEILING MOUNTED
M	MOTOR SWITCH
	OVERHEAD DOOR 3-BUTTON SWITCH, OPEN-CLOSE-STOP
PP	POWER POLE
JB	JUNCTION BOX
FF	FURNITURE FEED
	MOTOR
	NON-FUSED DISCONNECT
	COMBINATION MOTOR STARTER/ DISCONNECT
	FUSED DISCONNECT
	MANUAL MOTOR STARTER
	MOTOR STARTER
	SURFACE MOUNTED PANEL BOARD
	RECESSED PANEL BOARD
	SWITCH, SINGLE POLE, 48" A.F.F. TO TOP UNO
3	SWITCH, 3-POLE, 48" A.F.F. TO TOP UNO
4	SWITCH, 4-POLE, 48" A.F.F. TO TOP UNO
D	SWITCH, WALL BOX DIMMER, 48" A.F.F. TO TOP UNO
LV	SWITCH, LOW VOLTAGE, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
LVD	SWITCH, LOW VOLTAGE DIMMER, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
F	SWITCH, FUSED: 125V, SINGLE POLE, DUAL ELEMENT PLUG FUSE
K	SWITCH, KEYED, 48" A.F.F. TO TOP UNO
P	SWITCH, PILOT LIGHT, 48" A.F.F. TO TOP UNO
T	SWITCH, TIMER, 48" A.F.F. TO TOP
OS	SWITCH, MULTI-TECH OCCUPANCY SENSOR, WALL
	SWITCH, MULTI-TECH OCCUPANCY SENSOR, CEILING
	SWITCH, EXTERIOR PHOTOCELL
OP	POWER PACK FOR OCCUPANCY SENSORS
S	CONTROLS: SPEAKER (SEE SCHEDULE)
DO	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH DOOR REQUIREMENTS
ADA	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH SECURITY, AUTO AND MANUAL CONTROL
	SECURITY: PAN - TILT - ZOOM CAMERA
	SECURITY: PUSH BUTTON
CR	SECURITY: CARD READER
DC	SECURITY: DOOR CONTACT
	LUMINAIRE: WALL MOUNTED W/ TYPE
	LUMINAIRE: RECESSED DOWNLIGHT OR PENDANT W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: SURFACE OR RECESSED W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: ON EMERGENCY, LIFE SAFETY, OR LOCAL LIGHTING CIRCUIT W/ TYPE, REFER TO SCHEDULE
	EXIT SIGN: CEILING MOUNTED W/ TYPE, SEE SCHEDULE
	EXIT SIGN: WALL MOUNTED W/ TYPE, SEE SCHEDULE
	EM LIGHTS: WALL MOUNTED UNO, REFER TO SCHEDULE
	REMOTE HEADS: WALL MOUNTED, REFER TO SCHEDULE
TV	TV CONNECTION: 96" TO TOP, COAX CONNECTION, UNO
	VOICE/ DATA OUTLET: 18" TO TOP, UNO
C	VOICE/ DATA OUTLET: CEILING MOUNTED, UNO
	VOICE/ DATA/ TV OUTLET: FLOOR MOUNTED, UNO
	TELEPHONE: 18" TO TOP, UNO
	DATA/ TELEPHONE: 18" TO TOP, UNO
P	FIRE: MANUAL PULL STATION, WALL MOUNTED, 48" AFF TO TOP UNO
#CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: AUDIBLE ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
AV #CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, CEILING MOUNTED
V #CD	FIRE: VISUAL ANNUNCIATION, CEILING MOUNTED
A	FIRE: AUDIBLE ANNUNCIATION, CEILING MOUNTED
SD	FIRE: SMOKE DETECTOR, CEILING
HD	FIRE: HEAT DETECTOR, CEILING
S/H	FIRE: SMOKE AND HEAT DETECTOR
DSD	FIRE: DUCT SMOKE DETECTOR, CEILING, PROVIDED / INSTALLED BY EC, MOUNTED BY MC, UNO
RT	FIRE ALARM: REMOTE TEST STATION
TS	FIRE: TAMPER SWITCH
FS	FIRE: FLOW SWITCH
DH	FIRE: MAGNETIC DOOR HOLD
FR	FIRE: DOOR LOCK RELEASE
PS	FIRE: PRESSURE SWITCH
	HOME RUN W/ DIRECTION
E	ELECTRICAL CIRCUIT
UG	UNDERGROUND ELECTRICAL W/ INCDICATOR
	SITE: LIGHT, POLE, AND BASE
XF	TRANSFORMER W/ LABEL
	DEVICE OR EQUIPMENT CONNECTION

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
AMP OR A	AMPERES
ATS	AUTOMATIC TRANSFER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
CKT	CIRCUIT
CB	CIRCUIT BREAKER
C	CONDUIT
CLG	CEILING
CP	CONTROL PANEL
CU	COPPER
D	DATA
DS	DISCONNECT SWITCH
DWG	DRAWING(S)
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EX	EXISTING
EXT	EXTERNAL
FIN. FLR.	FINISH FLOOR
FACP	FIRE ALARM CONTROL PANEL
FF	FURNITURE FEED
FT	FOOT, FEET
GRC	GALVANIZED RIGID CONDUIT
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERUPPTER
GFI	GROUND FAULT PROTECTION
HH	HAND HOLE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
IU	INDOOR UNIT
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KVA	KILO VOLT-AMPERES
KVAR	KILO VOLT-AMPERES REACTIVE
LC	LIGHTING CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTOR PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MH	MAN HOLE
MFR	MANUFACTURER'S
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N.L.	NIGHT LIGHT
NC	NORMALLY CLOSED CONTACT
NO	NORMALLY OPEN CONTACT
N.T.S.	NOT TO SCALE
OU	OUTDOOR UNIT
O.D.	OUTSIDE DIAMETER
OL	OVERLOADS-THERMAL
PNL	PANEL W/ INDICATION
Ø	PHASE
PH	PHASE
PC	PHOTO-SWITCH
P	POLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PB	PULL BOX
PTT	PUSH-TO-TEST
RMC	RIGID METAL COUNT
SPEC	SPECIFICATION
SW	SWITCH
SWD	SWITCHING DUTY
TEL	TELEPHONE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
VFC	VARIABLE FREQUENCY CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WATT
WP	WEATHER PROOF
W	WIRE
W/	WITH
XF/ XFMR	TRANSFORMER
XXAF	XX AMPERE FUSE
XXAS	XX AMPERE SWITCH
XP	X POLES

GENERAL NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS WITH ARCHITECTURAL AND MECHANICAL PLANS, SPECIFICATIONS AND EQUIPMENT DRAWINGS. PROVIDE ALL NECESSARY EQUIPMENT POWER AND CONTROL CONNECTIONS NOT PROVIDED BY OTHERS WHETHER INDICATED ON THE DRAWINGS OR NOT.
3. UNLESS OTHERWISE NOTED, WHERE ELECTRICAL DEMOLITION WORK IS SHOWN, REMOVE ALL CONDUCTOR AND EXPOSED CONDUITS FROM EQUIPMENT OR OUTLET LOCATION BACK TO THE POWER SOURCE(S) FOR THE CIRCUIT.
4. SEAL ALL WALL AND FLOOR PENETRATIONS TO MAINTAIN RATING.
5. BACK-TO-BACK OR THROUGH THE WALL BOXES SHALL NOT BE USED.
6. ALL LOW VOLTAGE CONDUCTORS SHALL BE STRANDED COPPER.
7. SPLICE CABLES OR CONDUCTORS IN OUTLET BOXES, DEVICE BOXES, PULL BOXES, JUNCTION BOXES. DO NOT SPLICE CABLES OR CONDUCTORS IN CONDUIT BODIES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER (GFI) TYPE MUST BE GFI RECEPTACLE, NO FEED THROUGH.
9. BRANCH CIRCUITS FROM CIRCUIT BREAKER TYPE DISTRIBUTION EQUIPMENT WHICH SUPPLY MOTOR LOADS THAT ARE LESS THAN 6.0 AMP SHALL BE PROTECTED BY A 15 AMP CIRCUIT BREAKER.
10. FINAL CONNECTIONS TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT . LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE USED AS A GROUNDING CONDUCTOR. PROVIDE A SEPARATE GREEN GROUNDING CONDUCTOR.
11. IN THE EVENT OF CONFLICTS BETWEEN THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS OR WITHIN THE DRAWINGS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL BE ASSUMED TO BE CORRECT. REFER UNCERTAINTIES IN REQUIREMENTS TO THE ENGINEER FOR CLARIFICATION.
12. ALL BELOW GRADE LOCATIONS WITHIN BUILDINGS ARE DAMP LOCATIONS UNLESS OTHERWISE NOTED.
13. 120V AC CONTROL WIRING ASSOCIATED WITH MOTOR CONTROL CIRCUITS MAY BE RUN IN THE SAME RACEWAY WITH MOTOR POWER WIRING FOR CONSTANT SPEED MOTORS LESS THAN 30HP. FOR MOTORS 30HP AND GREATER OR FOR MOTORS POWERED FROM VARIABLE FREQUENCY CONTROLLERS, SEPARATE RACEWAYS SHALL BE USED FOR POWER AND CONTROL CONDUCTORS.
14. 120/240V CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS AS REQUIRED UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
15. CONDUIT PENETRATIONS OF FLOORS, LOWER LEVEL EXTERIOR WALLS OR WETWELL WALLS SHALL BE SLEEVED AND SEALED WITH LINKSEAL. SEE DETAILS ON MECHANICAL DRAWINGS.
16. IF COMPLIANCE WITH TWO OR MORE DIFFERING STANDARDS, REQUIREMENTS, DRAWINGS OR SPECIFICATIONS, OR ANY COMBINATION THEREOF, IS SPECIFIED AND THESE ESTABLISH DIFFERENT OR CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT. THE MOST STRINGENT REQUIREMENT WILL BE THE BETTER QUALITY OR GREATER QUANTITY OF WORK, AND WILL TYPICALLY BE THE MORE EXPENSIVE OPTION. REFER UNCERTAINTIES AND REQUIREMENTS THAT ARE DIFFERENT, BUT APPARENTLY EQUAL, TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
17. THE QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE THE MINIMUM PROVIDED OR PERFORMED. THE ACTUAL INSTALLATION MAY COMPLY EXACTLY WITH THE MINIMUM QUANTITY OR QUALITY SPECIFIED, OR IT MAY EXCEED THE MINIMUM WITHIN REASONABLE LIMITS. TO COMPLY WITH THESE REQUIREMENTS, INDICATED NUMERIC VALUES ARE MINIMUM OR MAXIMUM, AS APPROPRIATE, FOR THE CONTEXT OF REQUIREMENTS. REFER UNCERTAINTIES TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
18. DESIGN DOCUMENTS MUST BE REPRODUCED IN THEIR ENTIRETY, INCLUDING ALL PLANS, SPECIFICATIONS, AND FRONT END DOCUMENTS.
19. ONLY COMPLETE DOCUMENT SETS ARE TO BE DISTRIBUTED TO SUBCONTRACTORS AND SUPPLIERS OF THE CONTRACTOR DURING BIDDING OR CONSTRUCTION.
20. FAILURE TO REVIEW AND COMPLY WITH A FULL SET OF CONTRACT DOCUMENTS WILL NOT BE ACCEPTED AS A VALID REASON FOR FAILURE TO MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
21. ALL ABOVE CEILING SYSTEMS AND COMPONENTS (INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) SHALL BE COORDINATED SUCH THAT THE SYSTEMS ARE PROPERLY INTEGRATED IN THE SPACE PROVIDED ABOVE CEILING AT THE CEILING HEIGHTS NOTED. IT IS THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE PATHWAYS WITHIN THE SPACE PROVIDED. CEILING HEIGHTS WILL NOT BE MODIFIED.
22. EQUIPMENT WHICH SHALL BE MOUNTED 6'-0" AWAY FROM HEAT PRODUCING EQUIPMENT. U.N.O.

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MECHANICAL UPGRADES
CENTRAL
BAY CITY, MICHIGAN

GENERAL NOTES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B.KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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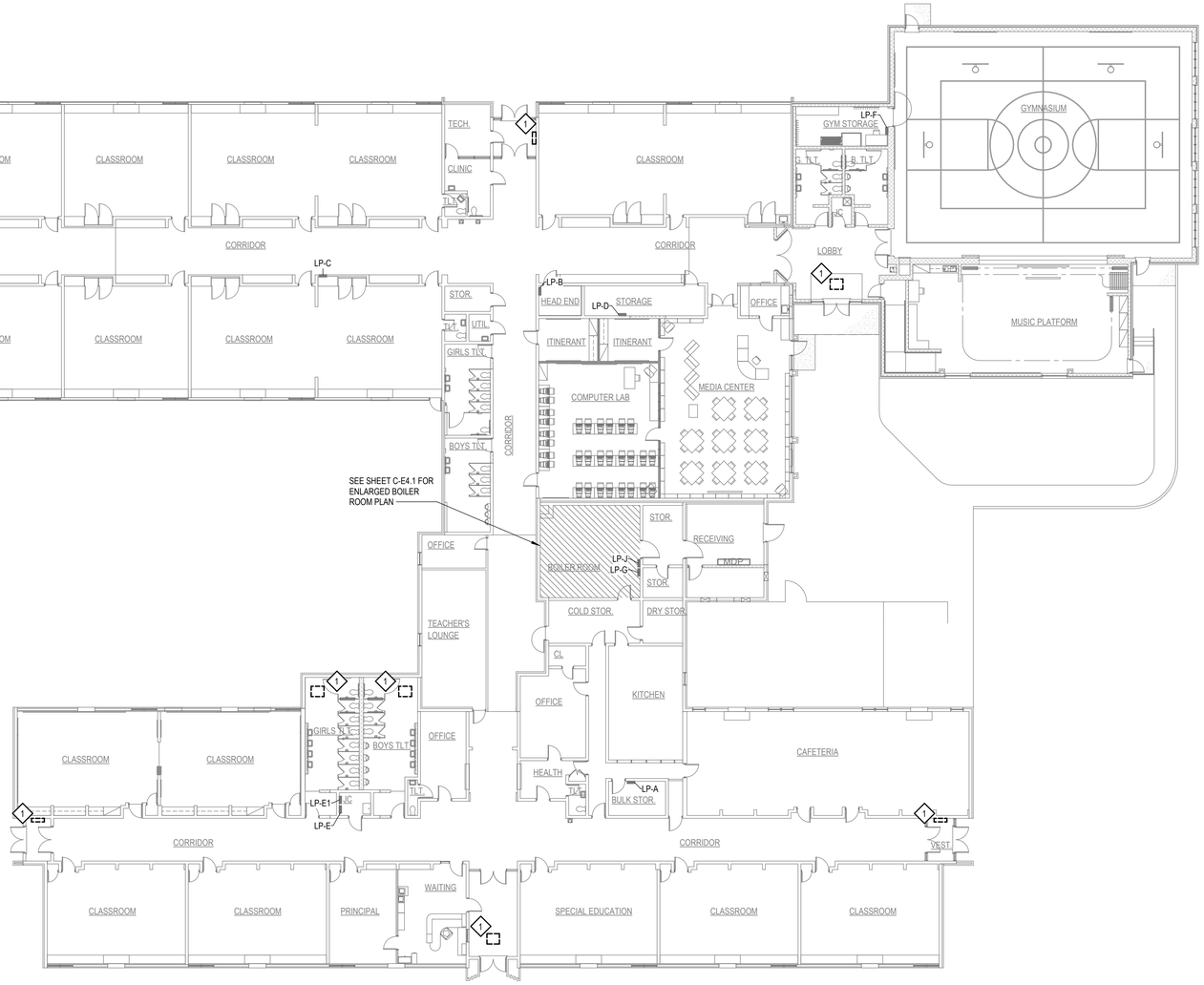


OVERALL DEMOLITION PLAN

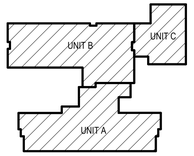
SCALE: 1/16" = 1'-0"

GENERAL DEMOLITION NOTES

1. NOTES AND GRAPHIC REPRESENTATION SHALL NOTE LIMIT THE EXTENT OF DEMOLITION REQUIRED. ELECTRICAL CONTRACTOR TO PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF DEMOLITION WORK SHALL INCLUDE, BUT NOT LIMITED TO, REMOVAL OF LIGHT FIXTURES, WIRING DEVICES, CONNECTIONS TO EQUIPMENT, DISTRIBUTION PANELS, AND ALL ASSOCIATED RACEWAY AND WIRING. EXTENT OF DEMOLITION SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
2. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE, BUT INTERFERES WITH RENOVATIONS, SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. ELECTRICAL CONTRACTOR SHALL TRACE AND RELOCATE ALL EXISTING FEEDERS AND BRANCH CIRCUITS PASSING THROUGH THE DEMOLITION AREA THAT SERVE EXISTING SPACES TO REMAIN.
5. ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS FOR EXISTING EQUIPMENT AND DEVICES THAT ARE TO REMAIN. WHEN DEVICES ARE REMOVED AND NOT THE CIRCUIT DEAD END, EXTEND CIRCUIT AS REQUIRED TO MAINTAIN INTEGRITY OF ORIGINAL CIRCUIT.
6. ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED SHALL GET FIRST REFUSAL FROM OWNER AND IS THEN RESPONSIBILITY OF ELECTRICAL CONTRACTOR FOR PROPER DISPOSAL. EQUIPMENT TO BE RE-INSTALLED OR TURNED OVER TO OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION.
7. FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN. WHERE EMPTY CONDUITS REMAIN, INSTALL PULLSTRING AND IDENTIFY BOTH ENDS.
8. FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICT WITH NEW WORK. INSTALL JUNCTIONS BOX, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED AND NOT INDICATED TO BE REPLACED.
10. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT CHANGES OR REMOVALS.
11. FIRE ALARM SYSTEM SHALL REMAIN IN OPERATION DURING BOTH DEMOLITION AND CONSTRUCTION STAGES OF THIS PROJECT.

KEYED DEMOLITION NOTES

SYMBOL	DESCRIPTION
◇	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	DISCONNECT EXISTING UNIT HEATER. SALVAGE CIRCUIT TO BE USED WITH NEW UNIT HEATER.
2	DISCONNECT EXISTING BOILER CIRCUITS BACK TO PANEL.



KEY PLAN

NOT TO SCALE

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OVERALL DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B.KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

SHEET
C-E1.0

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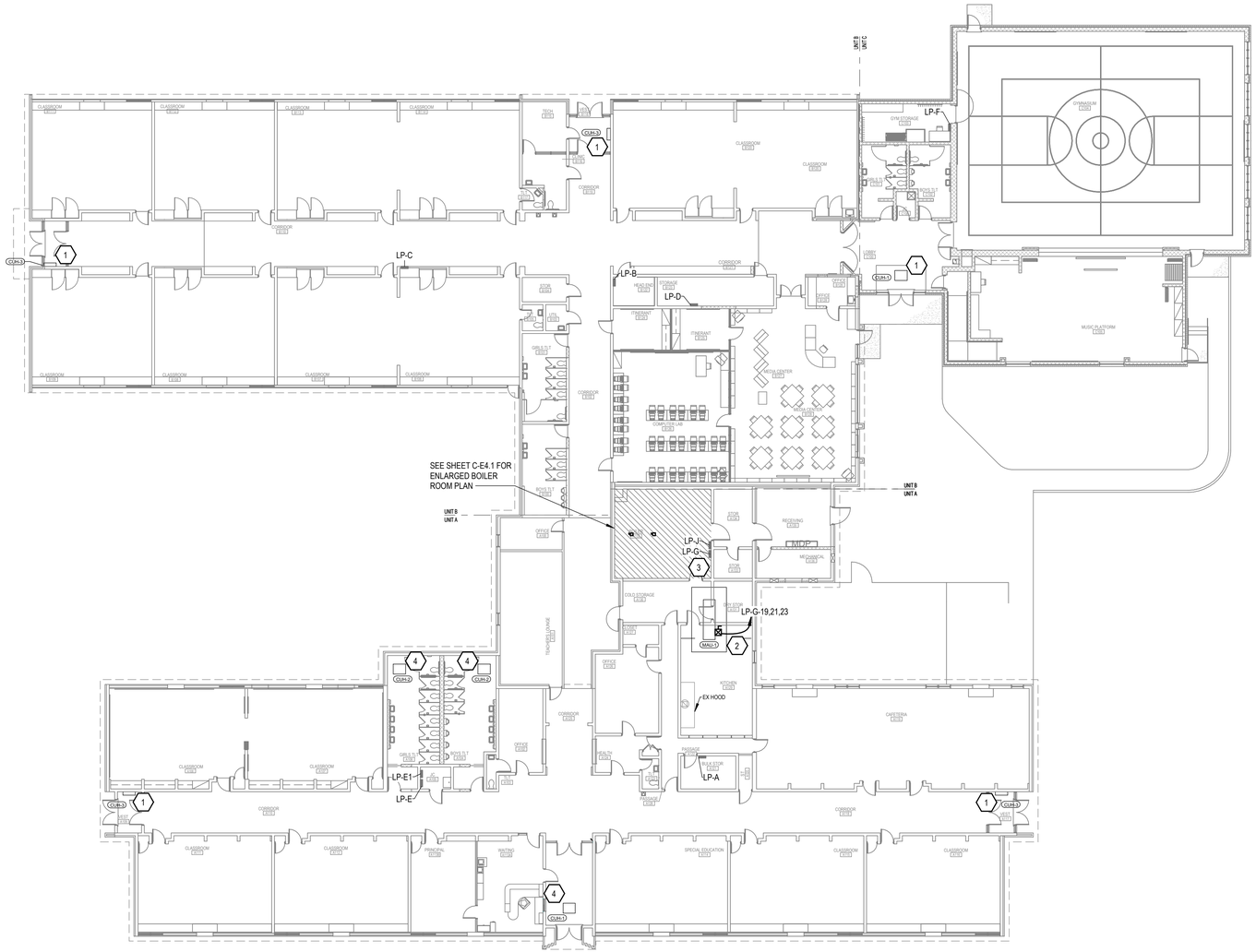
KEYED CONSTRUCTION NOTES

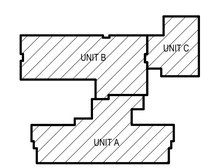
SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	RECONNECT NEW UNIT HEATER TO EXISTING POWER CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	PROVIDE COMBINATION MOTOR STARTER DISCONNECT FOR NEW MAKE UP AIR UNIT. UNIT SHALL BE INTERLOCKED WITH HOOD CONTROLS FOR SIMULTANEOUS OPERATION. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
3	PROVIDE NEW 15A/3P CIRCUIT BREAKER FOR EXISTING LP-G FOR POWER TO NEW KITCHEN MAU-1. EXISTING PANEL IS SQUARE-D NQOD PANELBOARD.
4	UTILIZE EXISTING CIRCUIT IN PANEL LP-E1 TO POWER NEW EQUIPMENT.
5	PROVIDE LOCAL 30A DISCONNECT SWITCH FOR NEW BOILERS. PROVIDE #10AWG CONDUCTORS AND #10G FOR CIRCUITING. FIELD VERIFY LOCATION AND COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
6	PROVIDE EMERGENCY SHUTDOWN SWITCH FOR NEW BOILERS. E-STOP SHALL BE WIRED TO BOILER CONTROL CIRCUIT TO SHUTDOWN ALL BOILERS UPON ACTIVATION. E-STOPS SHALL BE PILLA PART NO. BSD120 WITH PILCLHCOV1 COVER OR EQUAL. COORDINATE FINAL LOCATION WITH AHJ PRIOR TO INSTALLATION.
7	PROVIDE 30A/1P BREAKERS FOR POWER TO NEW BOILERS B-1 & B-2. EXISTING PANEL LP-G IS SQUARE-D NQOD PANELBOARD. UTIILIZE SPACES IN PANEL FROM EXISTING BOILERS BEING REMOVED.



N

OVERALL POWER PLAN

SCALE: 1/16" = 1'-0"



KEY PLAN

NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRADES

CENTRAL
BAY CITY, MICHIGAN

OVERALL POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B.KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

SHEET
C-E4.0

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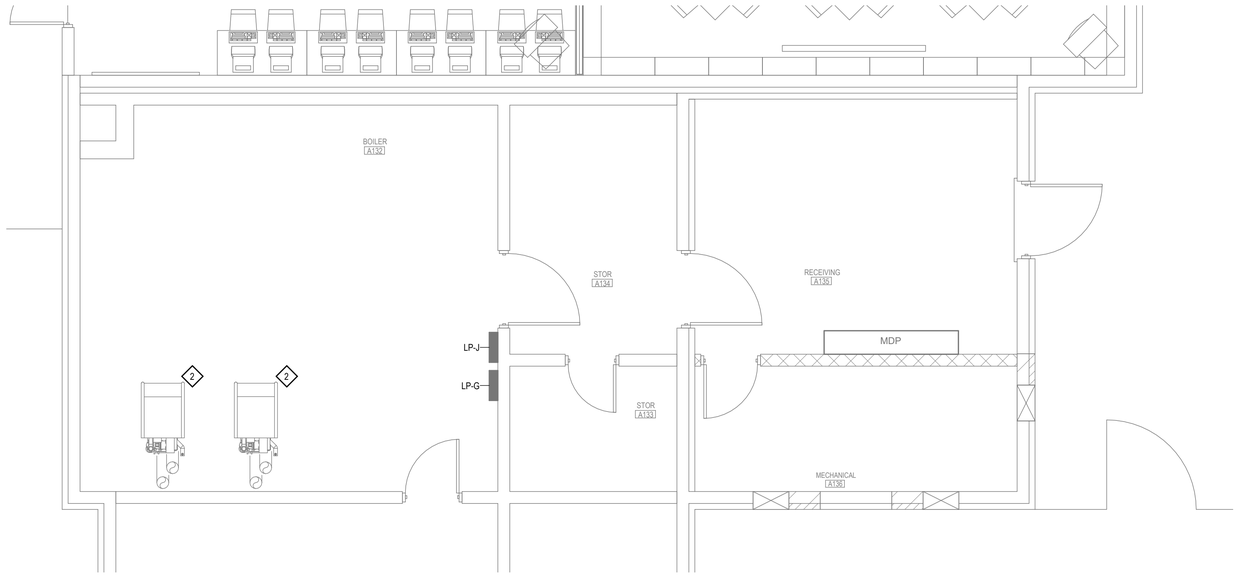
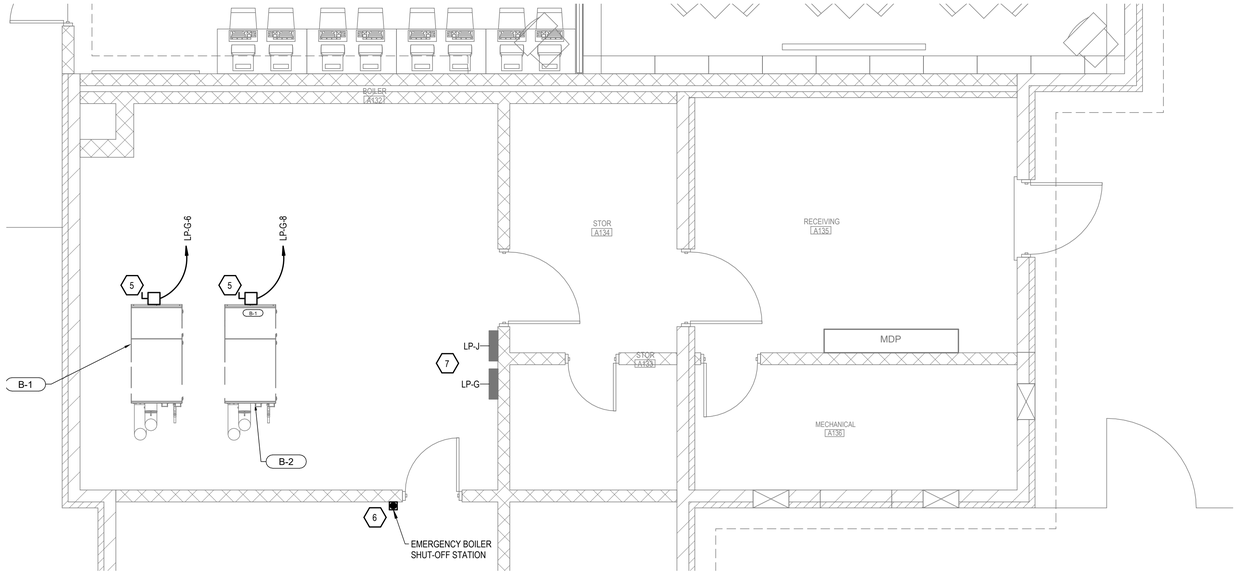


BOILER ROOM DEMOLITION PLAN

SCALE: 1/4" = 1'-0"



BOILER ROOM POWER PLAN

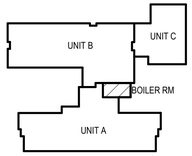
SCALE: 1/4" = 1'-0"

KEYED DEMOLITION NOTES

SYMBOL	DESCRIPTION
◇	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	DISCONNECT EXISTING UNIT HEATER. SALVAGE CIRCUIT TO BE USED WITH NEW UNIT HEATER.
2	DISCONNECT EXISTING BOILER CIRCUITS BACK TO PANEL.

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	RECONNECT NEW UNIT HEATER TO EXISTING POWER CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	PROVIDE COMBINATION MOTOR STARTER DISCONNECT FOR NEW MAKE UP AIR UNIT. UNIT SHALL BE INTERLOCKED WITH HOOD CONTROLS FOR SIMULTANEOUS OPERATION. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
3	PROVIDE NEW 15A/3P CIRCUIT BREAKER FOR EXISTING LP-G FOR POWER TO NEW KITCHEN MAU-1. EXISTING PANEL IS SQUARE-D NQOD PANELBOARD.
4	UTILIZE EXISTING CIRCUIT IN PANEL LP-E1 TO POWER NEW EQUIPMENT.
5	PROVIDE LOCAL 30A DISCONNECT SWITCH FOR NEW BOILERS. PROVIDE #10AWG CONDUCTORS AND #10G FOR CIRCUITING. FIELD VERIFY LOCATION AND COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
6	PROVIDE EMERGENCY SHUTDOWN SWITCH FOR NEW BOILERS. E-STOP SHALL BE WIRED TO BOILER CONTROL CIRCUIT TO SHUTDOWN ALL BOILERS UPON ACTIVATION. E-STOPS SHALL BE PILLA PART NO. BSD120 WITH PILCLHCOV1 COVER OR EQUAL. COORDINATE FINAL LOCATION WITH AHJ PRIOR TO INSTALLATION.
7	PROVIDE 30A/1P BREAKERS FOR POWER TO NEW BOILERS B-1 & B-2. EXISTING PANEL LP-G IS SQUARE-D NQOD PANELBOARD. UTILIZE SPACES IN PANEL FROM EXISTING BOILERS BEING REMOVED.



KEY PLAN

NOT TO SCALE

WILLIAM A. KIBBE & ASSOCIATES, INC.
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BANGOR SCHOOLS MECHANICAL UPGRADES

CENTRAL
BAY CITY, MICHIGAN

BOILER ROOM POWER & DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B.KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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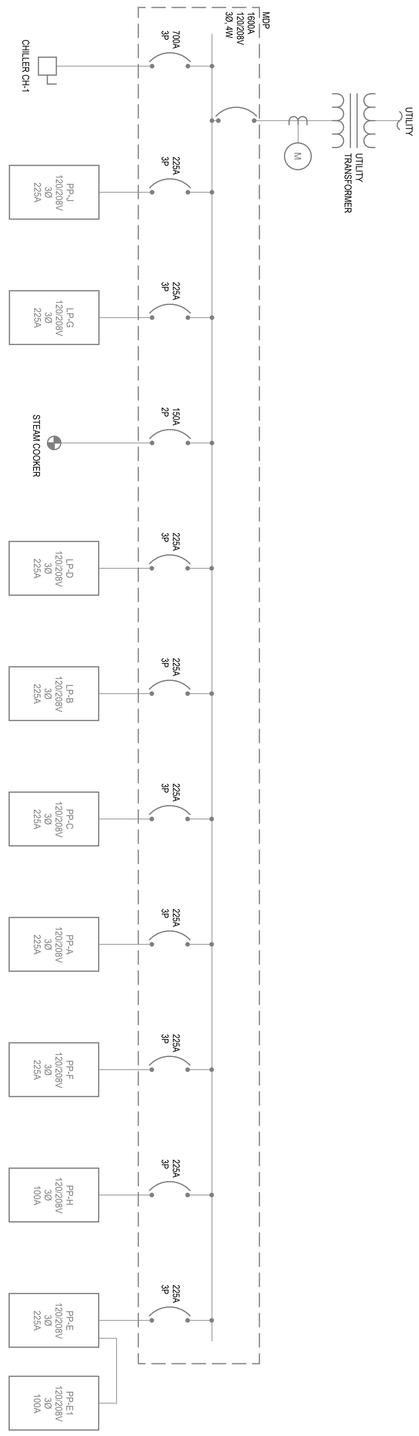

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

DRAWN BY: E. MARTER
DES'D BY: B.NISHON
CHKD BY: B.NISHON
PROJ # 21-1719-425
SHEET C-E6.0

ONE-LINE DIAGRAM

BANGOR SCHOOLS
MECHANICAL UPGRADES
CENTRAL
BAY CITY, MICHIGAN

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

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BRANCH PANEL: LP-G

LOCATION: BOILER A132
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	POLE LTS	20 A	1	180	355					1	20 A	UH-1 & UH-2	2
3	RECEIVING - REC	20 A	1			360	830			1	20 A	MECH A136 - EF-4	4
5	MECH A136/EXT - REC	20 A	1					540	2316	**1**	**30 A**	**BOILER A132 B-1**	**6**
7	BOILER A132 P-1	20 A	3	900	2316					**1**	**30 A**	**BOILER A132 B-2**	**8**
9	--	--	--			900	3038			3	50 A	BOILER A132 P-3	10
11	--	--	--					900	3038	--	--	--	12
13	BOILER A132 P-2	20 A	3	900	3038					--	--	--	14
15	--	--	--			900	600			1	20 A	HEAT TAPE (CHILLER)	16
17	--	--	--					900	600	1	20 A	TRANE CONTROL PANEL	18
19	**MAU-1**	**20 A**	**3**	420	500					1	20 A	FREEZER LIGHT	20
21	**--**	**--**	**--**			420	500			1	20 A	FREEZER PLUG	22
23	--	--	--					420	1200	3	20 A	FREEZER	24
25	Space	--	1	--	1200					--	--	--	26
27	Space	--	1			--	1200			--	--	--	28
29	Space	--	1					--	--	1	--	Space	30
		Total Load:		9809.3 VA		8748.3 VA		9914.3 VA					
		Total Amps:		83 A		73 A		84 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC	1260.9 VA	100.00%	1260.9 VA		
Power	4632.0 VA	100.00%	4632.0 VA	**TOTAL CONN LOAD:**	28471.9 VA
				TOTAL EST DEMAND:	28471.9 VA
				TOTAL CONN CURRENT:	79 A
				TOTAL EST DEMAND CURRENT:	79 A

NOTES:

BRANCH PANEL: LP-E1

LOCATION: JC A105
SUPPLY FROM: LP-E
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 100 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	CLRM A108 UV-3	20 A	1	1600	1600					1	20 A	CLRM A111 UV-3	2
3	CLRM A107 UV-3	20 A	1			1600	1600			1	20 A	CLRM A112 UV-2	4
5	LOUNGE UV-5 (ALT UV-6)	20 A	1					1130	1600	1	20 A	CLRM A113 UV-2	6
7	CLRM A111 - REC	20 A	1	360	265					**1**	**20 A**	**TLTS A104, A106/ENTRANCE CUH 1**	**8**
9	COMP PLUG SMALL CLASS BY OFFICE	20 A	1			540	540			1	20 A	CLRM A107, A108 - REC	10
11	OFFICE A102 IDF REC	20 A	1					360	1340	1	20 A	EF-6, EF-7	12
13	RESTROOMS	20 A	1	600	1080					1	20 A	LOUNGE OFFICE ALT-REC	14
15	EX FAN	20 A	1			676	1080			1	20 A	SECRETARY OFFICE - REC	16
17	LIGHTS RM 8	20 A	1					600	1080	1	20 A	SECRETARY OFFICE - REC	18
19	Space	--	1	--	--					1	--	Space	20
21	Space	--	1			--	--			1	--	Space	22
23	Space	--	1					--	--	1	--	Space	24
25	Space	--	1	--	--					1	--	Space	26
27	Space	--	1			--	--			1	--	Space	28
29	Space	--	1					--	--	1	--	Space	30
		Total Load:		5505.0 VA		6036.0 VA		6110.0 VA					
		Total Amps:		46 A		51 A		52 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
				TOTAL CONN LOAD:	17651.0 VA
				TOTAL EST DEMAND:	17651.0 VA
				TOTAL CONN CURRENT:	49 A
				TOTAL EST DEMAND CURRENT:	49 A

NOTES:

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BANGOR SCHOOLS
MECHANICAL UPGRADES
CENTRAL
BAY CITY, MICHIGAN

PANEL SCHEDULES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B.KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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BANGOR TOWNSHIP SCHOOLS

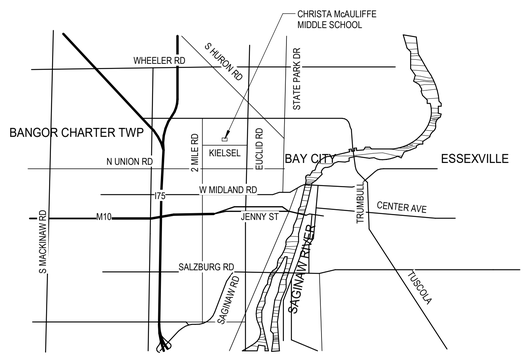
CHRISTA McAULIFFE MIDDLE SCHOOL
MECHANICAL UPGRADES

3281 KIESEL ROAD
BAY CITY MICHIGAN

SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
M-M1.0	OVERALL MECHANICAL PLAN - DEMOLITION	X
M-M3.0	UNIT 'A' OVERHEAD MECHANICAL PLAN	X
M-M3.1	UNIT 'B' OVERHEAD MECHANICAL PLAN	X
M-M3.2	UNIT 'C' OVERHEAD MECHANICAL PLAN	X
M-M3.3	UNIT 'D' OVERHEAD MECHANICAL PLAN	X
M-M3.4	ENLARGED BOILER ROOM PLANS	X
M-M8.0	MECHANICAL SCHEDULES	X
M-M8.1	MECHANICAL SCHEDULES	X
ELECTRICAL		
M-E0.0	GENERAL NOTES	X
M-E1.0	DEMOLITION DRAWINGS	X
M-E4.0	UNIT 'A' POWER PLAN	X
M-E4.1	UNIT 'B' POWER PLAN	X
M-E4.2	UNIT 'C' POWER PLAN	X
M-E4.3	UNIT 'D' POWER PLAN	X
M-E4.4	BOILER ROOM DEMOLITION & POWER PLAN	X
M-E6.0	ONE-LINE DIAGRAM	X
M-E7.0	PANEL SCHEDULES	X
M-E7.1	PANEL SCHEDULES	X

LOCATION MAP



CONTACT INFORMATION

OWNER / CLIENT:
BANGOR TOWNSHIP SCHOOLS
3359 E. MIDLAND RD
BAY CITY, MI 48706
(989) 684-8121

KURTIS PAKE
FINANCE DIRECTOR
PHONE: (989) 684-8121
EMAIL: pakek@bangorschools.org

ARCHITECT / ENGINEER:
TYLER MIETZ, P.E.
PROJECT ENGINEER

PHONE: (989) 863-4034
EMAIL: tyler@trm-engineering.com
WEB: www.kibbe.com

CODE AUTHORITY:
MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF CONSTRUCTION CODES/PLAN REVIEW DIVISION
PO BOX 30255
LANSING, MI 48909
(517) 241-9328

MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF FIRE SERVICES/PLAN REVIEW DIVISION
PO BOX 30700
LANSING, MI 48909
(517) 241-8847

Know what's **below.**
Call before you dig.

PROJECT INFORMATION

BUILDING CODE COMPLIANCE
- 2015 MICHIGAN BUILDING CODE (MBC)
- 2018 MICHIGAN PLUMBING CODE (MPC)
- 2015 MICHIGAN MECHANICAL CODE (MMC)
- 2017 NATIONAL ELECTRICAL CODE (NEC)
- 2018 INTERNATIONAL FIRE CODE (IFC)
- 2012 NFPA 101 LIFE SAFETY CODE (LSC)

USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP E - EDUCATIONAL GROUP

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- ALLOWED - 2
- ACTUAL - 1

BUILDING AREA [TBL 506.2]
- ALLOWABLE - 14,400 SFT/ FLR
- ACTUAL - 73,250 SFT

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB, II(000)

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- NO SPRINKLER SYSTEM

OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- NO CHANGE

CORRIDORS [SEC 1020, TBL 1020.1]
- 1HR RATING

WILLIAM A. KIBBE & ASSOCIATES, INC.
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BANGOR TOWNSHIP SCHOOLS
CHRISTA McAULIFFE MIDDLE SCHOOL
MECHANICAL UPGRADES
BAY CITY MICHIGAN

COVER SHEET

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: T. MIETZ
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

SHEET
CS

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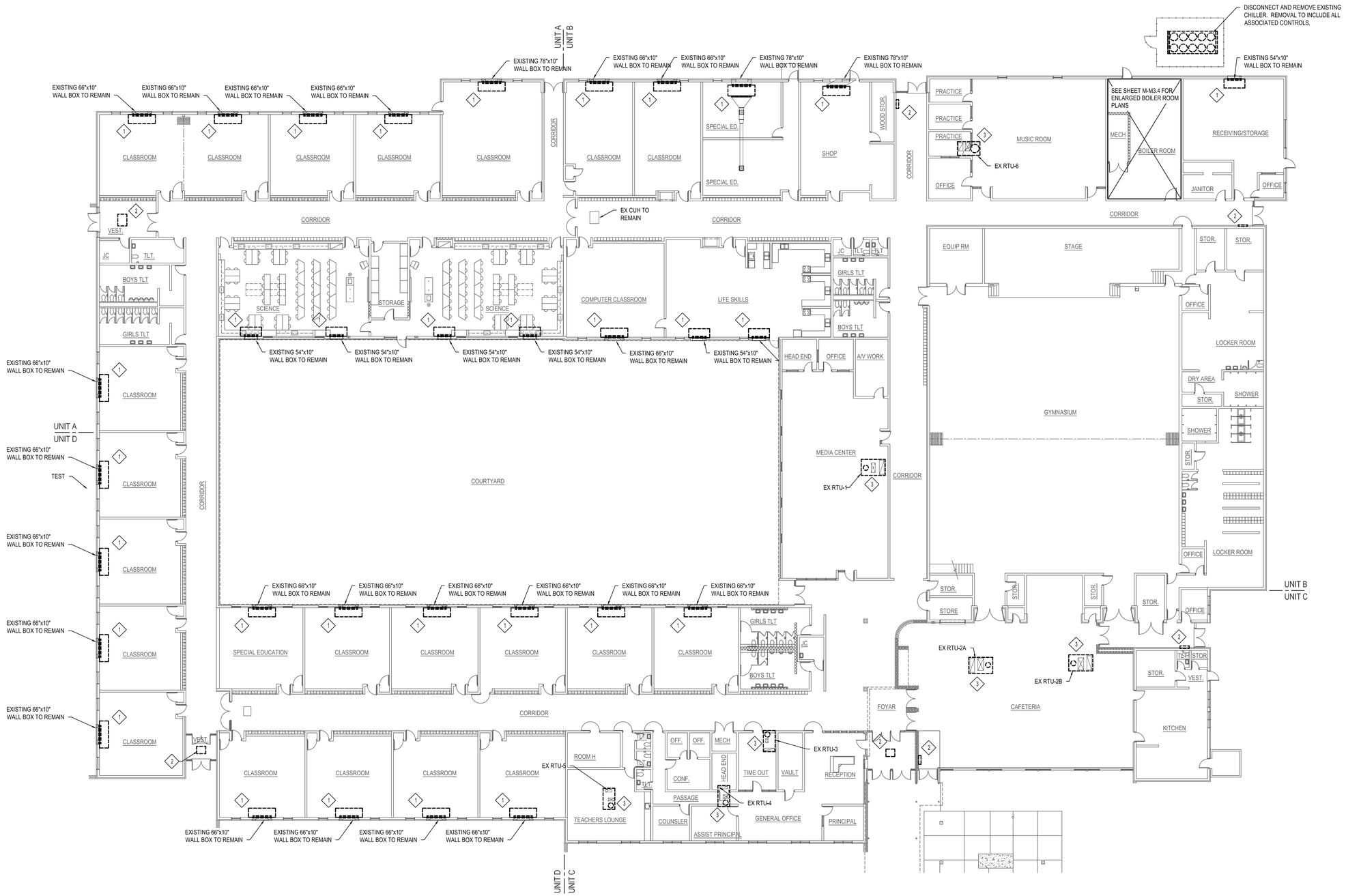


OVERALL MECHANICAL PLAN - DEMOLITION

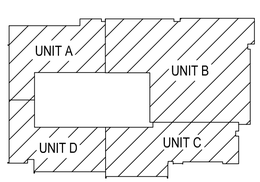
SCALE: 1/16" = 1'-0"

MECHANICAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING UNIT VENTILATOR. MAINTAIN EXISTING CONTROL WIRING, HHWS, HHWR, CWS, AND CWR ROUGH-INS FOR CONNECTION TO NEW UNIT.
2. DISCONNECT AND REMOVE EXISTING CABINET UNIT HEATER. MAINTAIN EXISTING CONTROL WIRING, HHWS, AND HHWR ROUGH-INS FOR CONNECTION TO NEW UNIT.
3. DISCONNECT AND REMOVE EXISTING ROOFTOP UNIT. DISCONNECT AND MAINTAIN EXISTING GAS SERVICE AND SUPPLY AND RETURN DUCT FOR CONNECTION TO NEW UNIT. MODIFY EXISTING SERVICES AS REQUIRED FOR CONNECTION TO NEW UNIT. PROVIDE NEW CURB ADAPTOR AS REQUIRED.

GENERAL DEMOLITION NOTES

1. ALL SURFACES DISTURBED OR HOLES CREATED DUE TO DEMOLITION TO BE PATCHED TO MATCH SURROUNDING SURFACE.
2. ALL MATERIALS RESULTING FROM DEMOLITION OPERATION SHALL BE PROMPTLY REMOVED FROM PREMISES AND LEGALLY DISPOSED OF.
3. CONTRACTOR TO CONTACT OWNER PRIOR TO REMOVAL AND TURN OVER TO OWNER ANY EQUIPMENT OR MATERIALS REQUESTED.
4. PIPE CAPPING TO BE DONE WITH MATERIALS TO MATCH EXISTING PIPING.
5. ALL ROOF PATCHING TO BE COORDINATED WITH OWNER TO MAINTAIN EXISTING ROOFING WARRANTY.



KEY PLAN

NOT TO SCALE

WILLIAM A. KERBER & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRADES

CHRISTA MCAULIFFE

BAY CITY, MICHIGAN

OVERALL MECHANICAL PLAN - DEMOLITION

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER

DES'D BY: R. MEYER

DRAWN BY: R. MEYER

PROJ #: 21-1719-0435

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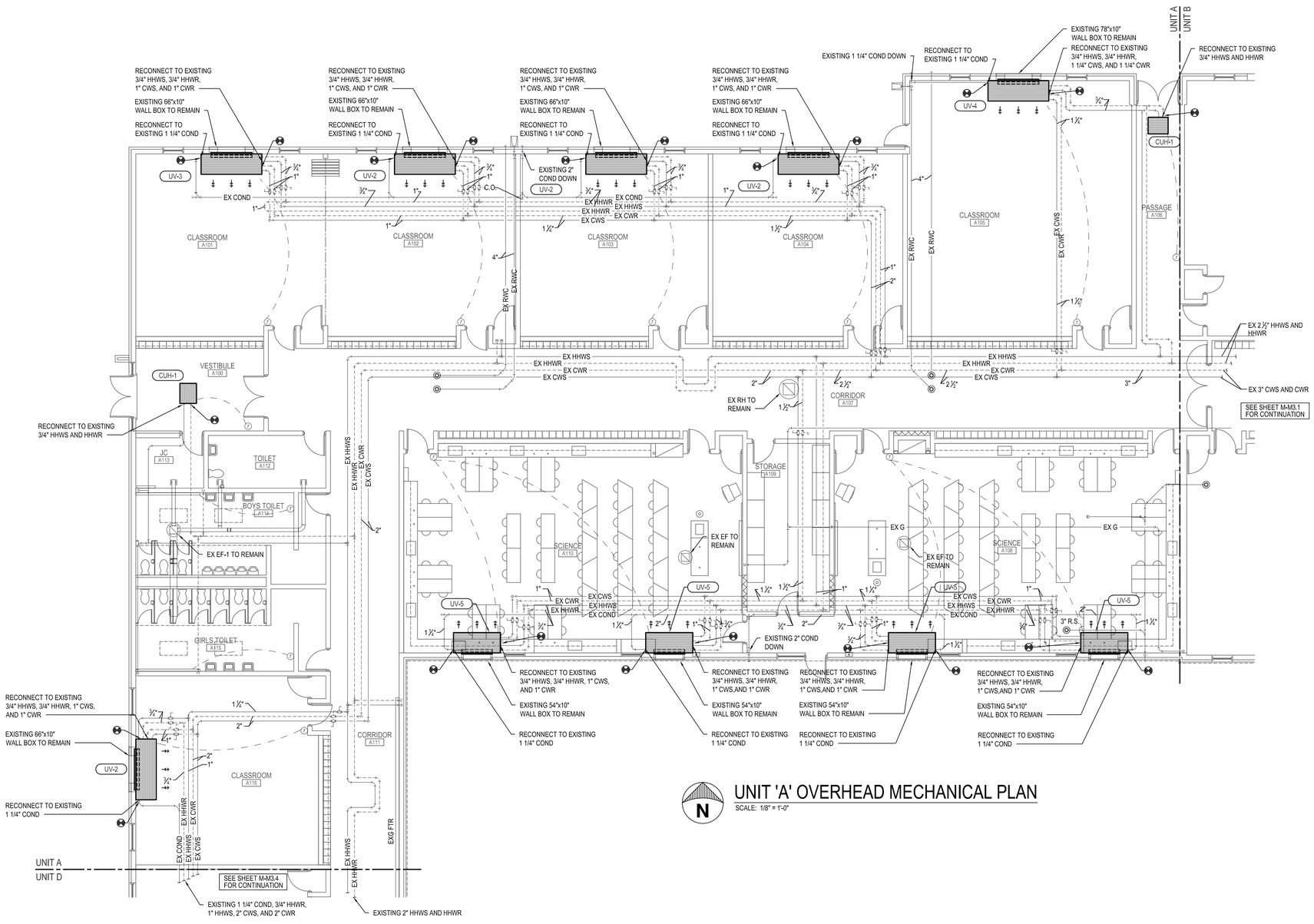
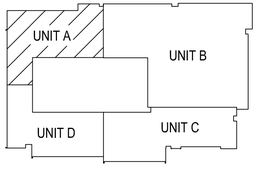


UNIT 'A' OVERHEAD MECHANICAL PLAN

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



KEY PLAN

NOT TO SCALE

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRAGES

CHRISTA MCAULIFFE
BAY CITY, MICHIGAN

UNIT 'A' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
PROJ #: 21-1719-0435

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M-M3.0

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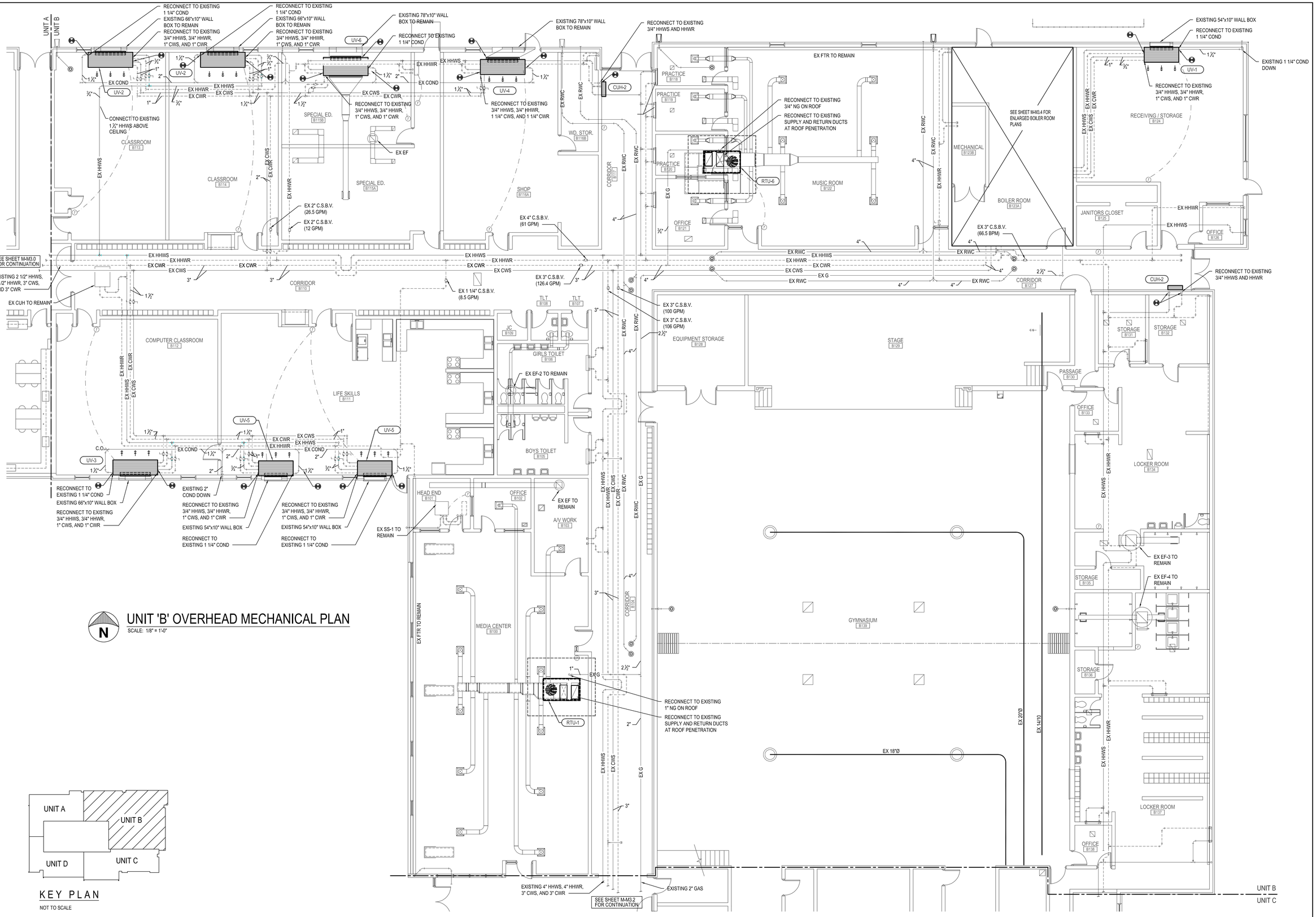

UNIT 'B' OVERHEAD MECHANICAL PLAN

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

KEY PLAN

NOT TO SCALE

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BANGOR SCHOOLS MECHANICAL UPGRADES

CHRISTA MCAULIFFE

BAY CITY, MICHIGAN

UNIT 'B' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER

DES'D BY: R. MEYER

DRAWN BY: R. MEYER

PROJ #: 21-1719-0435

SHEET

M-M3.1

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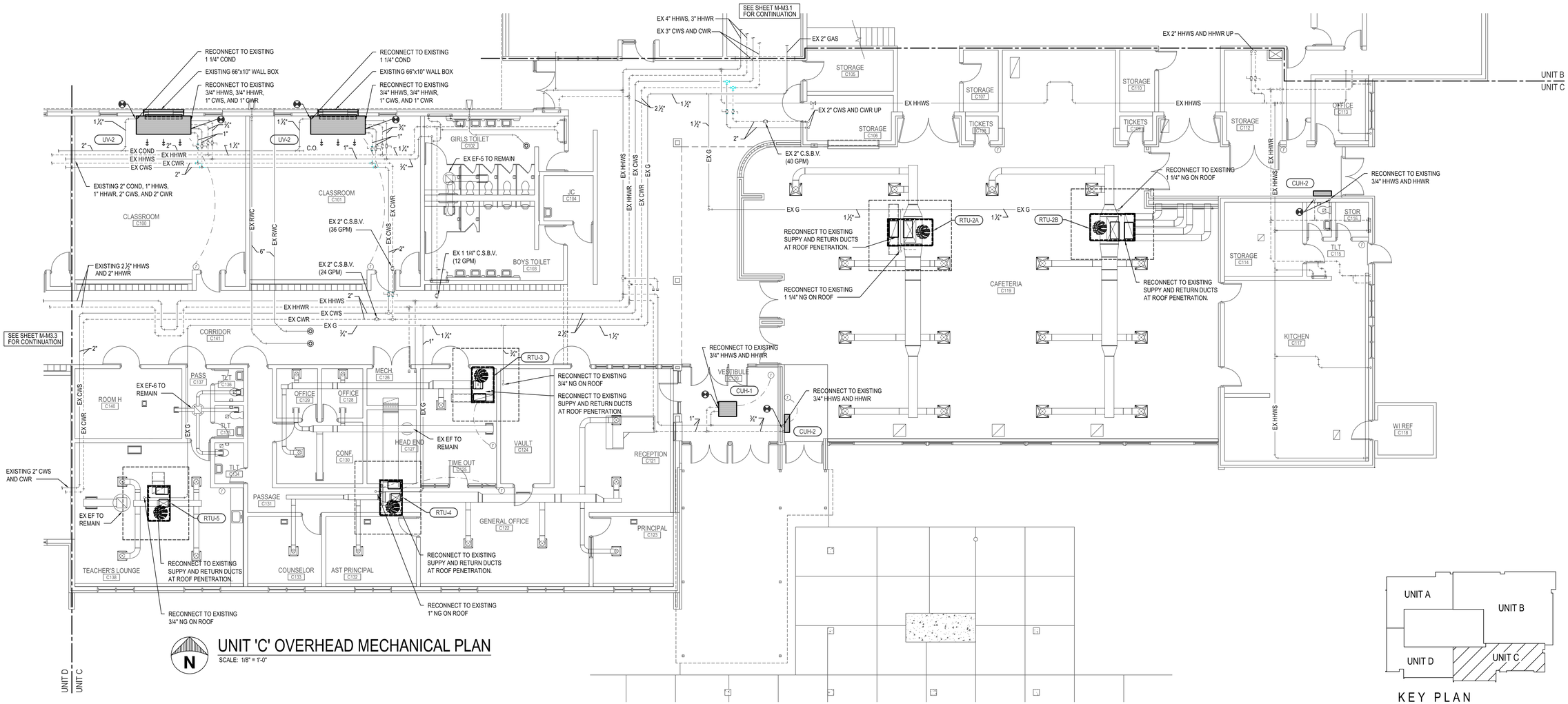

UNIT 'C' OVERHEAD MECHANICAL PLAN

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

KEY PLAN

NOT TO SCALE

WILLIAM A. KOBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRAGES

CHRISTA MCAULIFFE
BAY CITY, MICHIGAN

UNIT 'C' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

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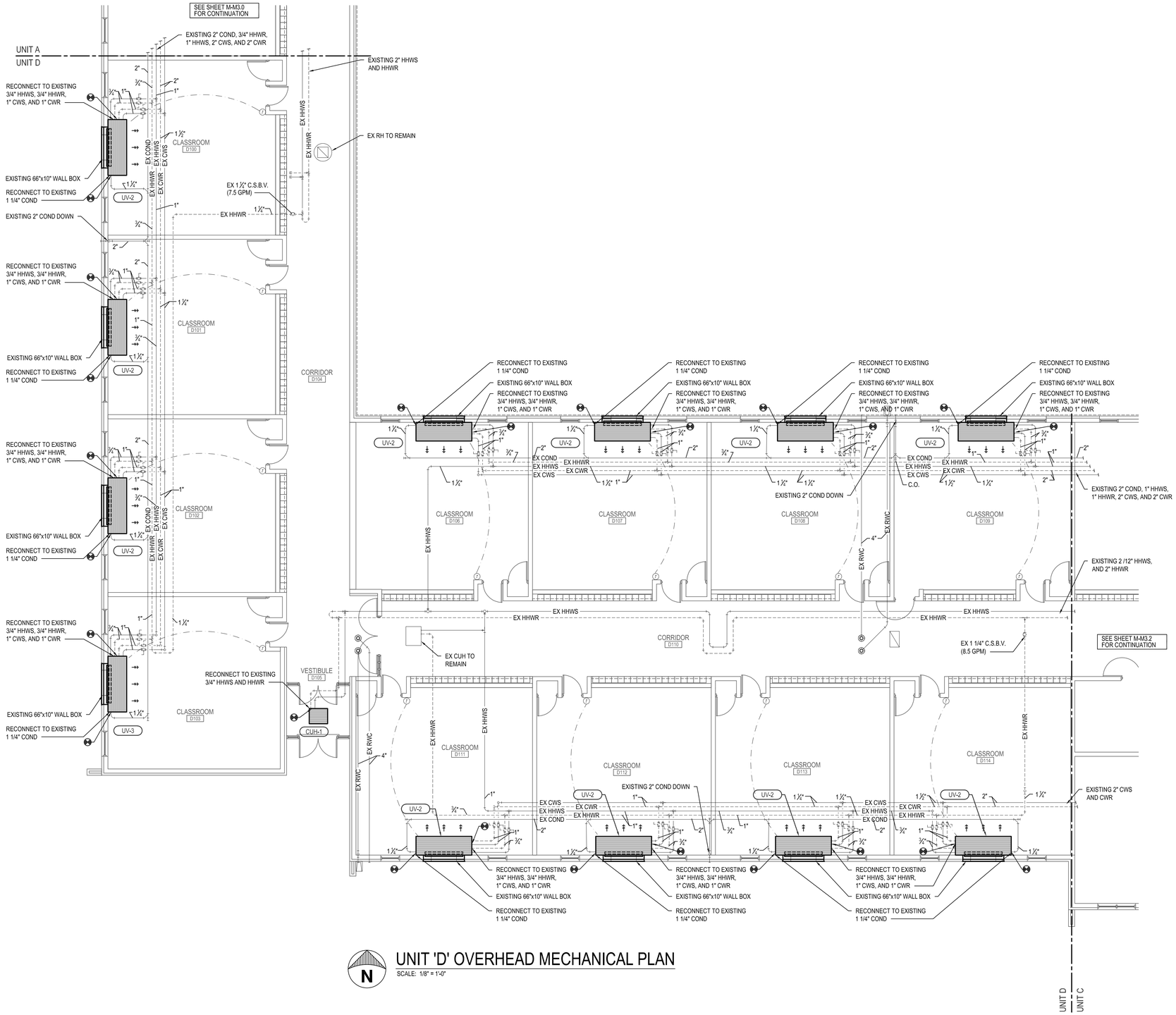
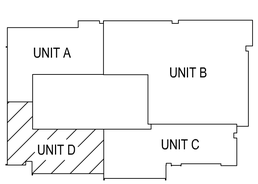


UNIT 'D' OVERHEAD MECHANICAL PLAN

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



KEY PLAN

NOT TO SCALE

VAN ATKER KOTKOS AND WILLIAM A. KOBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRAGES

CHRISTA MCAULIFFE

BAY CITY, MICHIGAN

UNIT 'D' OVERHEAD MECHANICAL PLAN

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	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER

DES'D BY: R. MEYER

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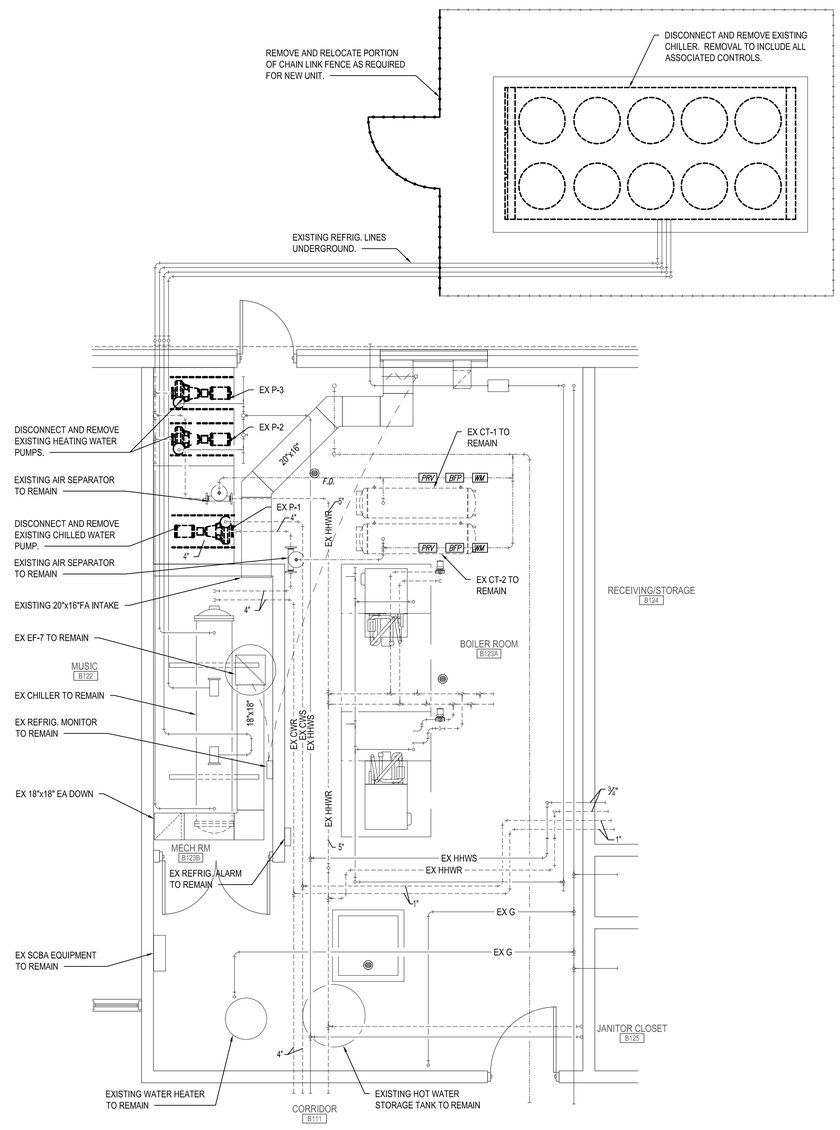
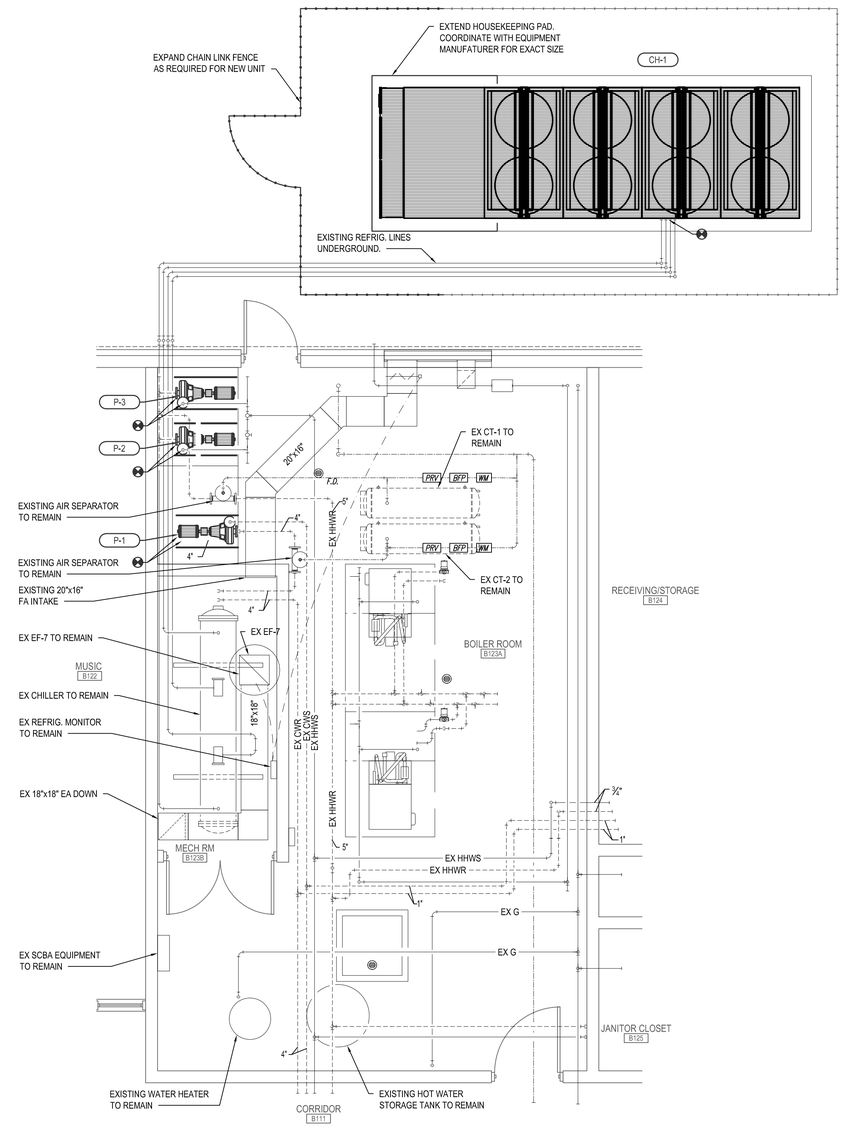


BOILER ROOM DEMOLITION PLAN

SCALE: 1/4" = 1'-0"



BOILER ROOM RENOVATION PLAN

SCALE: 1/4" = 1'-0"

WILLIAM A. KIBBE & ASSOCIATES, INC.
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BANGOR SCHOOLS
MECHANICAL UPGRAGES
CHRISTA MCAULIFFE
BAY CITY, MICHIGAN

ENLARGED BOILER ROOM PLANS

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
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PACKAGED ROOFTOP UNIT SCHEDULE (ALT #M1)

DESIGN TEMPERATURES — SUMMER: OUTDOOR = 87°/72° ROOM = 74°/50% — WINTER: OUTDOOR = 0° ROOM = 70°

SEE 3/M8

MARK	TYPE	AREA	CFM	HEATING		COOLING	FLA	MCA	VØ	SUPPLY FAN		TOTAL	MIN. O.A.	WEIGHT	MODEL	REMARKS
				MBH INPUT	MBH OUTPUT	MBH				H.P.	RPM	S.P.	(CFM)	(LBS.)		
RTU-1	GAS FIRED	MEDIA CENTER	4000	200	160	116.3	7.3	49	208/3	2.75	1750	0.75	750	1384	YSC120	
RTU-2A, 2B	GAS FIRED	CAFETERIA	4000	200	160	116.3	7.3	49	208/3	2.75	1750	0.75	750	1384	YSC120	
RTU-3	GAS FIRED	ADMINISTRATION	960	80	64	35.6	5.7	20	208/3	0.75	1075	0.75	150	747	YSC036	
RTU-4	GAS FIRED	ADMINISTRATION	1600	100	81	48.8	6.9	26	208/3	1.0	1040	0.75	150	767	YSC048	
RTU-5	GAS FIRED	TEACHERS LOUNGE	1200	80	64	37	5.7	20	208/3	0.75	1400	0.75	225	747	YSC036	
RTU-6	GAS FIRED	MUSIC ROOM	2400	120	96	75	7.3	35	208/3	1.0	1750	0.75	375	1045	YSC072	

BASED ON TRANE :
OPTION:
1. ROOF CURB ADAPTOR AS REQUIRED.
2. BAROMETRIC RELIEF.
3. ECONOMIZER.
4. CONVENIENCE OUTLET.
5. FACTORY DISCONNECT/SINGLE POINT CONNECTION.
6. CONSTANT SPEED FAN.
7. RA/SA SMOKE DETECTOR AS REQUIRED.

CHILLER SCHEDULE

45° LWT
58° EWT

SEE 1/M-M8.0

TYPE	TYPE	NOMINAL TONS	WEIGHT (LBS.)	MCA	MOP	KW	V/Ø	REFRIGERANT CIRCUITS	MODEL
CH-1	AIR COOLED LIQUID	150	14400	632	800	149.7	208/3	2	ACRB1505AUA

BASED ON TRANE

PUMP SCHEDULE

SEE 3/M-M8.1 3/M-M8.1

MARK	TYPE	SYSTEM	GPM	FT.P.D.	SUCTION "	DISCHARGE "	V/Ø	H.P.	RPM	MODEL	REMARKS
P-1	BASE-MOUNTED	CHILLED WATER	265	59	3"	2 1/2"	208/3	7.5	1750	E1510-2.5BB	
P-2 & 3	BASE-MOUNTED	HEATING HOT WATER	88	47	2"	1 1/2"	208/3	2	1750	E1510-1.5AD	

BASED ON B & G

UNIT VENTILATOR SCHEDULE

DESIGN TEMPERATURES — SUMMER: OUTDOOR = 87°/72° ROOM = 74°/50% 45° EWT — WINTER: OUTDOOR = 0° ROOM = 70° 180° EWT

SEE 3/M-M8.1

MARK	TYPE	AREA	CFM	HEATING			COOLING			H.P.	V/Ø	MIN. O.A. CFM	ARRANGEMENT		MODEL
				MBH	GPM	FT.P.D.	MBH	GPM	FT.P.D.				INLET	DISCHARGE	
UV-1	HORIZONTAL	CLASSROOM	944	54.2	1.5	0.22	29.9	5.2	4.41	1	115/1	375	H	5	HUVC100
UV-2	HORIZONTAL	CLASSROOM	1381	65.9	1.5	0.27	40.7	6	2.86	1	115/1	375	H	5	HUVC150
UV-3	HORIZONTAL	CLASSROOM	1381	65.9	1.5	0.27	40.7	6	2.86	1	115/1	375	H	5	HUVC150
UV-4	HORIZONTAL	CLASSROOM	1535	67.5	1.5	0.27	53.3	8.7	5.58	1	115/1	375	H	5	HUVC200
UV-5	HORIZONTAL	CLASSROOM	944	40.2	1	0.10	29.9	5.2	4.41	1	115/1	375	H	5	HUVC100
UV-6	HORIZONTAL	TECH. ED.	1535	82.7.	2	0.45	43.7	5.8	2.68	1	115/1	375	H	5	HUVC200

BASED ON TRANE

CABINET UNIT HEATER SCHEDULE

180° E.W.T.
60° E.A.T.

SEE 7/M8

MARK	TYPE	AREA	CFM	MBH	GPM	FT.P.D.	H.P.	V/Ø	MODEL	REMARKS
CUH-1	HORIZ. RECESSED	VESTIBULE	600	44.1	4	5.65	0.089	115/1	FFEB060	
CUH-2	FLOOR CABINET	CAFETERIA	600	35.25	3	10.0	0.084	115/1	FFBB060	

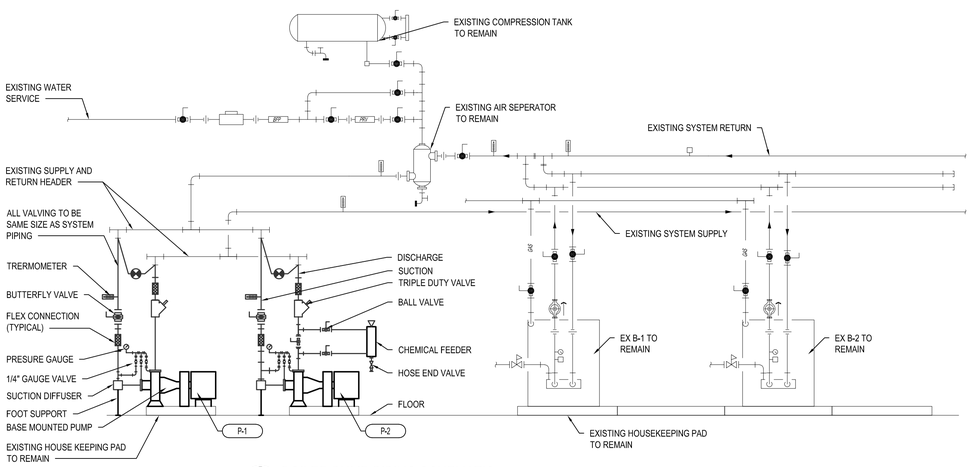
BASED ON TRANE "FORCE-FLO"

MECHANICAL SYMBOLS LIST

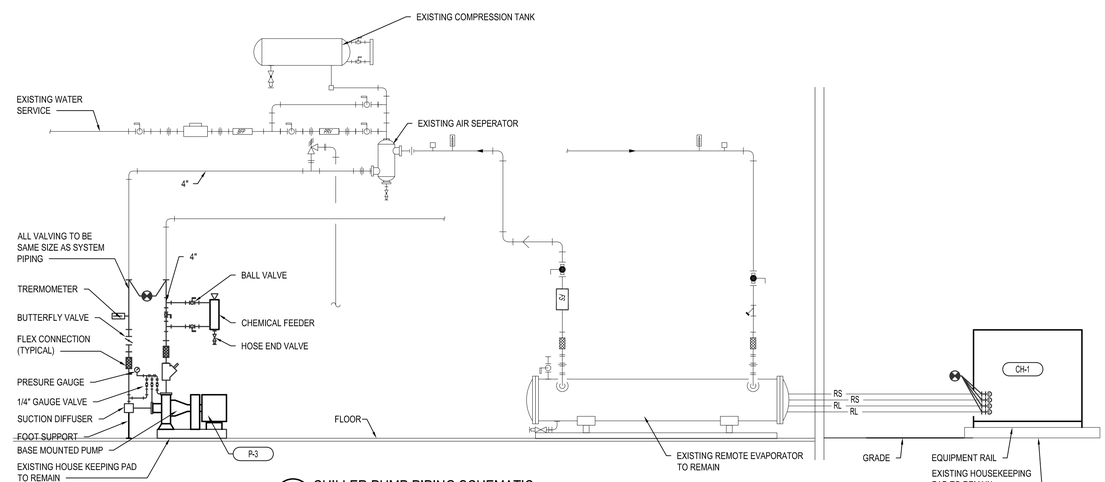
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISH FLOOR	RA	RETURN AIR
AGA	AMERICAN GAS ASSOCIATION	RAR	RETURN AIR REGISTER
AHU	AIR HANDLING UNIT	SA	SUPPLY AIR
ASME	AMERICAN SOCIETY OF MECH. ENGINEERS	SAR	SUPPLY AIR REGISTER
BTUH	BRITISH THERMAL UNITS PER HOUR	S.C.C.V.	SELF CONTAINED CONTROL VALVE
CA	COMBUSTION AIR	S.P.	STATIC PRESSURE
CD	CEILING DIFFUSER	TCC	TEMPERATURE CONTROL CONTRACTOR
CFM	CUBIC FEET PER MINUTE	UH	UNIT HEATER
COND	CONDENSATE	U.L.	UNDERWRITERS LABORATORIES
C.S.B.V.	CIRCUIT SETTER BALANCE VALVE	U.N.O.	UNLESS NOTED OTHERWISE
CUH	CABINET UNIT HEATER	UV	UNIT VENTILATOR
CWS	CHILLED WATER SUPPLY	WH	WATER HEATER
CWR	CHILLED WATER RETURN	WM	WATER METER
EAR	EXHAUST AIR REGISTER	WTD	WATER TEMPERATURE DROP
EAT	ENTERING AIR TEMPERATURE	WTR	WATER TEMPERATURE RISE
EC	ELECTRIC CONTRACTOR		CHECK VALVE
EF	EXHAUST FAN		BALANCE VALVE (CIRCUIT SETTER)
EWT	ENTERING WATER TEMPERATURE		CONTROL VALVE
EX	EXISTING		PRESSURE AND TEMPERATURE RELIEF VALVE
FD	FLOOR DRAIN		THREE-WAY VALVE
FFE	FINISHED FLOOR ELEVATION		HOSE END VALVE
FPF	FINS PER FOOT		BALL VALVE
FT.P.D.	FEET OF PRESSURE DROP		BUTTERFLY VALVE
FTR	FIN-TUBE RADIATION	PRV	PRESSURE REDUCING VALVE
G	GAS	BFP	BACKFLOW PREVENTOR
GC	GENERAL CONTRACTOR		UNION
GPM	GALLONS PER MINUTE		STRAINER
HHWR	HEATING HOT WATER RETURN		MANUAL AIR VENT
HHWS	HEATING HOT WATER SUPPLY	FS	FLOW SWITCH
HP	HORSE POWER		GAUGE
LAT	LEAVING AIR TEMPERATURE		THERMOMETER
LWT	LEAVING WATER TEMPERATURE		CONNECT TO EXISTING
MC	MECHANICAL CONTRACTOR	H	HUMIDISTAT
OA	OUTSIDE AIR	T	THERMOSTAT
			PUMP (INLINE)

MECHANICAL GENERAL NOTES

1. ALL WORK TO COMPLY WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND ORDINANCES
2. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING.
3. SEAL ALL DUCT JOINTS.
4. PROVIDE ACCESS PANELS TO ALL VALVES, DAMPERS, TRAPS, FILTERS, EQUIPMENT, ETC.
5. COORDINATE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND CEILING MOUNTED EQUIPMENT WITH THE REFLECTED CEILING PLAN.
6. DUCT SIZES NOTED REPRESENT NET FREE INTERIOR DIMENSIONS.
7. PROVIDE BALANCE DAMPERS IN EACH SUPPLY AND EXHAUST DUCT BRANCH.
8. ALL ROUND DUCTWORK TO BE SPIRAL TYPE UNLESS NOTED OTHERWISE.
9. HEATING PIPING TO BE MINIMUM 3/4" DIAMETER.
10. VERIFY MOUNTING HEIGHTS OF WALL CAPS AND LOUVERS WITH ARCHITECTURAL DRAWINGS.
11. ALL VALVES SHOWN ON FLOOR PLANS ARE IN ADDITION TO ALL VALVES SHOWN ON PIPING SCHEMATICS.
12. REFER TO PIPING SCHEMATIC DETAILS FOR UNIONS, VALVES, AIR VENTS, THERMOMETERS, ETC. REQUIRED AT SPECIFIC PIECES OF EQUIPMENT.
13. ALL ROOF CURBS FOR MECHANICAL EQUIPMENT TO BE MINIMUM 16" ABOVE FINISHED ROOF SURFACE.
14. EQUIPMENT, DUCTS, PIPING, ETC. TO BE SUPPORTED FROM PANEL POINTS OF STRUCTURAL MEMBERS. NO MECHANICAL ITEMS TO BE SUPPORTED FROM DECKING. CONCENTRATED MECHANICAL LOADS TO BE DISTRIBUTED OVER TWO OR MORE JOISTS. CONCENTRATED LOADING ON A SINGLE STRUCTURAL MEMBER IS TO BE AVOIDED.
15. SUPPLY AIR DIFFUSERS MAY BE CONNECTED WITH A MAXIMUM 5 FEET OF INSULATED FLEXIBLE DUCT WHEN DUCT IS CONCEALED. ALL RETURN AIR REGISTERS AND EXHAUST AIR REGISTERS TO BE DUCTED WITH SHEET METAL.
16. NEW THERMOSTATS TO BE LOCATED AT OLD THERMOSTATS' LOCATIONS WHERE POSSIBLE. IF NEW T'STATS ARE NOT IN OLD LOCATIONS, THEN OLD LOCATION IS TO BE REMOVED AND WALL PATCHED TO MATCH EXISTING.
17. MECHANICAL CONTRACTOR TO COORDINATE WITH GENERAL ON REMOVAL, REINSTALLATION, AND PATCHING OF EXISTING CEILINGS WHERE ACCESS IS NEEDED FOR INSTALLATION OF NEW EQUIPMENT, PIPING, ETC.
18. MECHANICAL CONTRACTOR TO COORDINATE WITH OWNER FOR ALL NEW ROOFING WORK TO MAINTAIN EXISTING ROOFING WARRANTY.



1/M-M8.0 BOILER PUMP PIPING SCHEMATIC
NO SCALE



2/M-M8.0 CHILLER PUMP PIPING SCHEMATIC
NO SCALE

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CHRISTA MCAULIFFE
BAY CITY, MICHIGAN

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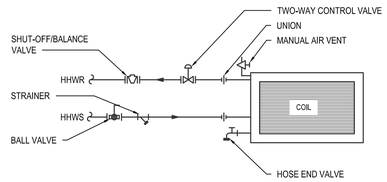
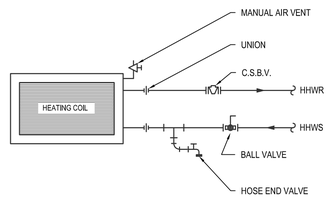
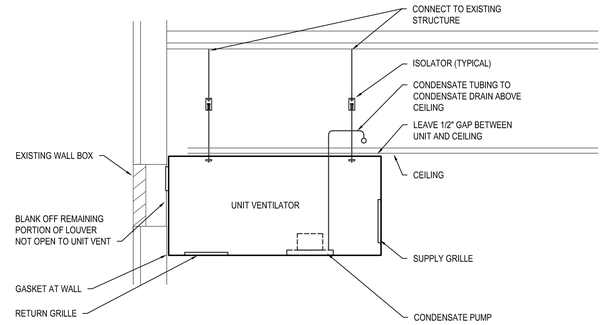


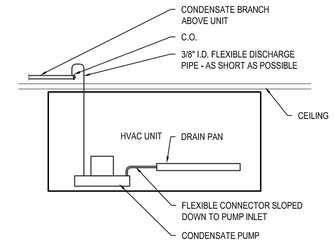
1 M-M8.1 UNIT VENTILATOR PIPING SCHEMATIC
NO SCALE HEATING/COOLING



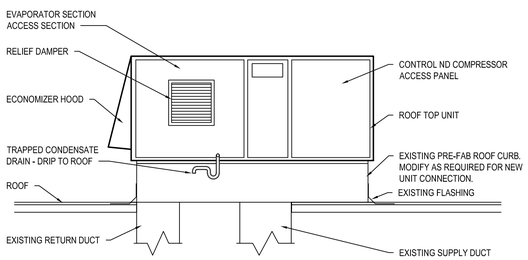
2 M-M8.1 CABINET UNIT HEATER PIPING SCHEMATIC
NO SCALE



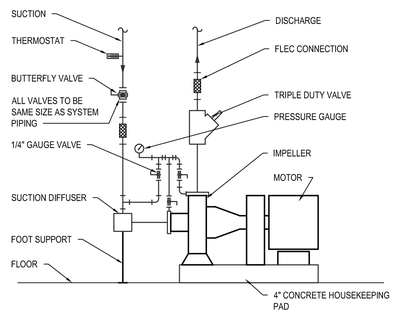
3 M-M8.1 UNDER CEILING UNIT VENTILATOR SECTION
NO SCALE



4 M-M8.1 CONDENSATE PUMP PIPING SCHEMATIC
SCALE: 1" = 1'-0"



5 M-M8.1 TYPICAL ROOF TOP UNIT DETAIL
NO SCALE



6 M-M8.1 BASE-MOUNTED PUMP PIPING SCHEMATIC
NO SCALE

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BAY CITY, MICHIGAN

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CIRCUIT CONDUIT & CONDUCTOR SCHEDULE

FUSE/CIRCUIT BREAKER - AMP/POLE	PHASE/NEUTRAL (NOTE 3)	GROUND	CONDUIT
15A/1P & 20A/1P	2 - 12 AWG	1 - 12 AWG	3/4"
15A/2P & 20A/2P	2 OR 3 - 12 AWG	1 - 12 AWG	3/4"
15A/3P & 20A/3P	3 OR 4 - 12 AWG	1 - 12 AWG	3/4"
25A/1P & 30A/1P	2 - 10 AWG	1 - 10 AWG	3/4"
25A/2P & 30A/2P	2 OR 3 - 10 AWG	1 - 10 AWG	3/4"
25A/3P & 30A/3P	3 OR 4 - 10 AWG	1 - 10 AWG	3/4"
35A/1P & 40A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
35A/2P & 40A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
35A/3P & 40A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
40A/1P & 45A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
40A/2P & 45A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
40A/3P & 45A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
60A/1P	2 - 6 AWG	1 - 10 AWG	3/4"
60A/2P	2 OR 3 - 6 AWG	1 - 10 AWG	3/4"
60A/3P	3 OR 4 - 6 AWG	1 - 10 AWG	1"
70A/1P	2 - 4 AWG	1 - 8 AWG	1"
70A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
70A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
80A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
80A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
90A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
90A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
100A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
100A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
110A/2P	2 OR 3 - 2 AWG	1 - 6 AWG	1 1/4"
110A/3P	3 OR 4 - 2 AWG	1 - 6 AWG	1 1/4"
125A/2P	2 OR 3 - 1 AWG	1 - 6 AWG	1 1/4"
125A/3P	3 OR 4 - 1 AWG	1 - 6 AWG	1 1/2"
150A/2P	2 OR 3 - 1/0 AWG	1 - 6 AWG	1 1/2"
150A/3P	3 OR 4 - 1/0 AWG	1 - 6 AWG	2"
175A/2P	2 OR 3 - 2/0 AWG	1 - 6 AWG	2"
175A/3P	3 OR 4 - 2/0 AWG	1 - 6 AWG	2"
200A/2P	2 OR 3 - 3/0 AWG	1 - 6 AWG	2"
200A/3P	3 OR 4 - 3/0 AWG	1 - 6 AWG	2"
225A/2P	2 OR 3 - 4/0 AWG	1 - 4 AWG	2"
225A/3P	3 OR 4 - 4/0 AWG	1 - 4 AWG	2 1/2"
250A/2P	2 OR 3 - 250 MCM	1 - 4 AWG	2 1/2"
250A/3P	3 OR 4 - 250 MCM	1 - 4 AWG	3"
300A/2P	2 OR 3 - 350 MCM	1 - 4 AWG	3"
300A/3P	3 OR 4 - 350 MCM	1 - 3 AWG	3"
350A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
350A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"
400A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
400A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"

NOTES:

1. PROVIDE CIRCUIT CONDUCTOR AND CONDUIT SIZES INDICATED ABOVE UNLESS OTHERWISE NOTED.
2. CONDUCTOR SIZING BASED UPON 75C THWN INSULATED COPPER CONDUCTORS.
3. FOR TWO AND THREE POLE CIRCUITS PROVIDE NEUTRAL CONDUCTOR IF REQUIRED BY EQUIPMENT SERVED.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, 18" A.F.F. TO TOP
GFCI	DUPLEX RECEPTACLE GFI, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, CEILING MOUNTED
GFCI	DUPLEX RECEPTACLE GFI, CEILING MOUNTED
USB	DUPLEX RECEPTACLE USB, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, 6" ABOVE COUNTER
GFCI	DUPLEX RECEPTACLE GFI, 6" ABOVE COUNTER
	DUPLEX RECEPTACLE, FLOOR MOUNTED
GFCI	DUPLEX RECEPTACLE GFI , FLOOR MOUNTED
	SPECIALTY OUTLET, SEE DRAWINGS W/ MTG HT
	QUAD RECEPTACLE, 18" A.F.F. TO TOP
GFCI	QUAD RECEPTACLE GFI, 18" A.F.F. TO TOP
	QUAD RECEPTACLE, CEILING MOUNTED
GFCI	QUAD RECEPTACLE GFI, CEILING MOUNTED
$M	MOTOR SWITCH
	OVERHEAD DOOR 3-BUTTON SWITCH, OPEN-CLOSE-STOP
PP	POWER POLE
JB	JUNCTION BOX
FF	FURNITURE FEED
	MOTOR
	NON-FUSED DISCONNECT
	COMBINATION MOTOR STARTER/ DISCONNECT
	FUSED DISCONNECT
	MANUAL MOTOR STARTER
	MOTOR STARTER
	SURFACE MOUNTED PANEL BOARD
	RECESSED PANEL BOARD
$	SWITCH, SINGLE POLE, 48" A.F.F. TO TOP UNO
$3	SWITCH, 3-POLE, 48" A.F.F. TO TOP UNO
$4	SWITCH, 4-POLE, 48" A.F.F. TO TOP UNO
$D	SWITCH, WALL BOX DIMMER, 48" A.F.F. TO TOP UNO
$LV	SWITCH, LOW VOLTAGE, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
$LVD	SWITCH, LOW VOLTAGE DIMMER, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
$F	SWITCH, FUSED: 125V, SINGLE POLE, DUAL ELEMENT PLUG FUSE
$K	SWITCH, KEYED, 48" A.F.F. TO TOP UNO
$P	SWITCH, PILOT LIGHT, 48" A.F.F. TO TOP UNO
$T	SWITCH, TIMER, 48" A.F.F. TO TOP
$OS	SWITCH, MULTI-TECH OCCUPANCY SENSOR, WALL
	SWITCH, MULTI-TECH OCCUPANCY SENSOR, CEILING
	SWITCH, EXTERIOR PHOTOCELL
	POWER PACK FOR OCCUPANCY SENSORS
SP	CONTROLS: SPEAKER (SEE SCHEDULE)
DO	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH DOOR REQUIREMENTS
ADA	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH SECURITY, AUTO AND MANUAL CONTROL
	SECURITY: PAN - TILT - ZOOM CAMERA
	SECURITY: PUSH BUTTON
CR	SECURITY: CARD READER
DC	SECURITY: DOOR CONTACT
	LUMINAIRE: WALL MOUNTED W/ TYPE
	LUMINAIRE: RECESSED DOWNLIGHT OR PENDANT W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: SURFACE OR RECESSED W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: ON EMERGENCY, LIFE SAFETY, OR LOCAL LIGHTING CIRCUIT W/ TYPE, REFER TO SCHEDULE
	EXIT SIGN: CEILING MOUNTED W/ TYPE, SEE SCHEDULE
	EXIT SIGN: WALL MOUNTED W/ TYPE, SEE SCHEDULE
	EM LIGHTS: WALL MOUNTED UNO, REFER TO SCHEDULE
	REMOTE HEADS: WALL MOUNTED, REFER TO SCHEDULE
TV	TV CONNECTION: 96" TO TOP, COAX CONNECTION, UNO
	VOICE/ DATA OUTLET: 18" TO TOP, UNO
C	VOICE/ DATA OUTLET: CEILING MOUNTED, UNO
	VOICE/ DATA/ TV OUTLET: FLOOR MOUNTED, UNO
	TELEPHONE: 18" TO TOP, UNO
	DATA/ TELEPHONE: 18" TO TOP, UNO
P	FIRE: MANUAL PULL STATION, WALL MOUNTED, 48" AFF TO TOP UNO
#CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: AUDIBLE ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
AV #CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, CEILING MOUNTED
V #CD	FIRE: VISUAL ANNUNCIATION, CEILING MOUNTED
A	FIRE: AUDIBLE ANNUNCIATION, CEILING MOUNTED
SD	FIRE: SMOKE DETECTOR, CEILING
HD	FIRE: HEAT DETECTOR, CEILING
S/H	FIRE: SMOKE AND HEAT DETECTOR
DSD	FIRE: DUCT SMOKE DETECTOR, CEILING, PROVIDED / INSTALLED BY EC, MOUNTED BY MC, UNO
RT	FIRE ALARM: REMOTE TEST STATION
TS	FIRE: TAMPER SWITCH
FS	FIRE: FLOW SWITCH
DH	FIRE: MAGNETIC DOOR HOLD
FR	FIRE: DOOR LOCK RELEASE
PS	FIRE: PRESSURE SWITCH
	HOME RUN W/ DIRECTION
—E—	ELECTRICAL CIRCUIT
—UG—	UNDERGROUND ELECTRICAL W/ INCDICATOR
	SITE: LIGHT, POLE, AND BASE
XF	TRANSFORMER W/ LABEL
	DEVICE OR EQUIPMENT CONNECTION

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
AMP OR A	AMPERES
ATS	AUTOMATIC TRANSFER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
CKT	CIRCUIT
CB	CIRCUIT BREAKER
C	CONDUIT
CLG	CEILING
CP	CONTROL PANEL
CU	COPPER
D	DATA
DS	DISCONNECT SWITCH
DWG	DRAWING(S)
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EX	EXISTING
EXT	EXTERNAL
FIN. FLR.	FINISH FLOOR
FACP	FIRE ALARM CONTROL PANEL
FF	FURNITURE FEED
FT	FOOT, FEET
GRC	GALVANIZED RIGID CONDUIT
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERUPPTER
GFI	GROUND FAULT PROTECTION
HH	HAND HOLE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
IU	INDOOR UNIT
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KVA	KILO VOLT-AMPERES
KVAR	KILO VOLT-AMPERES REACTIVE
LC	LIGHTING CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTOR PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MH	MAN HOLE
MFR	MANUFACTURER'S
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N.L.	NIGHT LIGHT
NC	NORMALLY CLOSED CONTACT
NO	NORMALLY OPEN CONTACT
N.T.S.	NOT TO SCALE
OU	OUTDOOR UNIT
O.D.	OUTSIDE DIAMETER
OL	OVERLOADS-THERMAL
PNL	PANEL W/ INDICATION
Ø	PHASE
PH	PHASE
PC	PHOTO-SWITCH
P	POLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PB	PULL BOX
PTT	PUSH-TO-TEST
RMC	RIGID METAL COUNT
SPEC	SPECIFICATION
SW	SWITCH
SWD	SWITCHING DUTY
TEL	TELEPHONE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
VFC	VARIABLE FREQUENCY CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WATT
WP	WEATHER PROOF
W	WIRE
W/	WITH
XF/ XFMR	TRANSFORMER
XXAF	XX AMPERE FUSE
XXAS	XX AMPERE SWITCH
XP	X POLES

GENERAL NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS WITH ARCHITECTURAL AND MECHANICAL PLANS, SPECIFICATIONS AND EQUIPMENT DRAWINGS. PROVIDE ALL NECESSARY EQUIPMENT POWER AND CONTROL CONNECTIONS NOT PROVIDED BY OTHERS WHETHER INDICATED ON THE DRAWINGS OR NOT.
3. UNLESS OTHERWISE NOTED, WHERE ELECTRICAL DEMOLITION WORK IS SHOWN, REMOVE ALL CONDUCTOR AND EXPOSED CONDUITS FROM EQUIPMENT OR OUTLET LOCATION BACK TO THE POWER SOURCE(S) FOR THE CIRCUIT.
4. SEAL ALL WALL AND FLOOR PENETRATIONS TO MAINTAIN RATING.
5. BACK-TO-BACK OR THROUGH THE WALL BOXES SHALL NOT BE USED.
6. ALL LOW VOLTAGE CONDUCTORS SHALL BE STRANDED COPPER.
7. SPLICE CABLES OR CONDUCTORS IN OUTLET BOXES, DEVICE BOXES, PULL BOXES, JUNCTION BOXES. DO NOT SPLICE CABLES OR CONDUCTORS IN CONDUIT BODIES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER (GFI) TYPE MUST BE GFI RECEPTACLE, NO FEED THROUGH.
9. BRANCH CIRCUITS FROM CIRCUIT BREAKER TYPE DISTRIBUTION EQUIPMENT WHICH SUPPLY MOTOR LOADS THAT ARE LESS THAN 6.0 AMP SHALL BE PROTECTED BY A 15 AMP CIRCUIT BREAKER.
10. FINAL CONNECTIONS TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT . LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE USED AS A GROUNDING CONDUCTOR. PROVIDE A SEPARATE GREEN GROUNDING CONDUCTOR.
11. IN THE EVENT OF CONFLICTS BETWEEN THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS OR WITHIN THE DRAWINGS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL BE ASSUMED TO BE CORRECT. REFER UNCERTAINTIES IN REQUIREMENTS TO THE ENGINEER FOR CLARIFICATION.
12. ALL BELOW GRADE LOCATIONS WITHIN BUILDINGS ARE DAMP LOCATIONS UNLESS OTHERWISE NOTED.
13. 120V AC CONTROL WIRING ASSOCIATED WITH MOTOR CONTROL CIRCUITS MAY BE RUN IN THE SAME RACEWAY WITH MOTOR POWER WIRING FOR CONSTANT SPEED MOTORS LESS THAN 30HP. FOR MOTORS 30HP AND GREATER OR FOR MOTORS POWERED FROM VARIABLE FREQUENCY CONTROLLERS, SEPARATE RACEWAYS SHALL BE USED FOR POWER AND CONTROL CONDUCTORS.
14. 120/240V CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS AS REQUIRED UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
15. CONDUIT PENETRATIONS OF FLOORS, LOWER LEVEL EXTERIOR WALLS OR WETWELL WALLS SHALL BE SLEEVED AND SEALED WITH LINKSEAL. SEE DETAILS ON MECHANICAL DRAWINGS.
16. IF COMPLIANCE WITH TWO OR MORE DIFFERING STANDARDS, REQUIREMENTS, DRAWINGS OR SPECIFICATIONS, OR ANY COMBINATION THEREOF, IS SPECIFIED AND THESE ESTABLISH DIFFERENT OR CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT. THE MOST STRINGENT REQUIREMENT WILL BE THE BETTER QUALITY OR GREATER QUANTITY OF WORK, AND WILL TYPICALLY BE THE MORE EXPENSIVE OPTION. REFER UNCERTAINTIES AND REQUIREMENTS THAT ARE DIFFERENT, BUT APPARENTLY EQUAL, TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
17. THE QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE THE MINIMUM PROVIDED OR PERFORMED. THE ACTUAL INSTALLATION MAY COMPLY EXACTLY WITH THE MINIMUM QUANTITY OR QUALITY SPECIFIED, OR IT MAY EXCEED THE MINIMUM WITHIN REASONABLE LIMITS. TO COMPLY WITH THESE REQUIREMENTS, INDICATED NUMERIC VALUES ARE MINIMUM OR MAXIMUM, AS APPROPRIATE, FOR THE CONTEXT OF REQUIREMENTS. REFER UNCERTAINTIES TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
18. DESIGN DOCUMENTS MUST BE REPRODUCED IN THEIR ENTIRETY, INCLUDING ALL PLANS, SPECIFICATIONS, AND FRONT END DOCUMENTS.
19. ONLY COMPLETE DOCUMENT SETS ARE TO BE DISTRIBUTED TO SUBCONTRACTORS AND SUPPLIERS OF THE CONTRACTOR DURING BIDDING OR CONSTRUCTION.
20. FAILURE TO REVIEW AND COMPLY WITH A FULL SET OF CONTRACT DOCUMENTS WILL NOT BE ACCEPTED AS A VALID REASON FOR FAILURE TO MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
21. ALL ABOVE CEILING SYSTEMS AND COMPONENTS (INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) SHALL BE COORDINATED SUCH THAT THE SYSTEMS ARE PROPERLY INTEGRATED IN THE SPACE PROVIDED ABOVE CEILING AT THE CEILING HEIGHTS NOTED. IT IS THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE PATHWAYS WITHIN THE SPACE PROVIDED. CEILING HEIGHTS WILL NOT BE MODIFIED.
22. EQUIPMENT SHALL BE MOUNTED 6'-0" AWAY FROM HEAT PRODUCING EQUIPMENT. U.N.O.

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BANGOR SCHOOLS
MECHANICAL UPGRADES
CHRISTA MCAULIFFE
BAY CITY MICHIGAN

GENERAL NOTES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B.KUSHION
PROJ #: 21-1719-0435

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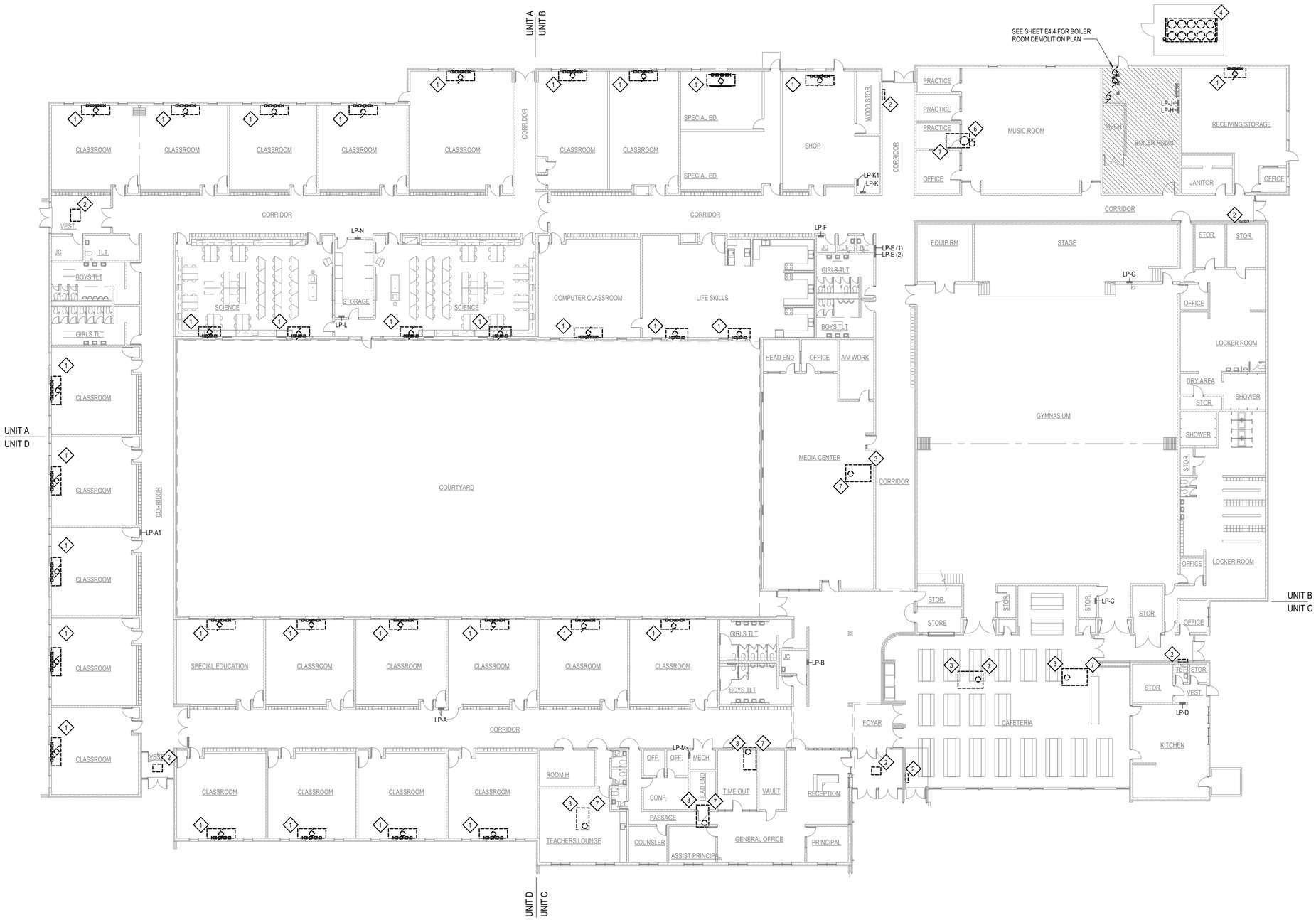


OVERALL DEMOLITION PLAN

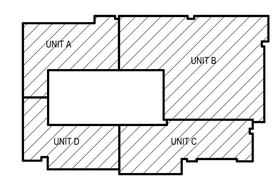
SCALE: 1/16" = 1'-0"

KEYED DEMOLITION NOTES

SYMBOL	DESCRIPTION
◇	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	DISCONNECT EXISTING UNIT VENTILATOR AND ASSOCIATED EQUIPMENT. SALVAGE EXISTING CIRCUIT FOR POWER TO NEW UNIT.
2	DISCONNECT EXISTING UNIT HEATER. SALVAGE CIRCUIT TO BE USED WITH NEW UNIT HEATER.
3	COORDINATE REMOVAL OF RTU WITH MECHANICAL CONTRACTOR. SALVAGE EXISTING CIRCUIT & BREAKER FOR POWER TO NEW UNIT. DISCONNECT AND REMOVE EXISTING DUCT SMOKE DETECTOR. SALVAGE EXISTING CONNECTION AND REMOTE TEST STATION FOR NEW DUCT SMOKE DETECTOR. COORDINATE REMOVAL WITH EXISTING FIRE ALARM SYSTEM.
4	DISCONNECT EXISTING CHILLER AND ASSOCIATED EQUIPMENT. SALVAGE EXISTING CIRCUIT FOR POWER TO NEW UNIT.
5	COORDINATE THE REMOVAL OF EXISTING PUMPS WITH MECHANICAL CONTRACTOR. SALVAGE EXISTING COMBINATION MOTOR STARTER DISCONNECTS FOR USE WITH NEW PUMPS.
6	COORDINATE REMOVAL OF RTU WITH MECHANICAL CONTRACTOR. REMOVE EXISTING CIRCUIT BREAKER. SALVAGE EXISTING CONDUCTORS FOR POWER TO NEW UNIT. DISCONNECT AND REMOVE EXISTING DUCT SMOKE DETECTOR. SALVAGE EXISTING CONNECTION AND REMOTE TEST STATION FOR NEW DUCT SMOKE DETECTOR. COORDINATE REMOVAL WITH EXISTING FIRE ALARM SYSTEM.
7	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #M1. SEE BID FORM FOR DETAILS.

GENERAL DEMOLITION NOTES

1. NOTES AND GRAPHIC REPRESENTATION SHALL NOTE LIMIT THE EXTENT OF DEMOLITION REQUIRED. ELECTRICAL CONTRACTOR TO PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF DEMOLITION WORK SHALL INCLUDE, BUT NOT LIMITED TO, REMOVAL OF LIGHT FIXTURES, WIRING DEVICES, CONNECTIONS TO EQUIPMENT, DISTRIBUTION PANELS, AND ALL ASSOCIATED RACEWAY AND WIRING. EXTENT OF DEMOLITION SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
2. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE, BUT INTERFERES WITH RENOVATIONS, SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. ELECTRICAL CONTRACTOR SHALL TRACE AND RELOCATE ALL EXISTING FEEDERS AND BRANCH CIRCUITS PASSING THROUGH THE DEMOLITION AREA THAT SERVE EXISTING SPACES TO REMAIN.
5. ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS FOR EXISTING EQUIPMENT AND DEVICES THAT ARE TO REMAIN. WHEN DEVICES ARE REMOVED AND NOT THE CIRCUIT DEAD END, EXTEND CIRCUIT AS REQUIRED TO MAINTAIN INTEGRITY OF ORIGINAL CIRCUIT.
6. ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED SHALL GET FIRST REFUSAL FROM OWNER AND IS THEN RESPONSIBILITY OF ELECTRICAL CONTRACTOR FOR PROPER DISPOSAL. EQUIPMENT TO BE RE-INSTALLED OR TURNED OVER TO OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION.
7. FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN. WHERE EMPTY CONDUITS REMAIN, INSTALL PULLSTRING AND IDENTIFY BOTH ENDS.
8. FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICT WITH NEW WORK. INSTALL JUNCTIONS BOX, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED AND NOT INDICATED TO BE REPLACED.
10. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT CHANGES OR REMOVALS.
11. FIRE ALARM SYSTEM SHALL REMAIN IN OPERATION DURING BOTH DEMOLITION AND CONSTRUCTION STAGES OF THIS PROJECT.



KEY PLAN

NOT TO SCALE

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BANGOR SCHOOLS MECHANICAL UPGRADES

CHRISTA MCAULIFFE

BAY CITY MICHIGAN

DEMOLITION DRAWINGS

NO.	STATUS / REVISIONS	DATE
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CHCK'D BY: E. MARTER

DES'D BY: B. KUSHION

DRAWN BY: B.KUSHION

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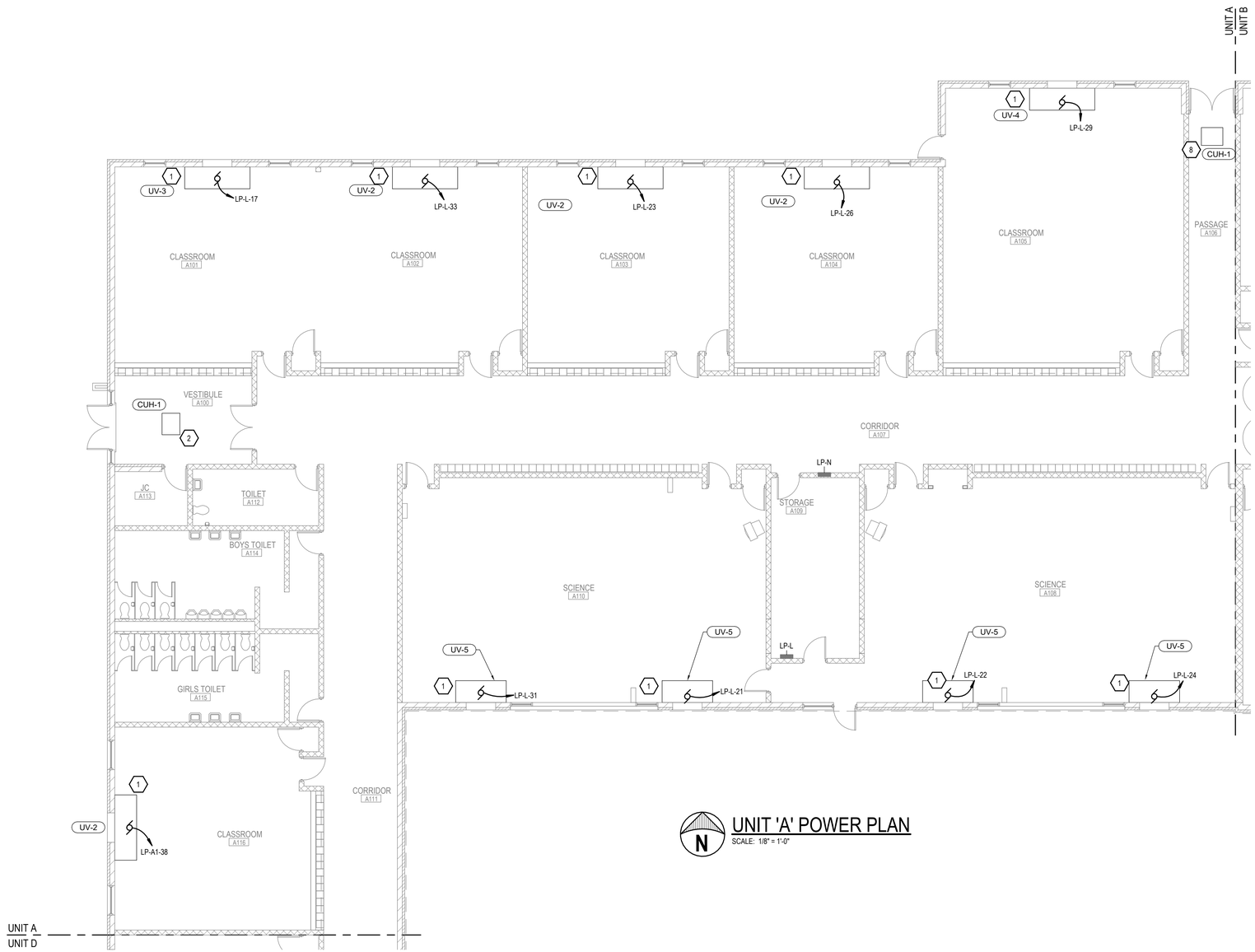
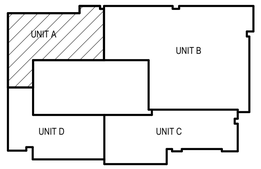


UNIT 'A' POWER PLAN

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

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. UTILIZE EXISTING REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.
4	UTILIZE EXISTING COMBINATION MOTOR STARTER DISCONNECT FOR POWER TO NEW PUMPS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE 50A/3P BREAKER FOR POWER TO NEW RTU-6. UTILIZE EXISTING CONDUCTORS FOR CONNECTION TO NEW UNIT. LOCAL DISCONNECT PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
6	COORDINATE INSTALLATION OF NEW RTU WITH MECHANICAL CONTRACTOR. LOCAL DISCONNECT PROVIDED WITH UNIT. UTILIZE EXISTING CIRCUIT FOR POWER CONNECTION.
7	PROVIDE 100A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 60A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. UTILIZE EXISTING CIRCUIT FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
8	UTILIZE EXISTING 20A SPARE IN PANEL LP-L FOR NEW UNIT HEATER.
9	PROVIDE POWER CONNECTION TO CHILLER CONTROL PANEL. UTILIZE EXISTING CIRCUIT OUT TO CHILLER. PROVIDE JUNCTION BOX AS NEEDED TO EXTEND CONDUCTORS TO NEW CONTROL PANEL LOCATION. FIELD VERIFY AND COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
10	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #M1. SEE BID FORM FOR DETAILS.



KEY PLAN

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CHRISTA MCAULIFFE
BAY CITY MICHIGAN

UNIT 'A' POWER PLAN

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	ISSUED FOR BIDS	03/30/2023

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DES'D BY: B. KUSHION
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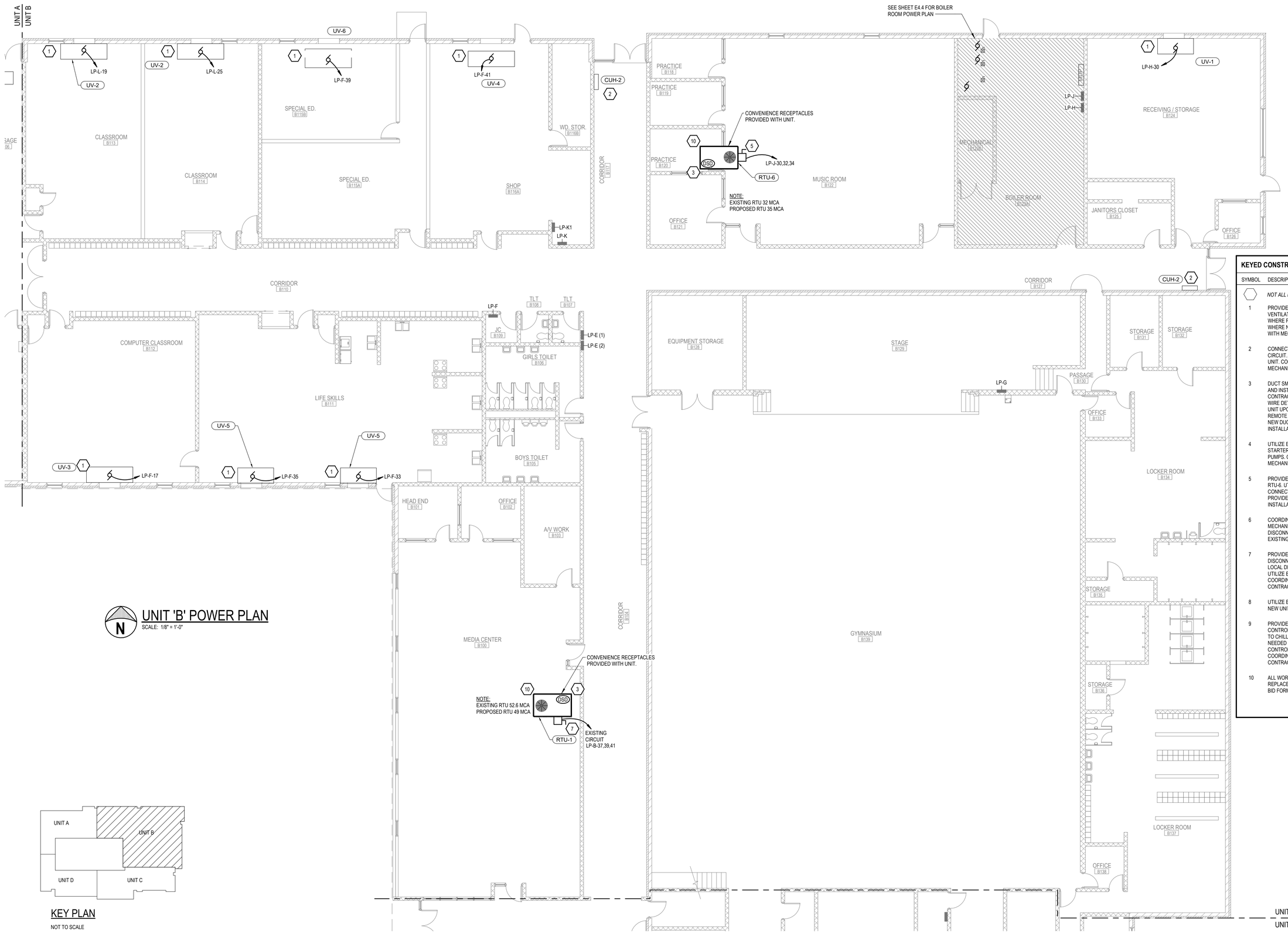

UNIT 'B' POWER PLAN

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

KEY PLAN

NOT TO SCALE

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. UTILIZE EXISTING REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.
4	UTILIZE EXISTING COMBINATION MOTOR STARTER DISCONNECT FOR POWER TO NEW PUMPS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE 50A/3P BREAKER FOR POWER TO NEW RTU-6. UTILIZE EXISTING CONDUCTORS FOR CONNECTION TO NEW UNIT. LOCAL DISCONNECT PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
6	COORDINATE INSTALLATION OF NEW RTU WITH MECHANICAL CONTRACTOR. LOCAL DISCONNECT PROVIDED WITH UNIT. UTILIZE EXISTING CIRCUIT FOR POWER CONNECTION.
7	PROVIDE 100A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 60A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. UTILIZE EXISTING CIRCUIT FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
8	UTILIZE EXISTING 20A SPARE IN PANEL LP-L FOR NEW UNIT HEATER.
9	PROVIDE POWER CONNECTION TO CHILLER CONTROL PANEL. UTILIZE EXISTING CIRCUIT OUT TO CHILLER. PROVIDE JUNCTION BOX AS NEEDED TO EXTEND CONDUCTORS TO NEW CONTROL PANEL LOCATION. FIELD VERIFY AND COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
10	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #M1. SEE BID FORM FOR DETAILS.

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BANGOR SCHOOLS MECHANICAL UPGRADES

CHRISTA MCAULIFFE
BAY CITY MICHIGAN

UNIT 'B' POWER PLAN

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CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B.KUSHION
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M-E4.1

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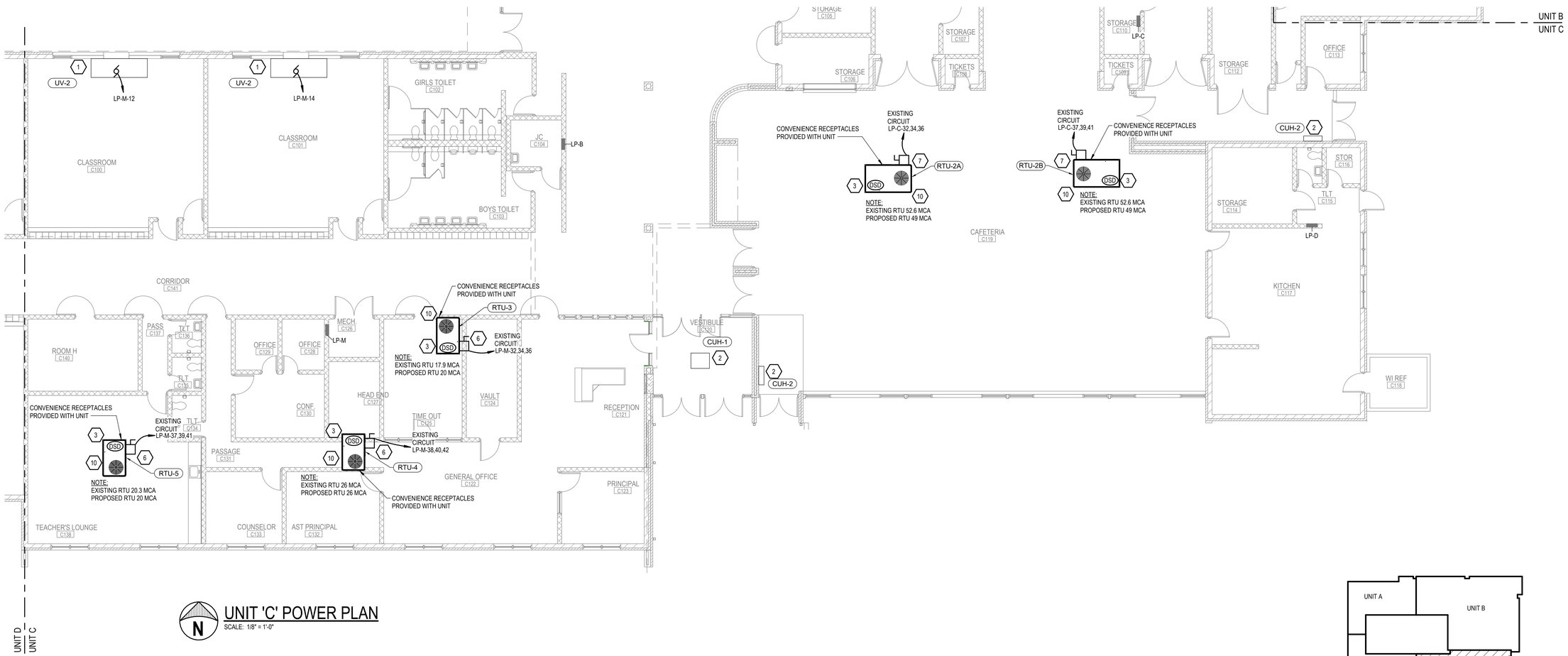
KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. UTILIZE EXISTING REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.
4	UTILIZE EXISTING COMBINATION MOTOR STARTER DISCONNECT FOR POWER TO NEW PUMPS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.

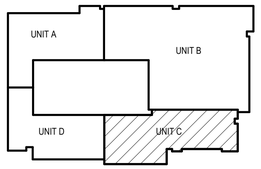
KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
5	PROVIDE 50A/3P BREAKER FOR POWER TO NEW RTU-6. UTILIZE EXISTING CONDUCTORS FOR CONNECTION TO NEW UNIT. LOCAL DISCONNECT PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
6	COORDINATE INSTALLATION OF NEW RTU WITH MECHANICAL CONTRACTOR. LOCAL DISCONNECT PROVIDED WITH UNIT. UTILIZE EXISTING CIRCUIT FOR POWER CONNECTION.
7	PROVIDE 100A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 60A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. UTILIZE EXISTING CIRCUIT FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
8	UTILIZE EXISTING 20A SPARE IN PANEL LP-L FOR NEW UNIT HEATER.
9	PROVIDE POWER CONNECTION TO CHILLER CONTROL PANEL. UTILIZE EXISTING CIRCUIT OUT TO CHILLER. PROVIDE JUNCTION BOX AS NEEDED TO EXTEND CONDUCTORS TO NEW CONTROL PANEL LOCATION. FIELD VERIFY AND COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
10	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #M1. SEE BID FORM FOR DETAILS.



UNIT 'C' POWER PLAN

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



KEY PLAN

NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRADES

CHRISTA MCAULIFFE
BAY CITY MICHIGAN

UNIT 'C' POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B.KUSHION
PROJ #: 21-1719-0435

SHEET
M-E4.2

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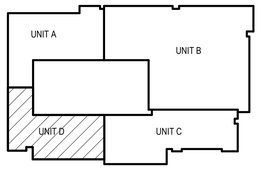
UNIT 'D' POWER PLAN

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

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
	NOT ALL NOTES APPEAR ON EVERY SHEET
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. UTILIZE EXISTING REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.
4	UTILIZE EXISTING COMBINATION MOTOR STARTER DISCONNECT FOR POWER TO NEW PUMPS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE 50A/3P BREAKER FOR POWER TO NEW RTU-6. UTILIZE EXISTING CONDUCTORS FOR CONNECTION TO NEW UNIT. LOCAL DISCONNECT PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
6	COORDINATE INSTALLATION OF NEW RTU WITH MECHANICAL CONTRACTOR. LOCAL DISCONNECT PROVIDED WITH UNIT. UTILIZE EXISTING CIRCUIT FOR POWER CONNECTION.
7	PROVIDE 100A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 60A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. UTILIZE EXISTING CIRCUIT FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
8	UTILIZE EXISTING 20A SPARE IN PANEL LP-L FOR NEW UNIT HEATER.
9	PROVIDE POWER CONNECTION TO CHILLER CONTROL PANEL. UTILIZE EXISTING CIRCUIT OUT TO CHILLER. PROVIDE JUNCTION BOX AS NEEDED TO EXTEND CONDUCTORS TO NEW CONTROL PANEL LOCATION. FIELD VERIFY AND COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
10	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #M1. SEE BID FORM FOR DETAILS.



KEY PLAN

NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRADES

CHRISTA MCAULIFFE
BAY CITY MICHIGAN

UNIT 'D' POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B.KUSHION
PROJ #: 21-1719-0435

SHEET
M-E4.3

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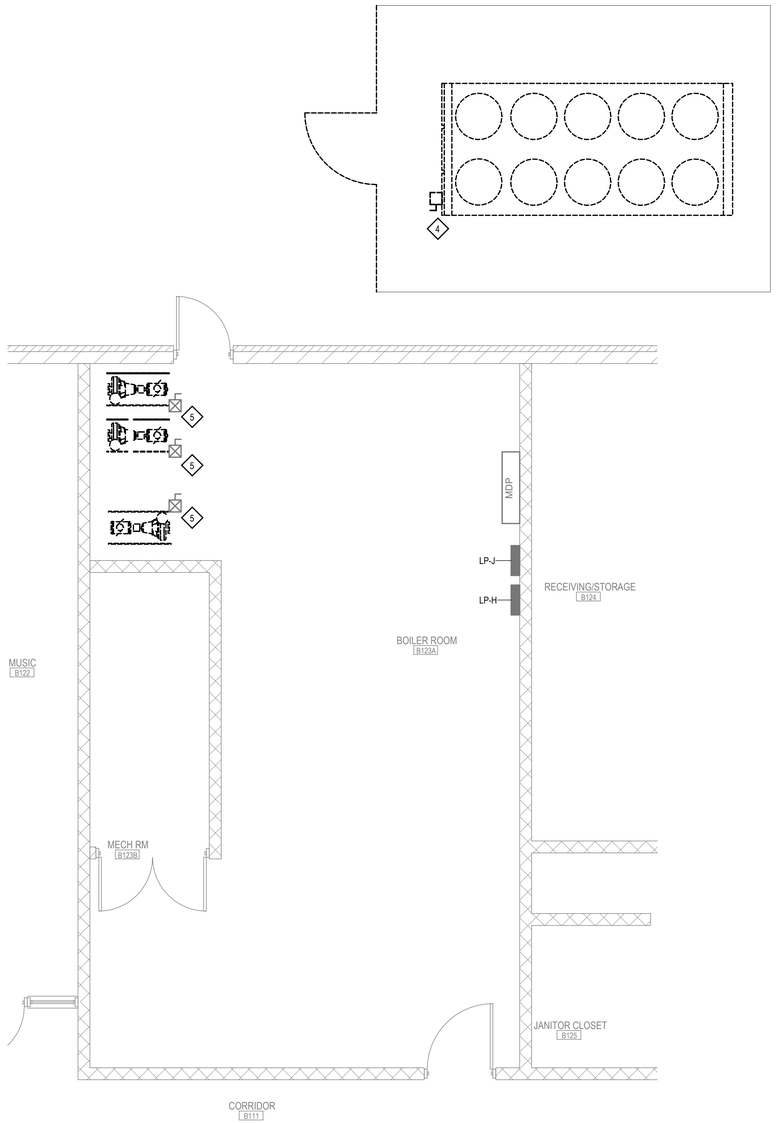
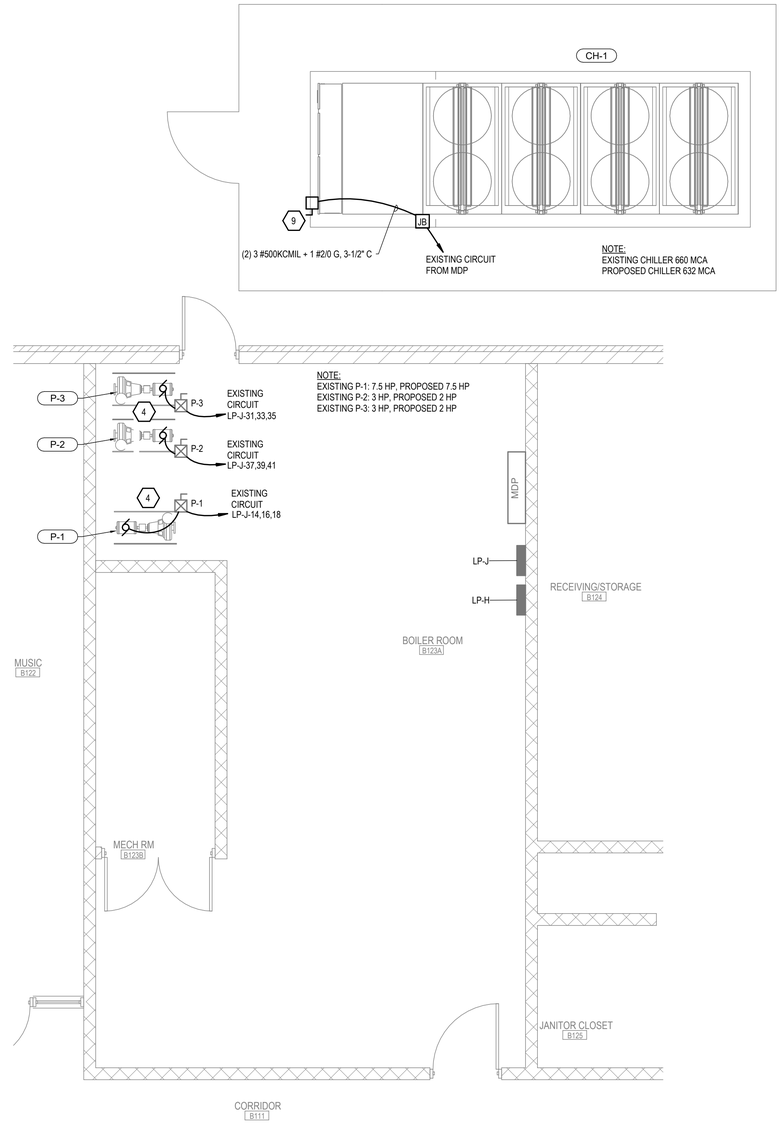


BOILER ROOM DEMOLITION PLAN

SCALE: 1/4" = 1'-0"



BOILER ROOM POWER PLAN

SCALE: 1/4" = 1'-0"

KEYED DEMOLITION NOTES

SYMBOL	DESCRIPTION
◇	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	DISCONNECT EXISTING UNIT VENTILATOR AND ASSOCIATED EQUIPMENT. SALVAGE EXISTING CIRCUIT FOR POWER TO NEW UNIT.
2	DISCONNECT EXISTING UNIT HEATER. SALVAGE CIRCUIT TO BE USED WITH NEW UNIT HEATER.
3	COORDINATE REMOVAL OF RTU WITH MECHANICAL CONTRACTOR. SALVAGE EXISTING CIRCUIT & BREAKER FOR POWER TO NEW UNIT. DISCONNECT AND REMOVE EXISTING DUCT SMOKE DETECTOR. SALVAGE EXISTING CONNECTION AND REMOTE TEST STATION FOR NEW DUCT SMOKE DETECTOR. COORDINATE REMOVAL WITH EXISTING FIRE ALARM SYSTEM.
4	DISCONNECT EXISTING CHILLER AND ASSOCIATED EQUIPMENT. SALVAGE EXISTING CIRCUIT FOR POWER TO NEW UNIT.
5	COORDINATE THE REMOVAL OF EXISTING PUMPS WITH MECHANICAL CONTRACTOR. SALVAGE EXISTING COMBINATION MOTOR STARTER DISCONNECTS FOR USE WITH NEW PUMPS.
6	COORDINATE REMOVAL OF RTU WITH MECHANICAL CONTRACTOR. REMOVE EXISTING CIRCUIT BREAKER. SALVAGE EXISTING CONDUCTORS FOR POWER TO NEW UNIT. DISCONNECT AND REMOVE EXISTING DUCT SMOKE DETECTOR. SALVAGE EXISTING CONNECTION AND REMOTE TEST STATION FOR NEW DUCT SMOKE DETECTOR. COORDINATE REMOVAL WITH EXISTING FIRE ALARM SYSTEM.
7	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #M1. SEE BID FORM FOR DETAILS.

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
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5	PROVIDE 50A/3P BREAKER FOR POWER TO NEW RTU-6. UTILIZE EXISTING CONDUCTORS FOR CONNECTION TO NEW UNIT. LOCAL DISCONNECT PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
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8	UTILIZE EXISTING 20A SPARE IN PANEL LP-L FOR NEW UNIT HEATER.
9	PROVIDE POWER CONNECTION TO CHILLER CONTROL PANEL. UTILIZE EXISTING CIRCUIT OUT TO CHILLER. PROVIDE JUNCTION BOX AS NEEDED TO EXTEND CONDUCTORS TO NEW CONTROL PANEL LOCATION. FIELD VERIFY AND COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
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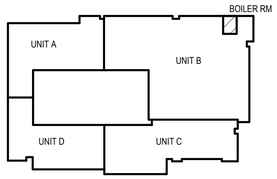

KEY PLAN

NOT TO SCALE

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
CHRISTA MCAULIFFE
BAY CITY MICHIGAN

BOILER ROOM DEMOLITION & POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B.KUSHION
PROJ #: 21-1719-0435

SHEET
M-E4.4

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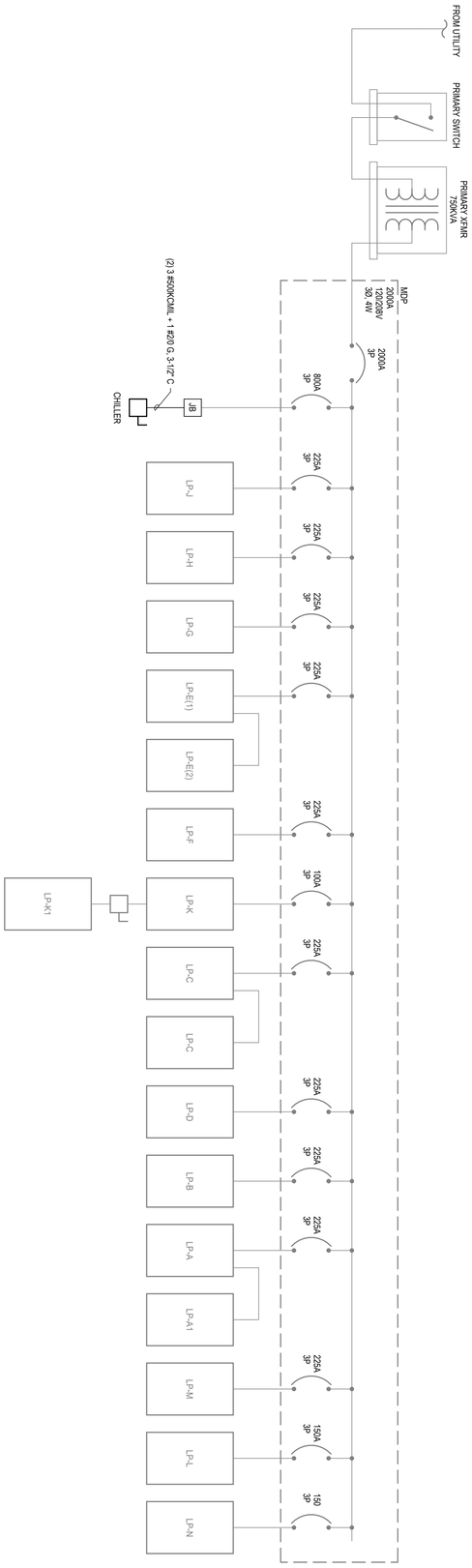

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

DRAWN BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B.KISHON
PROJ # 21-1719-425

SHEET
M-E6.0

ONE-LINE DIAGRAM

BANGOR SCHOOLS
MECHANICAL UPGRADES
CHRISTA MCAULIFFE
BAY CITY MICHIGAN

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

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BRANCH PANEL: LP-A1

LOCATION: CORRIDOR D104
SUPPLY FROM: LP-A
MOUNTING: Surface
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	Space	--	1	--	--					1	--	Space	2
3	Space	--	1			--	--			1	--	Space	4
5	Space	--	1					--	--	1	--	Space	6
7	Space	--	1	--	--					1	--	Space	8
9	Space	--	1			--	--			1	--	Space	10
11	**UV-2 D102**	**20 A**	**1**					1440	1440	**1**	**20 A**	**UV-3 D103**	**12**
13	CLASSROOM PROJECTOR	20 A	1	540	540					1	20 A	CLRM 12/RECESS LTS RMS 12 & 13	14
15	EXISTING	20 A	1			540	540			1	20 A	CLRM 13 & 14	16
17	EXISTING	20 A	1					540	540	1	20 A	CLRM 15	18
19	CLRM 11/SOUTH ENTRANCE LTS	20 A	1	540	540					1	20 A	GIRLS TLT/TEACHET TLT/ JAN. CLOSET/	20
21	CLRM 12	20 A	1			540	540			1	20 A	PLUGS-RMS 12, 13, SOUTH COOR, &...	22
23	CLRM 13	20 A	1					540	540	1	20 A	PLUGS-RMS 13, 14, & 15	24
25	CLRM 14	20 A	1	540	540					1	20 A	PLUGS ROOM 14	26
27	CLRM 14	20 A	1			540	540			1	20 A	PLUGS-CORR & WEST WALL LAB	28
29	CORR LTS	20 A	1					540	540	1	20 A	PLUGS 13 & 15 - N. WALL	30
31	PLUGS-RMS 11, 12, & S. ENTRANCE	20 A	1	540	540					1	20 A	PLUGS 12 & 14 - N. WALL	32
33	PLUGS - TLTS & JAN CLOSET	20 A	1			540	540			1	20 A	PLUGS 13 & 15 - N. WALL	34
35	**UV-2 D100**	**20 A**	**1**					1440	540	1	20 A	EMERGENCY LTS	36
37	PLUGS 12 & 14 - N. WALL	20 A	1	540	1440					**1**	**20 A**	**UV-2 A116**	**38**
39	CLRM 11 COMP CKT	20 A	1			540	1440			**1**	**20 A**	**UV-2 D101**	**40**
41	DOOR MAG.	20 A	1					540	0	1	20 A	TLT A116 EF-1	42
		Total Load:		6300.0 VA		6300.0 VA		8640.0 VA					
		Total Amps:		53 A		53 A		72 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	7200.0 VA	105.00%	7560.0 VA		
				TOTAL CONN LOAD:	21240.0 VA
				TOTAL EST DEMAND:	21600.0 VA
				TOTAL CONN CURRENT:	59 A
				TOTAL EST DEMAND CURRENT:	60 A

NOTES:

BRANCH PANEL: LP-F

LOCATION: JC B109
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	CORR/FINISH RM	20 A	1	540	676					1	20 A	FAN FINISH RM INTERNET	2
3	SKY ITS	20 A	1			600	600			1	20 A	CORRIDOR LTS	4
5	SP ED 101 LTS	20 A	1					600	600	1	20 A	SP ED 103 LTS	6
7	SP ED 100, 102 LTS	20 A	1	600	600					1	20 A	SP ED 103 LTS	8
9	ARTS/CRAFTS LTS	20 A	1			600	600			1	20 A	ARTS/CRAFTS LTS	10
11	ARTS/CRAFTS LTS	20 A	1					600	600	1	20 A	ARTS/CRAFTS LTS	12
13	PLUG WATER FTN FINISH	20 A	1	540	600					1	20 A	FAN FINISH RM INTERNET	14
15	CORR/FINISH RM	20 A	1			540	600			2	20 A	UPS POWER	16
17	**UV-3 B112**	**20 A**	**1**					1440	600	--	--	--	18
19	SPARE	20 A	1	0	0					1	20 A	SPARE	20
21	SPARE	20 A	1			0	0			1	20 A	SPARE	22
23	SPARE	20 A	1					0	0	1	20 A	SPARE	24
25	ARTS/CRAFTS PLUGS	20 A	1	540	540					1	20 A	ARTS/CRAFTS PLUGS	26
27	ARTS/CRAFTS PLUGS	20 A	1			540	540			1	20 A	INTERNET LIBRARY	28
29	RM21 LTS	20 A	1					1200	540	1	20 A	ARTS/CRAFTS PLUG, FAN	30
31	EXISTING CKT	20 A	1	600	676					1	20 A	UH'S ARTS/CRAFTS	32
33	**UV-5 B111**	**20 A**	**1**			1440	0			1	20 A	SPARE	34
35	**UV-5 B111**	**20 A**	**1**					1440	540	1	20 A	COMP B112/LIFE SKILLS B111 - REC	36
37	TLT B106 - EF - 2	20 A	1	830	410					1	20 A	SS-1 (INDOOR) & EXT REC	38
39	**UV-6 B115B**	**20 A**	**1**			1440	1144			2	20 A	SS-1 OUTDOOR	40
41	**UV-4 B116B**	**20 A**	**1**					1440	1144	--	--	--	42
		Total Load:		7152.0 VA		8644.0 VA		10744.0 VA					
		Total Amps:		60 A		74 A		91 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	7200.0 VA	105.00%	7560.0 VA		
				TOTAL CONN LOAD:	26540.0 VA
				TOTAL EST DEMAND:	26900.0 VA
				TOTAL CONN CURRENT:	74 A
				TOTAL EST DEMAND CURRENT:	75 A

NOTES:

BRANCH PANEL: LP-M

LOCATION: MECH C126
SUPPLY FROM: MDP
MOUNTING: Surface
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	**UV-2 D106**	**20 A**	**1**	1440	600					1	20 A	UPS	2
3	**UV-2 D107**	**20 A**	**1**			1440	1440			**1**	**20 A**	**UV-2 D108**	**4**
5	**UV-2 D109**	**20 A**	**1**					1440	600	1	20 A	UPS	6
7	**UV-2 D114**	**20 A**	**1**	1440	600					2	30 A	EXISTING	8
9	**UV-2 D113**	**20 A**	**1**			1440	600			**--**	**--**	**--**	10
11	EXISTING	20 A	1					600	1440	**1**	**20 A**	**UV-2 C100**	**12**
13	EXISTING	20 A	1	600	1440					**1**	**20 A**	**UV-2 C101**	**14**
15	EXISTING	20 A	1			600	1440			**1**	**20 A**	**UV-2 D112**	**16**
17	EXISTING	20 A	1					600	1440	**1**	**20 A**	**UV-2 D111**	**18**
19	EXISTING	20 A	1	600	600					1	20 A	EXISTING	20
21	EXISTING	20 A	1			600	600			1	20 A	EXISTING	22
23	EXISTING	20 A	1					600	600	1	20 A	EXISTING	24
25	SPARE	20 A	1	600	600					1	20 A	EXISTING	26
27	EXISTING	20 A	1			600	600			1	20 A	EXISTING	28
29	EXISTING	20 A	1					600	600	1	20 A	EXISTING	30
31	EXISTING	20 A	1	600	2402					**3**	**30 A**	**RTU-3**	**32**
33	EXISTING	20 A	1			600	2402			**--**	**--**	**--**	**34**
35	EXISTING	20 A	1					600	2402	**--**	**--**	**--**	**36**
37	**RTU-5**	**30 A**	**3**	2402	3122					**3**	**40 A**	**RTU-4**	**38**
39	**--**	**--**	**--**			2402	3122			**--**	**--**	**--**	**40**
41	**--**	**--**	**--**					2402	3122	**--**	**--**	**--**	**42**
		Total Load:		17046.3 VA		17886.3 VA		17046.3 VA					
		Total Amps:		142 A		149 A		142 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC	23778.9 VA	100.00%	23778.9 VA		
Motor	14400.0 VA	102.50%	14760.0 VA		
				TOTAL CONN LOAD:	51978.9 VA
				TOTAL EST DEMAND:	52338.9 VA
				TOTAL CONN CURRENT:	144 A
				TOTAL EST DEMAND CURRENT:	145 A

NOTES:

BRANCH PANEL: LP-H

LOCATION: BOILER RM B123A
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	EF-RM 80	20 A	1	506	765					1	20 A	LTS CORR 77, OFF 78, 79	2
3	SKY LT COOR 77	20 A	1			1020	1020			1	20 A	LTS BOILER RM, MUSIC RM	4
5	BOILER PUMP, #5, 6	20 A	3					600	1080	1	20 A	LTS MUSIC RM	6
7	--	--	--	600	1530					1	20 A	UNIT HEATER RM 31	8
9	--	--	--			600	1080			1	20 A	RECP MUSIC, COR 77	10
11	RECEP MUSIC RM	20 A	1					1020	510	1	20 A	RECP OFFICE 83, CORR 4	12
13	EXISTING CKT	20 A	1	765	1080					1	20 A	REC S WALL NEW	14
15	RECEP S WALL NEW CLRM	20 A	1			1080	510			1	20 A	NE WALL	16
17	RECEP TV E WALL	20 A	1					1080	510	1	20 A	RECP NEW W WALL	18
19	LTS NEW CLASS RM	20 A	1	506	360					1	20 A	RECP NEW NW WALL	20
21	IG NEW RM SE WALL	20 A	1			720	510			1	20 A	RECP E WALL	22
23	IG RM S WALL	20 A	1					180	0	1	20 A	SPARE	24
25	LIGHTS NEW CLASS RM	20 A	1	1020	0					1	20 A	SPARE	26
27	RECP OUTSIDE BACK DOOR	20 A	1			360	0			1	20 A	SPARE	28
29	BOILER RM RECP	20 A	1					1020	1440	**1**	**20 A**	**UV-1 B124**	**30**
31	RECP S WALL NEW	20 A	1	360	510					1	20 A	CIRC PUMP #3	32
33	CHILLER CONTROL CKT	20 A	1			1080	510			1	20 A	CIRC PUMP #4	34
35	CHILLER HEAT TAPE	20 A	1					600	510	1	20 A	CIRC PUMP #1	36
37	BOILER CONTROL	20 A	1	600	600					1	20 A	CIRC PUMP #2	38
39	SPARE	20 A	2			0	0			1	20 A	SPARE	40
41	--	--	--					0	0	1	20 A	SPARE	42
		Total Load:		9202.0 VA		8490.0 VA		8550.0 VA					
		Total Amps:		77 A		71 A		71 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	1440.0 VA	125.00%	1800.0 VA		
				TOTAL CONN LOAD:	26242.0 VA
				TOTAL EST DEMAND:	26602.0 VA
				TOTAL CONN CURRENT:	73 A
				TOTAL EST DEMAND CURRENT:	74 A

NOTES:

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
CHRISTA MCAULIFFE
BAY CITY MICHIGAN

PANEL SCHEDULES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B.KUSHION
PROJ #: 21-1719-0435

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M-E7.0

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BRANCH PANEL: LP-L

LOCATION: STORAGE A109
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	SCIENCE A111 - LTS	20 A	1	0	0					1	20 A	SPARE	2
3	SPARE	20 A	1			0	0			1	20 A	SPARE	4
5	STOR A11/SCIENCE A111 - REC	20 A	1					540	0	1	20 A	SPARE	6
7	SCIENCE A111 - REC	20 A	1	540	540					1	20 A	SCIENCE A108 - RC	8
9	SCIENCE A111 - REC	20 A	1			540	540			1	20 A	SCIENCE A108 - REC	10
11	SPARE	20 A	1					0	540	1	20 A	SCIENCE A108 - REC	12
13	SCIENCE A111 - REC	20 A	1	540	0					1	20 A	SCIENCE A108 - REC	14
15	SCIENCE A111 - REC	20 A	1			540	540			1	20 A	SCIENCE A108 - REC	16
17	**UV-3 A101**	**20 A**	**1**					1440	540	1	20 A	SCIENCE A108 - REC	18
19	**UV-2 B113**	**20 A**	**1**	1440	540					1	20 A	SCIENCE A108 - REC	20
21	**UV-5 A110**	**20 A**	**1**			1440	1440			**1**	**20 A**	**UV-5 A108**	**22**
23	**UV-2 A103**	**20 A**	**1**					1440	1440	**1**	**20 A**	**UV-5 A108**	**24**
25	**UV-2 B114**	**20 A**	**1**	1440	1440					**1**	**20 A**	**UV-2 A104**	**26**
27	UPS	20 A	1			500	345			**1**	**20 A**	**CUH-1**	**28**
29	**UV-4 A105**	**20 A**	**1**					1440	0	2	20 A	SPARE	30
31	**UV-5 A110**	**20 A**	**1**	1440	0					--	--	--	32
33	**UV-3 A102**	**20 A**	**1**			1440	0			3	40 A	SPARE	34
35	SPARE	40 A	3					0	0	--	--	--	36
37	--	--	--	0	0					--	--	--	38
39	--	--	--			0	0			2	20 A	SPARE	40
41	SPARE	20 A	1					0	0	--	--	--	42
		Total Load:		7920.0 VA		7325.0 VA		7380.0 VA					
		Total Amps:		66 A		61 A		62 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	15840.0 VA	102.27%	16200.0 VA		
Heating	345.0 VA	50.00%	172.5 VA	**TOTAL CONN LOAD:**	22625.0 VA
				TOTAL EST DEMAND:	22812.5 VA
				TOTAL CONN CURRENT:	63 A
				TOTAL EST DEMAND CURRENT:	63 A

NOTES:

BRANCH PANEL: LP-B

LOCATION: JC C104
SUPPLY FROM: MDP
MOUNTING: Surface
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	LOUNGE 38 LTS	20 A	1	600	600					1	20 A	FOYER 39 LTS	2
3	VEST 1 ENTRANCE CANOPY LTS	20 A	1			600	600			1	20 A	RECPT 2 LTS	4
5	REC 2 OFF 3 VAULT 5 CORR 11 LTS	20 A	1					600	600	1	20 A	GEN OFF 4 LTS	6
7	OFF 12,13 CORR 11-14, COUNS OFF -...	20 A	1	600	600					1	20 A	OFF 10, MEET 6, STOR 7, EQUIP 102	8
9	FAN FOR MEET RM & CONF RM OFF	20 A	1			600	600			1	20 A	CLRM 33 LTS RM 5	10
11	CLRM 33, TLT 34 LTS RM 5	20 A	1					600	600	1	20 A	FIRE ALARM	12
13	FAN - GIRLS, BOYS TLT	20 A	1	600	600					1	20 A	LOUNGE 38 PLUGS, LIB PLUGS	14
15	LOUNGE 38 PLUGS	20 A	1			600	600			1	20 A	NEST 1 PLUGS, COKE PLUGS	16
17	RECPT 1 PLUGS	20 A	1					600	600	1	20 A	OFFICE 3,4 PLUGS	18
19	OFFICE 12,13 PLUGS	20 A	1	600	600					1	20 A	OFFICE 10, CONF 8,9 PLUGS	20
21	OFFICE 10 PLUGS	20 A	1			600	600			1	20 A	CLRM 33 TLT 36 PLUGS RM 5 CLRM 33	22
23	TLT 34, CLRM 33 PLUGS RM 5	20 A	1					600	600	1	20 A	UH'S LOUNGE	24
25	UNIT HEATER OFFICE	20 A	1	600	600					1	20 A	EXISTING	26
27	PLGS FRONT OFF RECP DESK	20 A	1			600	600			2	20 A	EXISTING	28
29	EXISTING	20 A	1					600	600	--	--	--	30
31	TLT 36, JAN	20 A	1	600	600					1	20 A	CAFE C119/CORR -REC	32
33	VEST C120 - ELEC. DOOR OPERATOR	20 A	1			600	1500			1	20 A	CAFE C119 - VENDING REC	34
35	ROOFTOP REC	20 A	1					180	1500	1	20 A	CAFE C119 - VENDING REC	36
37	**RTU-1**	**80 A**	**3**	5884	1500					1	20 A	CAFE C119 - VENDING REC	38
39	**--**	**--**	**--**			5884	360			1	20 A	VEST C120/CAFE C110 - REC	40
41	**--**	**--**	**--**					5884	560	1	20 A	VEST C120/CAFE C119 CUH-1 & 2	42
		Total Load:		14584.4 VA		14344.4 VA		14124.4 VA					
		Total Amps:		122 A		120 A		118 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC	17653.1 VA	100.00%	17653.1 VA		
				TOTAL CONN LOAD:	43053.1 VA
				TOTAL EST DEMAND:	43053.1 VA
				TOTAL CONN CURRENT:	120 A
				TOTAL EST DEMAND CURRENT:	120 A

NOTES:

BRANCH PANEL: LP-C

LOCATION: STORAGE C110
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	COMMONS 40 LTS	20 A	1	600	600					1	20 A	COMMONS 40 LTS	2
3	COMMONS 40 LTS	20 A	1			600	600			1	20 A	COMMONS 40 LTS	4
5	COMMONS 40 LTS	20 A	1					600	600	1	20 A	COMMONS 40 LTS	6
7	MILK COOLER	20 A	1	600	600					1	20 A	KITCH HOOD, STOR 43, TLT 44, OFF 45	8
9	STOR 49, 51, OFF 47, COOR 46-48,50 LTS	20 A	1			600	600			1	20 A	STAGE 53, TICKET 52-55 LTS	10
11	STAGE 53 SPOT LTS	20 A	1					600	600	1	20 A	STAGE 53 PLUGS	12
13	STAGE 53 PLUGS	20 A	1	600	600					1	20 A	STAGE 53 PLUGS	14
15	OFFICE 47 PLUGS	20 A	1			600	600			1	20 A	UG TLT 44, CORR 46, OFF 45	16
17	EXG CKT	20 A	1					600	1200	1	20 A	KITCHEN REFRIG PLUGS	18
19	KITCH REFRIG PLUG	20 A	1	600	600					1	20 A	KITCHEN PLUGS	20
21	DRINKING FOUNTAIN	20 A	1			600	600			1	20 A	110 E PLUG WALL, JUICE N, MILK...	22
23	MEZZ 60, EQUIP RM 60A - PLUGS	20 A	1					600	600	1	20 A	EXISTING	24
25	ROOFTOP REC	20 A	1	600	600					1	20 A	EXISTING	26
27	110V PLUG E WALL KITCH WALL	20 A	1			600	600			1	20 A	WARMING TABLE COMM	28
29	CAFE C119 - REC	20 A	1					600	600	1	20 A	GYM 59 PLUGS	30
31	EXISTING	20 A	1	600	5884					**3**	**70 A**	**RTU-2A**	**32**
33	FOOD WARMER	20 A	2			600	5884			**--**	**--**	**--**	**34**
35	--	--	--					600	5884	**--**	**--**	**--**	**36**
37	**RTU-2B**	**70 A**	**3**	5884	3020					3	100 A	LP-C1	38
39	**--**	**--**	**--**			5884	2515			--	--	--	40
41	**--**	**--**	**--**					5884	2835	--	--	--	42
		Total Load:		21388.7 VA		20883.7 VA		21803.7 VA					
		Total Amps:		179 A		174 A		182 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC	35306.1 VA	100.00%	35306.1 VA		
				TOTAL CONN LOAD:	64076.1 VA
				TOTAL EST DEMAND:	64076.1 VA
				TOTAL CONN CURRENT:	178 A
				TOTAL EST DEMAND CURRENT:	178 A

NOTES:

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
CHRISTA MCAULIFFE
BAY CITY MICHIGAN

PANEL SCHEDULES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B.KUSHION
PROJ #: 21-1719-0435

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BANGOR TOWNSHIP SCHOOLS

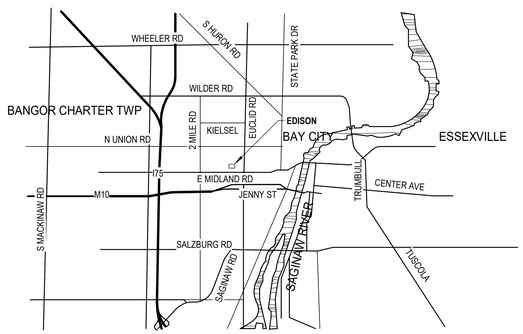
EDISON
MECHANICAL UPGRADES

3359 E. MIDLAND ROAD
BAY CITY, MICHIGAN

SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
E-M1.0	OVERHEAD MECHANICAL PLAN - DEMO	X
E-M3.0	OVERHEAD MECHANICAL PLAN	X
E-M8.0	SCHEDULES & DETAILS	X
ELECTRICAL		
E-E0.0	GENERAL NOTES	X
E-E1.0	DEMOLITION PLAN	X
E-E4.0	POWER PLAN	X
E-E6.0	ONE-LINE DIAGRAM	X

LOCATION MAP



CONTACT INFORMATION

OWNER / CLIENT:
BANGOR TOWNSHIP SCHOOLS
3359 E. MIDLAND RD
BAY CITY, MI 48706
(989) 684-8121

KURTIS PAKE
FINANCE DIRECTOR
PHONE: (989) 684-8121
EMAIL: pakek@bangorschools.org

ARCHITECT / ENGINEER:
TYLER MIETZ, P.E.
PROJECT ENGINEER

PHONE: (989) 863-4034
EMAIL: tyler@trm-engineering.com
WEB: www.kibbe.com

CODE AUTHORITY:
MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF CONSTRUCTION CODES/PLAN REVIEW DIVISION
PO BOX 30255
LANSING, MI 48909
(517) 241-9328

MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF FIRE SERVICES/PLAN REVIEW DIVISION
PO BOX 30700
LANSING, MI 48909
(517) 241-8847

811 Know what's below. Call before you dig.

PROJECT INFORMATION

BUILDING CODE COMPLIANCE
- 2015 MICHIGAN BUILDING CODE (MBC)
- 2018 MICHIGAN PLUMBING CODE (MPC)
- 2015 MICHIGAN MECHANICAL CODE (MMC)
- 2017 NATIONAL ELECTRICAL CODE (NEC)
- 2018 INTERNATIONAL FIRE CODE (IFC)
- 2012 NFPA 101 LIFE SAFETY CODE (LSC)

USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP E - EDUCATIONAL GROUP

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- ALLOWED - 2
- ACTUAL - 1

BUILDING AREA [TBL 506.2]
- ALLOWABLE - 14,400 SFT/ FLR
- ACTUAL - 13,220 SFT

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB, II(000)

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- NO SPRINKLER SYSTEM

OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- NO CHANGE

CORRIDORS [SEC 1020, TBL 1020.1]
- 1HR RATING

WILLIAM A. KIBBE & ASSOCIATES, INC.
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BANGOR TOWNSHIP SCHOOLS
EDISON
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

COVER SHEET

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: T. MIETZ
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

SHEET
CS

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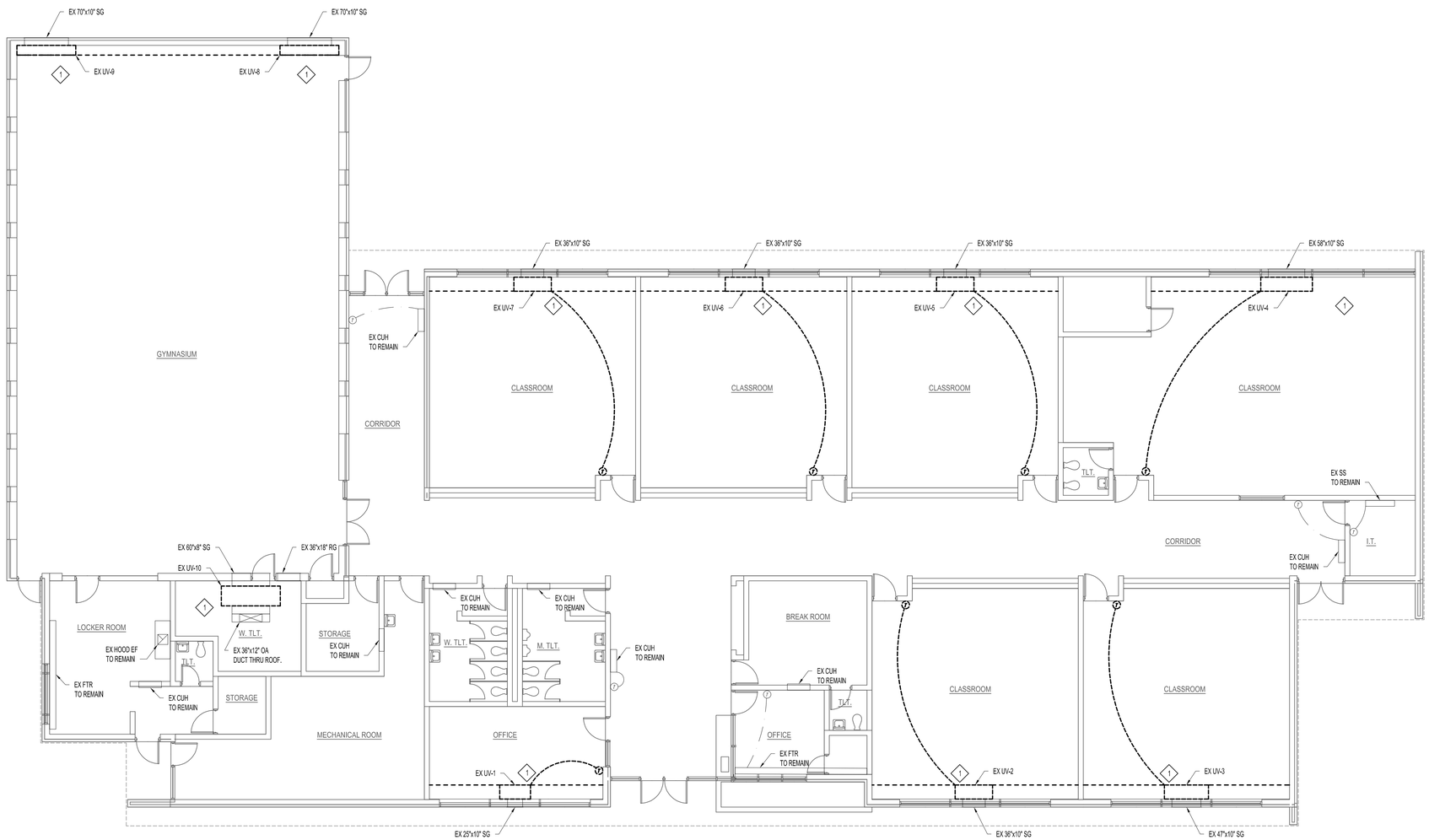
MECHANICAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING UNIT VENTILATOR AND CABINETRY. MAINTAIN EXISTING CONTROL WIRING, HHWS, AND HHWR ROUGHINS FOR CONNECTION TO NEW UNIT.

GENERAL DEMOLITION NOTES

1. ALL SURFACES DISTURBED OR HOLES CREATED DUE TO DEMOLITION TO BE PATCHED TO MATCH SURROUNDING SURFACE.
2. ALL MATERIALS RESULTING FROM DEMOLITION OPERATION SHALL BE PROMPTLY REMOVED FROM PREMISES AND LEGALLY DISPOSED OF.
3. CONTRACTOR TO CONTACT OWNER PRIOR TO REMOVAL AND TURN OVER TO OWNER ANY EQUIPMENT OR MATERIALS REQUESTED.
4. PIPE CAPPING TO BE DONE WITH MATERIALS TO MATCH EXISTING PIPING.



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OVERHEAD MECHANICAL PLAN - DEMO

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

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRADES

EDISON

BAY CITY, MICHIGAN

OVERHEAD MECHANICAL PLAN - DEMO

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/03/2023

CHCK'D BY: J. WHEELER

DES'D BY: R. MEYER

DRAWN BY: A. BERZLEY

PROJ #: 21-1719-0435

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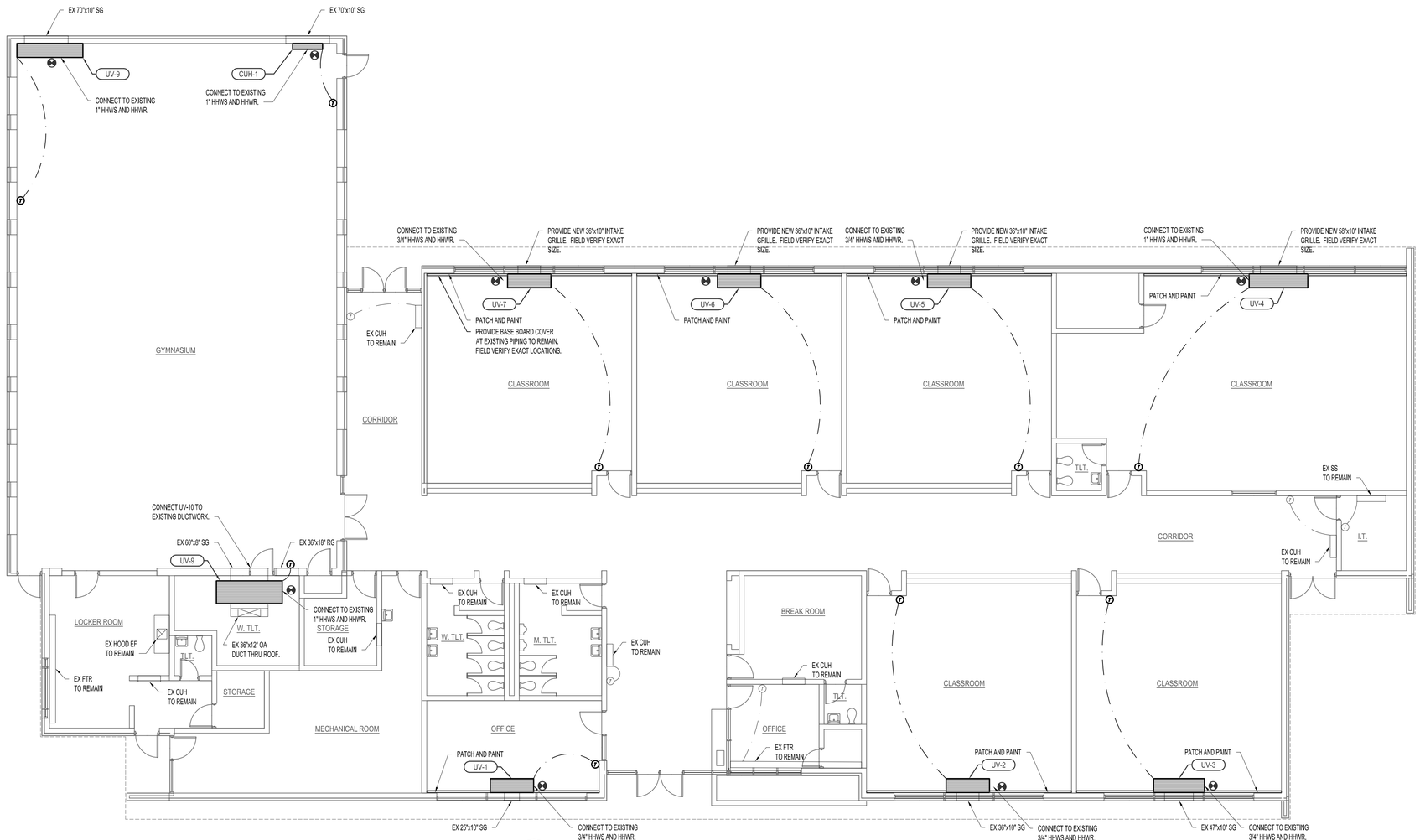

OVERHEAD MECHANICAL PLAN

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

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRADES

EDISON

BAY CITY, MICHIGAN

OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/03/2023

CHCK'D BY: J. WHEELER

DES'D BY: R. MEYER

DRAWN BY: A. BERZLEY

PROJ #: 21-1719-0435

SHEET

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UNIT VENTILATOR SCHEDULE

180° E.W.T. DESIGN TEMPERATURES SUMMER = 87/72° ROOM =74° WINTER = 0° ROOM =70° SEE

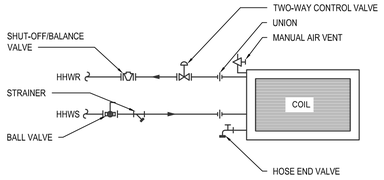
MARK	TYPE	AREA	CFM	HEATING MBH	HEATING GPM	HEATING FT.P.D.	H.P.	VØ	MIN. O.A. CFM	INLET	DISCHARGE	MODEL	NOTES
UV-1	WALL MOUNT	OFFICE	473	41.1	1.7	0.83	0.25	115/1	75	1	C	VUVE075	
UV-2	WALL MOUNT	CLASSROOM	788	63.8	2.5	1.17	0.25	115/1	188	1	C	VUVE075	
UV-3	WALL MOUNT	CLASSROOM	1032	86.5	3.3	1.44	0.25	115/1	250	1	C	VUVE100	
UV-4	WALL MOUNT	CLASSROOM	1293	98.8	4.1	2.58	0.25	115/1	310	1	C	VUVE125	
UV-5	WALL MOUNT	CLASSROOM	788	63.8	2.5	1.17	0.25	115/1	188	1	C	VUVE075	
UV-6	WALL MOUNT	CLASSROOM	788	63.8	2.5	1.17	0.25	115/1	188	1	C	VUVE075	
UV-7	WALL MOUNT	CLASSROOM	788	63.8	2.5	1.17	0.25	115/1	188	1	C	VUVE075	
UV-8	WALL MOUNT	GYM	1578	127	5.0	4.58	0.25	115/1	500	1	C	VUVE150	
UV-9	HORIZONTAL	GYM OFFICE	1488	117	5.0	3.08	0.1	120/1	500	H	3	HUVC150	

BASED ON TRANE.

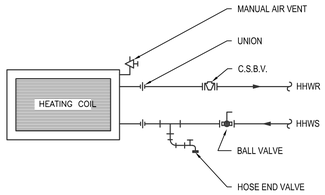
CABINET HEATER SCHEDULE

60° E.A.T.

MARK	TYPE	AREA	CFM	MBH	H.P.	VØ	MANUFACTURER	MODEL	REMARKS
CUH-1	WALL MOUNT	GYM	600	42.4	1.0	115/1	TRANE	FFBB060	



1 E-M8.0 UNIT VENTILATOR PIPING SCHEMATIC
NO SCALE HEATING



2 E-M8.0 CABINET UNIT HEATER PIPING SCHEMATIC
NO SCALE

MECHANICAL SYMBOLS LIST

SYMBOL	DESCRIPTION
AFF	ABOVE FINISH FLOOR
AGA	AMERICAN GAS ASSOCIATION
AHU	AIR HANDLING UNIT
ASME	AMERICAN SOCIETY OF MECH. ENGINEERS
BTUH	BRITISH THERMAL UNITS PER HOUR
CA	COMBUSTION AIR
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
COND	CONDENSATE
C.S.B.V.	CIRCUIT SETTER BALANCE VALVE
CUH	CABINET UNIT HEATER
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
EAR	EXHAUST AIR REGISTER
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRIC CONTRACTOR
EF	EXHAUST FAN
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
FD	FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FPF	FINS PER FOOT
FT.P.D.	FEET OF PRESSURE DROP
FTR	FIN-TUBE RADIATION
G	GAS
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HP	HORSE POWER
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MC	MECHANICAL CONTRACTOR
OA	OUTSIDE AIR

SYMBOL	DESCRIPTION
RA	RETURN AIR
RAR	RETURN AIR REGISTER
SA	SUPPLY AIR
SAR	SUPPLY AIR REGISTER
S.C.C.V.	SELF CONTAINED CONTROL VALVE
S.P.	STATIC PRESSURE
TCC	TEMPERATURE CONTROL CONTRACTOR
UH	UNIT HEATER
U.L.	UNDERWRITERS LABORATORIES
U.N.O.	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR
WH	WATER HEATER
WM	WATER METER
WTD	WATER TEMPERATURE DROP
WTR	WATER TEMPERATURE RISE
	CHECK VALVE
	BALANCE VALVE (CIRCUIT SETTER)
	CONTROL VALVE
	PRESSURE AND TEMPERATURE RELIEF VALVE
	THREE-WAY VALVE
	HOSE END VALVE
	BALL VALVE
	BUTTERFLY VALVE
PRV	PRESSURE REDUCING VALVE
BFP	BACKFLOW PREVENTOR
	UNION
	STRAINER
	MANUAL AIR VENT
FS	FLOW SWITCH
	GAUGE
	THERMOMETER
	CONNECT TO EXISTING
H	HUMIDISTAT
T	THERMOSTAT
	PUMP (INLINE)

MECHANICAL GENERAL NOTES

1. ALL WORK TO COMPLY WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND ORDINANCES
2. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING.
3. SEAL ALL DUCT JOINTS.
4. PROVIDE ACCESS PANELS TO ALL VALVES, DAMPERS, TRAPS, FILTERS, EQUIPMENT, ETC.
5. COORDINATE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND CEILING MOUNTED EQUIPMENT WITH THE REFLECTED CEILING PLAN.
6. DUCT SIZES NOTED REPRESENT NET FREE INTERIOR DIMENSIONS.
7. PROVIDE BALANCE DAMPERS IN EACH SUPPLY AND EXHAUST DUCT BRANCH.
8. ALL ROUND DUCTWORK TO BE SPIRAL TYPE UNLESS NOTED OTHERWISE.
9. HEATING PIPING TO BE MINIMUM 3/4" DIAMETER.
10. VERIFY MOUNTING HEIGHTS OF WALL CAPS AND LOUVERS WITH ARCHITECTURAL DRAWINGS.
11. ALL VALVES SHOWN ON FLOOR PLANS ARE IN ADDITION TO ALL VALVES SHOWN ON PIPING SCHEMATICS.
12. REFER TO PIPING SCHEMATIC DETAILS FOR UNIONS, VALVES, AIR VENTS, THERMOMETERS, ETC. REQUIRED AT SPECIFIC PIECES OF EQUIPMENT.
13. ALL ROOF CURBS FOR MECHANICAL EQUIPMENT TO BE MINIMUM 16" ABOVE FINISHED ROOF SURFACE.
14. EQUIPMENT, DUCTS, PIPING, ETC. TO BE SUPPORTED FROM PANEL POINTS OF STRUCTURAL MEMBERS. NO MECHANICAL ITEMS TO BE SUPPORTED FROM DECKING. CONCENTRATED MECHANICAL LOADS TO BE DISTRIBUTED OVER TWO OR MORE JOISTS. CONCENTRATED LOADING ON A SINGLE STRUCTURAL MEMBER IS TO BE AVOIDED.
15. SUPPLY AIR DIFFUSERS MAY BE CONNECTED WITH A MAXIMUM 5 FEET OF INSULATED FLEXIBLE DUCT WHEN DUCT IS CONCEALED. ALL RETURN AIR REGISTERS AND EXHAUST AIR REGISTERS TO BE DUCTED WITH SHEET METAL.
16. NEW THERMOSTATS TO BE LOCATED AT OLD THERMOSTATS' LOCATIONS WHERE POSSIBLE. IF NEW T'STATS ARE NOT IN OLD LOCATIONS, THEN OLD LOCATION IS TO BE REMOVED AND WALL PATCHED TO MATCH EXISTING.
17. MECHANICAL CONTRACTOR TO COORDINATE WITH GENERAL ON REMOVAL, REINSTALLATION, AND PATCHING OF EXISTING CEILINGS WHERE ACCESS IS NEEDED FOR INSTALLATION OF NEW EQUIPMENT, PIPING, ETC.

NOTE: EQUIPMENT LISTED IN SCHEDULES IS NOT TO BE USED FOR THE SOLE PURPOSE OF OBTAINING QUANTITIES. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES UTILIZING THESE SCHEDULES AND CAREFUL REVIEW OF LAYOUT DRAWINGS.

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MECHANICAL UPGRADES
EDISON
BAY CITY, MICHIGAN

SCHEDULES & DETAILS

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/03/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

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CIRCUIT CONDUIT & CONDUCTOR SCHEDULE

FUSE/CIRCUIT BREAKER - AMP/POLE	PHASE/NEUTRAL (NOTE 3)	GROUND	CONDUIT
15A/1P & 20A/1P	2 - 12 AWG	1 - 12 AWG	3/4"
15A/2P & 20A/2P	2 OR 3 - 12 AWG	1 - 12 AWG	3/4"
15A/3P & 20A/3P	3 OR 4 - 12 AWG	1 - 12 AWG	3/4"
25A/1P & 30A/1P	2 - 10 AWG	1 - 10 AWG	3/4"
25A/2P & 30A/2P	2 OR 3 - 10 AWG	1 - 10 AWG	3/4"
25A/3P & 30A/3P	3 OR 4 - 10 AWG	1 - 10 AWG	3/4"
35A/1P & 40A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
35A/2P & 40A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
35A/3P & 40A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
40A/1P & 45A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
40A/2P & 45A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
40A/3P & 45A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
60A/1P	2 - 6 AWG	1 - 10 AWG	3/4"
60A/2P	2 OR 3 - 6 AWG	1 - 10 AWG	3/4"
60A/3P	3 OR 4 - 6 AWG	1 - 10 AWG	1"
70A/1P	2 - 4 AWG	1 - 8 AWG	1"
70A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
70A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
80A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
80A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
90A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
90A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
100A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
100A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
110A/2P	2 OR 3 - 2 AWG	1 - 6 AWG	1 1/4"
110A/3P	3 OR 4 - 2 AWG	1 - 6 AWG	1 1/4"
125A/2P	2 OR 3 - 1 AWG	1 - 6 AWG	1 1/4"
125A/3P	3 OR 4 - 1 AWG	1 - 6 AWG	1 1/2"
150A/2P	2 OR 3 - 1/0 AWG	1 - 6 AWG	1 1/2"
150A/3P	3 OR 4 - 1/0 AWG	1 - 6 AWG	2"
175A/2P	2 OR 3 - 2/0 AWG	1 - 6 AWG	2"
175A/3P	3 OR 4 - 2/0 AWG	1 - 6 AWG	2"
200A/2P	2 OR 3 - 3/0 AWG	1 - 6 AWG	2"
200A/3P	3 OR 4 - 3/0 AWG	1 - 6 AWG	2"
225A/2P	2 OR 3 - 4/0 AWG	1 - 4 AWG	2"
225A/3P	3 OR 4 - 4/0 AWG	1 - 4 AWG	2 1/2"
250A/2P	2 OR 3 - 250 MCM	1 - 4 AWG	2 1/2"
250A/3P	3 OR 4 - 250 MCM	1 - 4 AWG	3"
300A/2P	2 OR 3 - 350 MCM	1 - 4 AWG	3"
300A/3P	3 OR 4 - 350 MCM	1 - 3 AWG	3"
350A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
350A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"
400A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
400A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"

NOTES:
1. PROVIDE CIRCUIT CONDUCTOR AND CONDUIT SIZES INDICATED ABOVE UNLESS OTHERWISE NOTED.
2. CONDUCTOR SIZING BASED UPON 75C THWN INSULATED COPPER CONDUCTORS.
3. FOR TWO AND THREE POLE CIRCUITS PROVIDE NEUTRAL CONDUCTOR IF REQUIRED BY EQUIPMENT SERVED.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, 18" A.F.F. TO TOP
GFCI	DUPLEX RECEPTACLE GFI, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, CEILING MOUNTED
GFCI	DUPLEX RECEPTACLE GFI, CEILING MOUNTED
USB	DUPLEX RECEPTACLE USB, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, 6" ABOVE COUNTER
GFCI	DUPLEX RECEPTACLE GFI, 6" ABOVE COUNTER
	DUPLEX RECEPTACLE, FLOOR MOUNTED
GFCI	DUPLEX RECEPTACLE GFI , FLOOR MOUNTED
	SPECIALTY OUTLET, SEE DRAWINGS W/ MTG HT
	QUAD RECEPTACLE, 18" A.F.F. TO TOP
GFCI	QUAD RECEPTACLE GFI, 18" A.F.F. TO TOP
	QUAD RECEPTACLE, CEILING MOUNTED
GFCI	QUAD RECEPTACLE GFI, CEILING MOUNTED
M	MOTOR SWITCH
	OVERHEAD DOOR 3-BUTTON SWITCH, OPEN-CLOSE-STOP
PP	POWER POLE
JB	JUNCTION BOX
FF	FURNITURE FEED
	MOTOR
	NON-FUSED DISCONNECT
	COMBINATION MOTOR STARTER/ DISCONNECT
	FUSED DISCONNECT
	MANUAL MOTOR STARTER
	MOTOR STARTER
	SURFACE MOUNTED PANEL BOARD
	RECESSED PANEL BOARD
S	SWITCH, SINGLE POLE, 48" A.F.F. TO TOP UNO
$_3$	SWITCH, 3-POLE, 48" A.F.F. TO TOP UNO
$_4$	SWITCH, 4-POLE, 48" A.F.F. TO TOP UNO
$_D$	SWITCH, WALL BOX DIMMER, 48" A.F.F. TO TOP UNO
$_{LV}$	SWITCH, LOW VOLTAGE, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
$_{LVD}$	SWITCH, LOW VOLTAGE DIMMER, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
$_F$	SWITCH, FUSED: 125V, SINGLE POLE, DUAL ELEMENT PLUG FUSE
$_K$	SWITCH, KEYED, 48" A.F.F. TO TOP UNO
$_P$	SWITCH, PILOT LIGHT, 48" A.F.F. TO TOP UNO
$_T$	SWITCH, TIMER, 48" A.F.F. TO TOP
$_{OS}$	SWITCH, MULTI-TECH OCCUPANCY SENSOR, WALL
	SWITCH, MULTI-TECH OCCUPANCY SENSOR, CEILING
	SWITCH, EXTERIOR PHOTOCELL
	POWER PACK FOR OCCUPANCY SENSORS
S	CONTROLS: SPEAKER (SEE SCHEDULE)
DO	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH DOOR REQUIREMENTS
ADA	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH SECURITY, AUTO AND MANUAL CONTROL
	SECURITY: PAN - TILT - ZOOM CAMERA
	SECURITY: PUSH BUTTON
CR	SECURITY: CARD READER
DC	SECURITY: DOOR CONTACT
	LUMINAIRE: WALL MOUNTED W/ TYPE
	LUMINAIRE: RECESSED DOWNLIGHT OR PENDANT W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: SURFACE OR RECESSED W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: ON EMERGENCY, LIFE SAFETY, OR LOCAL LIGHTING CIRCUIT W/ TYPE, REFER TO SCHEDULE
	EXIT SIGN: CEILING MOUNTED W/ TYPE, SEE SCHEDULE
	EXIT SIGN: WALL MOUNTED W/ TYPE, SEE SCHEDULE
	EM LIGHTS: WALL MOUNTED UNO, REFER TO SCHEDULE
	REMOTE HEADS: WALL MOUNTED, REFER TO SCHEDULE
TV	TV CONNECTION: 96" TO TOP, COAX CONNECTION, UNO
	VOICE/ DATA OUTLET: 18" TO TOP, UNO
C	VOICE/ DATA OUTLET: CEILING MOUNTED, UNO
	VOICE/ DATA/ TV OUTLET: FLOOR MOUNTED, UNO
	TELEPHONE: 18" TO TOP, UNO
	DATA/ TELEPHONE: 18" TO TOP, UNO
P	FIRE: MANUAL PULL STATION, WALL MOUNTED, 48" AFF TO TOP UNO
#CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: AUDIBLE ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
AV #CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, CEILING MOUNTED
V #CD	FIRE: VISUAL ANNUNCIATION, CEILING MOUNTED
A	FIRE: AUDIBLE ANNUNCIATION, CEILING MOUNTED
SD	FIRE: SMOKE DETECTOR, CEILING
HD	FIRE: HEAT DETECTOR, CEILING
S/H	FIRE: SMOKE AND HEAT DETECTOR
DSD	FIRE: DUCT SMOKE DETECTOR, CEILING, PROVIDED / INSTALLED BY EC, MOUNTED BY MC, UNO
RT	FIRE ALARM: REMOTE TEST STATION
TS	FIRE: TAMPER SWITCH
FS	FIRE: FLOW SWITCH
DH	FIRE: MAGNETIC DOOR HOLD
FR	FIRE: DOOR LOCK RELEASE
PS	FIRE: PRESSURE SWITCH
	HOME RUN W/ DIRECTION
—E—	ELECTRICAL CIRCUIT
—UG—	UNDERGROUND ELECTRICAL W/ INCDICATOR
	SITE: LIGHT, POLE, AND BASE
XF	TRANSFORMER W/ LABEL
	DEVICE OR EQUIPMENT CONNECTION

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
AMP OR A	AMPERES
ATS	AUTOMATIC TRANSFER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
CKT	CIRCUIT
CB	CIRCUIT BREAKER
C	CONDUIT
CLG	CEILING
CP	CONTROL PANEL
CU	COPPER
D	DATA
DS	DISCONNECT SWITCH
DWG	DRAWING(S)
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EX	EXISTING
EXT	EXTERNAL
FIN. FLR.	FINISH FLOOR
FACP	FIRE ALARM CONTROL PANEL
FF	FURNITURE FEED
FT	FOOT , FEET
GRC	GALVANIZED RIGID CONDUIT
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERUPPTER
GFI	GROUND FAULT PROTECTION
HH	HAND HOLE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
IU	INDOOR UNIT
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KVA	KILO VOLT-AMPERES
KVAR	KILO VOLT-AMPERES REACTIVE
LC	LIGHTING CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTOR PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MH	MAN HOLE
MFR	MANUFACTURER'S
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N.L.	NIGHT LIGHT
NC	NORMALLY CLOSED CONTACT
NO	NORMALLY OPEN CONTACT
N.T.S.	NOT TO SCALE
OU	OUTDOOR UNIT
O.D.	OUTSIDE DIAMETER
OL	OVERLOADS-THERMAL
PNL	PANEL W/ INDICATION
Ø	PHASE
PH	PHASE
PC	PHOTO-SWITCH
P	POLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PB	PULL BOX
PTT	PUSH-TO-TEST
RMC	RIGID METAL COUNT
SPEC	SPECIFICATION
SW	SWITCH
SWD	SWITCHING DUTY
TEL	TELEPHONE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
VFC	VARIABLE FREQUENCY CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WATT
WP	WEATHER PROOF
W	WIRE
W/	WITH
XF/ XFMR	TRANSFORMER
XXAF	XX AMPERE FUSE
XXAS	XX AMPERE SWITCH
XP	X POLES

GENERAL NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS WITH ARCHITECTURAL AND MECHANICAL PLANS, SPECIFICATIONS AND EQUIPMENT DRAWINGS. PROVIDE ALL NECESSARY EQUIPMENT POWER AND CONTROL CONNECTIONS NOT PROVIDED BY OTHERS WHETHER INDICATED ON THE DRAWINGS OR NOT.
3. UNLESS OTHERWISE NOTED, WHERE ELECTRICAL DEMOLITION WORK IS SHOWN, REMOVE ALL CONDUCTOR AND EXPOSED CONDUITS FROM EQUIPMENT OR OUTLET LOCATION BACK TO THE POWER SOURCE(S) FOR THE CIRCUIT.
4. SEAL ALL WALL AND FLOOR PENETRATIONS TO MAINTAIN RATING.
5. BACK-TO-BACK OR THROUGH THE WALL BOXES SHALL NOT BE USED.
6. ALL LOW VOLTAGE CONDUCTORS SHALL BE STRANDED COPPER.
7. SPLICE CABLES OR CONDUCTORS IN OUTLET BOXES, DEVICE BOXES, PULL BOXES, JUNCTION BOXES. DO NOT SPLICE CABLES OR CONDUCTORS IN CONDUIT BODIES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER (GFI) TYPE MUST BE GFI RECEPTACLE, NO FEED THROUGH.
9. BRANCH CIRCUITS FROM CIRCUIT BREAKER TYPE DISTRIBUTION EQUIPMENT WHICH SUPPLY MOTOR LOADS THAT ARE LESS THAN 6.0 AMP SHALL BE PROTECTED BY A 15 AMP CIRCUIT BREAKER.
10. FINAL CONNECTIONS TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT . LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE USED AS A GROUNDING CONDUCTOR. PROVIDE A SEPARATE GREEN GROUNDING CONDUCTOR.
11. IN THE EVENT OF CONFLICTS BETWEEN THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS OR WITHIN THE DRAWINGS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL BE ASSUMED TO BE CORRECT. REFER UNCERTAINTIES IN REQUIREMENTS TO THE ENGINEER FOR CLARIFICATION.
12. ALL BELOW GRADE LOCATIONS WITHIN BUILDINGS ARE DAMP LOCATIONS UNLESS OTHERWISE NOTED.
13. 120V AC CONTROL WIRING ASSOCIATED WITH MOTOR CONTROL CIRCUITS MAY BE RUN IN THE SAME RACEWAY WITH MOTOR POWER WIRING FOR CONSTANT SPEED MOTORS LESS THAN 30HP. FOR MOTORS 30HP AND GREATER OR FOR MOTORS POWERED FROM VARIABLE FREQUENCY CONTROLLERS, SEPARATE RACEWAYS SHALL BE USED FOR POWER AND CONTROL CONDUCTORS.
14. 120/240V CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS AS REQUIRED UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
15. CONDUIT PENETRATIONS OF FLOORS, LOWER LEVEL EXTERIOR WALLS OR WETWELL WALLS SHALL BE SLEEVED AND SEALED WITH LINKSEAL. SEE DETAILS ON MECHANICAL DRAWINGS.
16. IF COMPLIANCE WITH TWO OR MORE DIFFERING STANDARDS, REQUIREMENTS, DRAWINGS OR SPECIFICATIONS, OR ANY COMBINATION THEREOF, IS SPECIFIED AND THESE ESTABLISH DIFFERENT OR CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT. THE MOST STRINGENT REQUIREMENT WILL BE THE BETTER QUALITY OR GREATER QUANTITY OF WORK, AND WILL TYPICALLY BE THE MORE EXPENSIVE OPTION. REFER UNCERTAINTIES AND REQUIREMENTS THAT ARE DIFFERENT, BUT APPARENTLY EQUAL, TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
17. THE QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE THE MINIMUM PROVIDED OR PERFORMED. THE ACTUAL INSTALLATION MAY COMPLY EXACTLY WITH THE MINIMUM QUANTITY OR QUALITY SPECIFIED, OR IT MAY EXCEED THE MINIMUM WITHIN REASONABLE LIMITS. TO COMPLY WITH THESE REQUIREMENTS, INDICATED NUMERIC VALUES ARE MINIMUM OR MAXIMUM, AS APPROPRIATE, FOR THE CONTEXT OF REQUIREMENTS. REFER UNCERTAINTIES TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
18. DESIGN DOCUMENTS MUST BE REPRODUCED IN THEIR ENTIRETY, INCLUDING ALL PLANS, SPECIFICATIONS, AND FRONT END DOCUMENTS.
19. ONLY COMPLETE DOCUMENT SETS ARE TO BE DISTRIBUTED TO SUBCONTRACTORS AND SUPPLIERS OF THE CONTRACTOR DURING BIDDING OR CONSTRUCTION.
20. FAILURE TO REVIEW AND COMPLY WITH A FULL SET OF CONTRACT DOCUMENTS WILL NOT BE ACCEPTED AS A VALID REASON FOR FAILURE TO MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
21. ALL ABOVE CEILING SYSTEMS AND COMPONENTS (INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) SHALL BE COORDINATED SUCH THAT THE SYSTEMS ARE PROPERLY INTEGRATED IN THE SPACE PROVIDED ABOVE CEILING AT THE CEILING HEIGHTS NOTED. IT IS THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE PATHWAYS WITHIN THE SPACE PROVIDED. CEILING HEIGHTS WILL NOT BE MODIFIED.
22. EQUIPMENT SHALL BE MOUNTED 6'-0" AWAY FROM HEAT PRODUCING EQUIPMENT. U.N.O.

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BANGOR TOWNSHIP SCHOOLS
EDISON
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

GENERAL NOTES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

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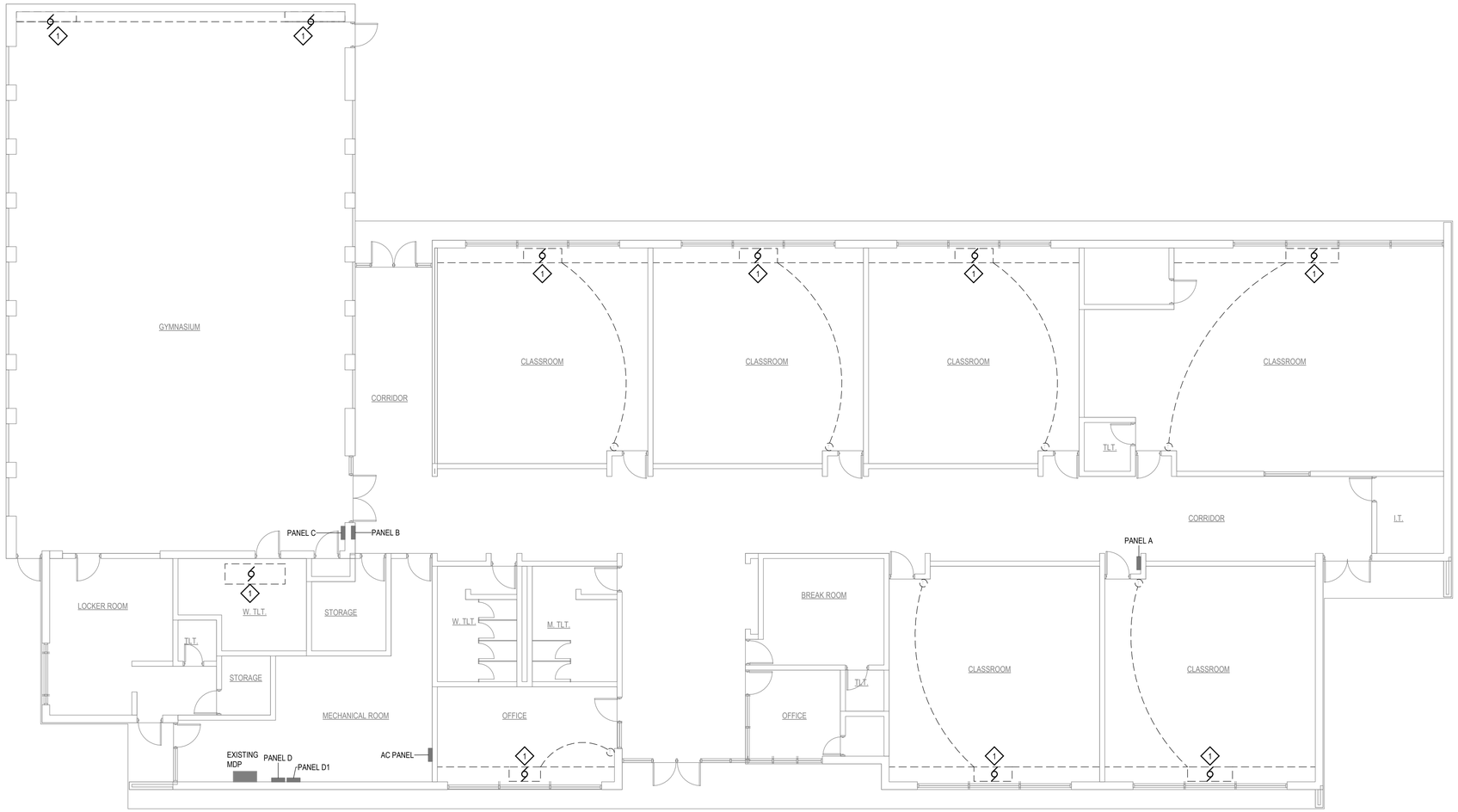
KEYED DEMOLITION NOTES

SYMBOL	DESCRIPTION
1	DISCONNECT EXISTING UNIT VENTILATOR. COORDINATE DEMOLITION WITH MECHANICAL CONTRACTOR. REMOVE ALL CONDUCTORS BACK TO THE SOURCE. FIELD VERIFY CONDUIT ROUTING AND UTILIZE WHERE POSSIBLE FOR CIRCUITING TO NEW UNIT VENTILATORS.



N

DEMOLITION PLAN

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

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BANGOR TOWNSHIP SCHOOLS
EDISON
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
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CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
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KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATORS. COORDINATE INSTALLATION WITH MECHANICAL
2	PROVIDE NEW TANDEM 20A/1P BREAKERS FOR NEW UNIT VENTILATORS. EXISTING PANELS UTILIZE GE TYPE TQL BREAKERS OR EQUIVALENT.

N

POWER PLAN

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

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MECHANICAL UPGRADES
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POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
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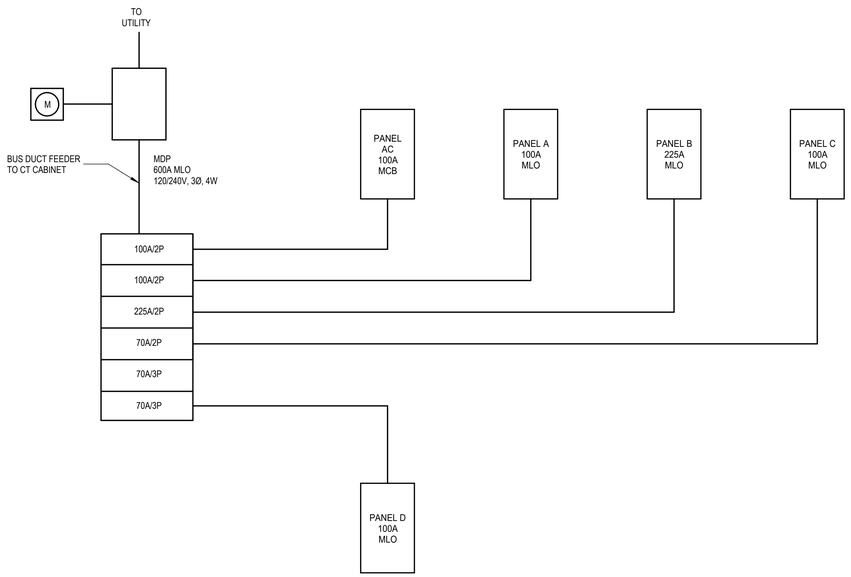

ONE-LINE DIAGRAM

BRANCH PANEL: PANEL B

LOCATION: CORRIDOR
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE:

VOLTS: 120/240 Single
PHASES: 1
WIRES: 3

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	CORRIDOR LTS	20 A	1	1200	1000			1	20 A	LTS	2
3	LTS	20 A	1			1000	1000	1	20 A	LTS	4
5	LTS LIBRARY & FOYER	20 A	1	1000	1000			1	20 A	TOILET RM LTS	6
7	Spare	20 A	1			0	1000	1	20 A	LTS KITCHEN & VESTIBULE	8
9	KITCHEN LTS	20 A	1	1000	900			1	20 A	RECEP	10
11	RECEP	20 A	1			1080	1500	**1**	**20 A**	**RECEP TLT RM / UNIT VENT**	**12**
13	RECEP & TLT FAN	20 A	1	1080	1500			**1**	**20 A**	**RECEP / UNIT VENT**	**14**
15	RECEP	20 A	1			900	1500	**1**	**20 A**	**KITCHEN RECEP / UNIT VENT**	**16**
17	RECEP	20 A	1	720	3000			**1**	**20 A**	**UNIT VENT / UNIT VENT**	**18**
19	PARKING LOT LTS	15 A	1			900	900	1	20 A	GARAGE RM RECEP	20
21	WATER HEATER	30 A	2	2500	2500			2	30 A	WATER HEATER	22
23	--	--	--			2500	2500	--	--	--	24
		Total Load:		17400.0 VA		14780.0 VA					
		Total Amps:		145 A		123 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
				TOTAL CONN LOAD:	32180.0 VA
				TOTAL EST DEMAND:	32180.0 VA
				TOTAL CONN CURRENT:	134 A
				TOTAL EST DEMAND CURRENT:	134 A

NOTES:
CIRCUITS 12, 14, 16, 18 ARE 20A/1P TANDEM BREAKERS

BRANCH PANEL: PANEL A

LOCATION: CORRIDOR
SUPPLY FROM: MDP
MOUNTING: Surface
ENCLOSURE:

VOLTS: 120/240 Single
PHASES: 1
WIRES: 3

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 100 A

NOTES:
EXISTING PANEL

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	LTS / RECEP	20 A	1	1000	1500			1	20 A	SERVER	2
3	LTS / RECEP	20 A	1			1000	1500	1	20 A	SERVER	4
5	LTS / RECEP	20 A	1	1000	750			1	20 A	LTS / RECEP	6
7	LTS	20 A	1			750	1500	**1**	**20 A**	**UNIT VENT / RECEP**	**8**
9	LTS	20 A	1	750	900			1	20 A	RECEPS	10
11	**RECEP / UNIT VENT**	**20 A**	**1**			1500	900	1	20 A	RECEP	12
13	RECEP / RECEP	20 A	1	900	900			1	20 A	RECEP	14
15	RECEP / RECEP	20 A	1			900	900	1	20 A	RECEP	16
17	CLOCKS	20 A	2	500	0			2	60 A	Spare	18
19	--	--	--			500	0	--	--	--	20
		Total Load:		8200.0 VA		9450.0 VA					
		Total Amps:		68 A		79 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
				TOTAL CONN LOAD:	17650.0 VA
				TOTAL EST DEMAND:	17650.0 VA
				TOTAL CONN CURRENT:	74 A
				TOTAL EST DEMAND CURRENT:	74 A

NOTES:
CIRCUITS 1-3, 5-12, 14 ARE 20A/1P TANDEM BREAKERS

BRANCH PANEL: PANEL C

LOCATION: CORRIDOR
SUPPLY FROM: MDP
MOUNTING: Surface
ENCLOSURE:

VOLTS: 120/240 Single
PHASES: 1
WIRES: 3

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 100 A

NOTES:
EXISTING PANEL

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	LTS 1 ROW	20 A	1	750	750			1	20 A	LTS 2 ROW	2
3	LTS 3 ROW	20 A	1			750	750	1	20 A	LTS 4 ROW	4
5	LTS 5 ROW	20 A	1	750	750			1	20 A	LTS 6 ROW	6
7	LTS 7 ROW "EM LTS"	20 A	1			750	750	1	20 A	LTS 8 ROW "TRED MIL OUTLET"	8
9	LTS 9 ROW	20 A	1	750	900			1	20 A	LTS 10 ROW "TRED MIL OUTLET"	10
11	PLUGS & LTS M.P. RM	20 A	1			900	1500	**1**	**20 A**	**RECEP / UNIT VENT**	**12**
13	PLUGS MULTIPURPOSE RM	20 A	1	900	1500			**1**	**20 A**	**UNIT VENT / UNIT VENT**	**14**
15	Space	--	1			--	--	1	--	Space	16
17	Space	--	1	--	--			1	--	Space	18
		Total Load:		7050.0 VA		5400.0 VA					
		Total Amps:		59 A		45 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
				TOTAL CONN LOAD:	12450.0 VA
				TOTAL EST DEMAND:	12450.0 VA
				TOTAL CONN CURRENT:	52 A
				TOTAL EST DEMAND CURRENT:	52 A

NOTES:
CIRCUITS 12 & 14 ARE 20A/1P TANDEM BREAKERS

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
EDISON
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

ONE-LINE DIAGRAM

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

SHEET
E-E6.0

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BANGOR TOWNSHIP SCHOOLS

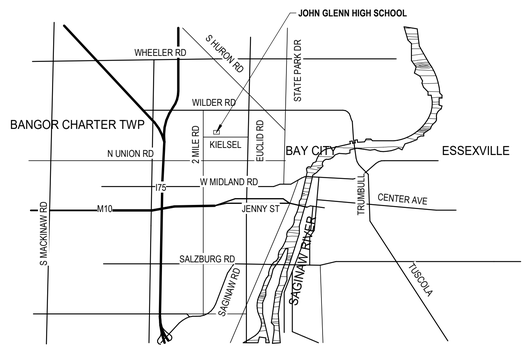
JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES

3201 KIESEL ROAD
BAY CITY, MICHIGAN

SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
STRUCTURAL		
G-S0.0	STRUCTURAL GENERAL NOTES	X
G-S3.1	ROOF FRAMING PLAN	X
G-S4.0	FRAMING ELEVATIONS	X
MECHANICAL		
G-M1.0	OVERHEAD MECHANICAL PLAN - DEMOLITION	X
G-M1.1	OVERHEAD MECHANICAL PLAN - DEMOLITION	X
G-M3.0	UNIT 'A' OVERHEAD MECHANICAL PLAN	X
G-M3.1	UNIT 'B' & 'C' OVERHEAD MECHANICAL PLAN	X
G-M3.2	UNIT 'D' & 'E' OVERHEAD MECHANICAL PLAN	X
G-M3.3	UNIT 'F' OVERHEAD MECHANICAL PLAN	X
G-M3.4	UNIT 'G' & 'H' OVERHEAD MECHANICAL PLAN	X
G-M3.5	UNIT 'J' OVERHEAD MECHANICAL PLAN	X
G-M3.6	UNIT 'K' WEST OVERHEAD MECHANICAL PLAN	X
G-M3.7	UNIT 'K' EAST OVERHEAD MECHANICAL PLAN	X
G-M3.8	UNIT 'A' AUDITORIUM OVERHEAD MECHANICAL	X
G-M3.9	ENLARGED BOILER ROOM PLANS	X
G-M8.0	MECHANICAL SCHEDULES AND NOTES	X
G-M8.1	MECHANICAL DETAILS	X
G-M8.2	PIPING SCHEMATICS	X
G-M8.3	PIPING SCHEMATICS	X
ELECTRICAL		
G-E0.0	GENERAL NOTES	X
G-E1.0	DEMOLITION PLAN UNITS A - H	X
G-E1.1	DEMOLITION PLAN UNITS J & K	X
G-E4.0	UNIT 'A' POWER PLAN	X
G-E4.1	UNIT 'B/C' POWER PLAN	X
G-E4.2	UNIT 'D/E' POWER PLAN	X
G-E4.3	UNIT 'F' POWER PLAN	X
G-E4.4	UNIT 'G/H' POWER PLAN	X
G-E4.5	UNIT 'J' POWER PLAN	X
G-E4.6	UNIT K (WEST) POWER PLAN	X
G-E4.7	UNIT K (EAST) POWER PLAN	X
G-E4.8	UNIT 'L' (MEZZANINE) POWER PLAN	X
G-E4.9	BOILER ROOM DEMOLITION & POWER PLAN	X
G-E6.0	ONE-LINE DIAGRAM	X
G-E7.0	PANEL SCHEDULES	X
G-E7.1	PANEL SCHEDULES	X
G-E7.3	PANEL SCHEDULES	X

LOCATION MAP



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LANSING, MI 48909
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LANSING, MI 48909
(517) 241-8847

811 Know what's **below.** **Call** before you dig.

PROJECT INFORMATION

BUILDING CODE COMPLIANCE
- 2015 MICHIGAN BUILDING CODE (MBC)
- 2018 MICHIGAN PLUMBING CODE (MPC)
- 2015 MICHIGAN MECHANICAL CODE (MMC)
- 2017 NATIONAL ELECTRICAL CODE (NEC)
- 2018 INTERNATIONAL FIRE CODE (IFC)
- 2012 NFPA 101 LIFE SAFETY CODE (LSC)

USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP E - EDUCATIONAL GROUP

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- ALLOWED - 2
- ACTUAL - 1

BUILDING AREA [TBL 506.2]
- ALLOWABLE - 14,400 SFT/ FLR
- ACTUAL - 142,741 SFT

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB, II(000)

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- NO SPRINKLER SYSTEM

OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- NO CHANGE

CORRIDORS [SEC 1020, TBL 1020.1]
- 1HR RATING

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JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

COVER SHEET

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: T. MIETZ
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

SHEET
CS

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STRUCTURAL GENERAL NOTES

GENERAL

1. THIS BUILDING RENOVATION HAS BEEN DESIGNED AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE MICHIGAN BUILDING CODE, 2015 EDITION.

2. THE OWNER WILL EMPLOY QUALIFIED SPECIAL INSPECTORS TO PERFORM INSPECTIONS IN ACCORDANCE WITH CHAPTER 17 OF THE MICHIGAN BUILDING CODE, EXCEPT AS NOTED BELOW. SPECIAL INSPECTIONS WILL BE PERFORMED FOR THE FOLLOWING:

   A. STEEL.
      I. STEEL SPECIAL INSPECTION SHALL BE PERFORMED IN ACCORDANCE WITH AISC 360.

3. WHEN "PROFESSIONAL ENGINEER" IS REFERRED TO IN THE FOLLOWING NOTES, IT DENOTES A LICENSED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN, QUALIFIED TO PERFORM THE WORK.

4. THE CONTRACTOR SHALL VISIT THE SITE TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS, THE OWNERS REQUIREMENTS FOR ACCESS TO THE SITE AND CONTINUED OPERATIONS DURING CONSTRUCTION.

5. THE PLAN, DETAIL DIMENSIONS & ELEVATIONS RELATIVE TO THE EXISTING STRUCTURE HAVE BEEN TAKEN FROM AVAILABLE DRAWINGS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY SUCH DIMENSIONS, ELEVATIONS & DETAILS AS NECESSARY AND MAKE APPROVED ADJUSTMENTS PRIOR TO CONSTRUCTION OR ORDERING OF MATERIAL.

6. THE CONTRACTOR SHALL SUBMIT PRECAST CONCRETE, CONCRETE REINFORCING, STRUCTURAL STEEL, METAL DECK, STEEL JOIST, COLD FORMED METAL, COLD FORMED METAL TRUSS AND WOOD TRUSS SHOP DRAWINGS PRIOR TO FABRICATION. THE CONTRACTOR SHALL ALSO SUBMIT MATERIAL REQUIREMENTS AND CONCRETE MIX DESIGNS. ALLOW (2) WEEKS FOR ENGINEER REVIEW.

7. THE STRUCTURE SHALL BE CONSIDERED TO BE IN AN UNSTABLE CONDITION UNTIL ALL FLOOR, WALL AND ROOF STRUCTURES ARE COMPLETED. CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR STABILITY AND TO RESIST LATERAL LOADS DURING ERECTION.

8. ALL NON LOAD BEARING WALLS, EXCEPT INDICATED SHEAR WALLS, SHALL BE CONSTRUCTED TO ALLOW FOR VERTICAL DEFLECTION OF THE STRUCTURE ABOVE.

DIVISION 5 - STRUCTURAL STEEL

1. THE LATEST REVISION OF THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING, FABRICATION AND ERECTION OF ALL STRUCTURAL STEEL.

   A. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) AISC 360, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS.
   B. AISC 303, CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES.

2. STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM MATERIAL SPECIFICATIONS:

   A. W AND WT SHAPES: ASTM A992, GRADE 50 (Fy = 50 KSI).
   B. MISCELLANEOUS SHAPES AND PLATES: ASTM A36 (Fy = 36 KSI).
   C. PIPE: ASTM A53, GRADE B, TYPE E OR S (Fy = 35 KSI).
   D. HOLLOW STRUCTURAL SECTIONS: ASTM A500, GRADE C (Fy = 50 KSI).
   E. ALL COLUMN ANCHOR RODS SHALL BE ASTM F1554 (Fy = 36 KSI).

3. ALL WELDING SHALL BE PERFORMED USING THE ELECTRIC ARC METHOD IN ACCORDANCE WITH THE LATEST REVISION OF THE AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE". E70XX ELECTRODES CONFORMING TO AWS A5.1 OR A5.5 SHALL BE USED FOR SHIELDED METAL ARC METHOD & FX7-ECXX FLUX - ELECTRODE COMBINATION CONFORMING TO AWS A5.17 FOR SUBMERGED ARC METHOD.

4. ALL BOLTS SHALL BE 3/4" DIAMETER ASTM F3125 GRADE A325 TYPE N BOLTS. ALL BOLTED CONNECTIONS SHALL BE SNUG-TIGHT BEARING TYPE BOLTS UNLESS NOTED OTHERWISE.

5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING SIZES, DESIGN VALUES, MATERIALS, DIMENSIONS AND CONNECTIONS.

6. ALL CONNECTIONS NOT SPECIFICALLY DETAILED, SHALL BE DESIGNED AND DETAILED UNDER THE DIRECT SUPERVISION OF A PROFESSIONAL ENGINEER. DETAILING SHALL BE PERFORMED USING RATIONAL ENGINEERING DESIGN AND STANDARD PRACTICE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE GENERAL DETAILS SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY AND DO NOT INDICATE THE REQUIRED NUMBER OF BOLTS OR WELD SIZES, UNLESS SPECIFICALLY NOTED.

7. PROVIDE "SLIP-CRITICAL" CONNECTIONS AT BRACING, WHERE BOLTS ARE IN TENSION AND AT MOMENT CONNECTIONS.

8. ALL BEAM CONNECTIONS ARE TO CONFORM TO AISC STANDARD TWO ANGLE WEB CONNECTIONS CAPABLE OF SUPPORTING 66% OF THE TOTAL UNIFORM LOAD CAPACITY OF THE BEAM OR FOR LOADS INDICATED ON DRAWING. NO CONNECTION SHALL CONSIST OF LESS THAN TWO 3/4" DIAMETER BOLTS OR A WELD DEVELOPING LESS THAN 10 KIPS.

9. DESIGN HORIZONTAL AND VERTICAL BRACING END CONNECTIONS FOR LOADS INDICATED ON THE DRAWINGS OR 50% OF THE TENSILE CAPACITY OF THE MEMBER WHICHEVER IS GREATER.

10. ALL FIELD CONNECTIONS SHALL BE BOLTED UNLESS NOTED OTHERWISE. FIELD WELDING IS NOT ALLOWED EXCEPT WHERE SPECIFICALLY INDICATED OR APPROVED.

11. PROVIDE 3/4" DIAMETER SHOULDER BOLTS WITH LOCK WASHERS AT ALL SLOTTED CONNECTIONS OF WIND COLUMNS OR AS NOTED.

12. ALL SHOP AND FIELD WELDS SHALL BE VISUALLY INSPECTED PER AWS D1.1. ALL DEFICIENT OR NON CONFORMING ITEMS SHALL BE REPORTED TO THE ENGINEER WHO WILL DETERMINE THE CORRECTIVE ACTION REQUIRED.

13. ALL BEAMS SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. PROVIDE CAMBERS AS INDICATED ON THE DRAWINGS.

14. GROUT REQUIRED UNDER COLUMN BASE PLATES AS SHOWN IN THE DETAILS SHALL BE A STANDARD NON-SHRINK GROUT SUCH AS "MASTERFLOW 100" BY MASTER BUILDERS.

15. PRIME PAINT ALL STRUCTURAL STEEL WITH FABRICATOR'S STANDARD LEAD AND CHROMATE- FREE, NONASPHALTIC, RUST-INHIBITING PRIMER COMPLYING WITH MASTER PAINTER INSTITUTE (MPI) #79. APPLY PRIMER ACCORDING TO THE MANUFACTURER'S WRITTEN INSTRUCTIONS AND AT RATE RECOMMENDED BY SSPC TO PROVIDE A MINIMUM DRY FILM THICKNESS OF 1.5 MILS. USE PRIMING METHODS THAT RESULT IN FULL COVERAGE OF JOINTS, CORNERS, EDGES, AND EXPOSED SURFACES. TOUCH-UP DAMAGED OR MISSING PAINT AFTER STEEL ERECTION IS COMPLETE. OMIT PAINT AT: HOLES FOR SLIP CRITICAL CONNECTIONS, AT STEEL TO BE FIRE PROOFED, AT STEEL ENCASED IN CONCRETE AND ON THE TOP FLANGE OF STEEL BEAMS WITH SHEAR CONNECTIONS.

16. PROVIDE AND HAVE IN PLACE ADEQUATE LATERAL BRACING AND VERTICAL SUPPORTS FOR THE SAFE ERECTION AND TRUE ALIGNMENT OF THE STRUCTURAL STEEL. THIS CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR THE SAFE ERECTION AND TEMPORARY BRACING OF STRUCTURAL STEEL.

17. VERIFY NUMBER AND SIZE OF OPENINGS IN ROOF, WALLS AND FLOOR WITH ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS. SEE DETAILS, AND SPECIFICATIONS. FOR STRUCTURAL REQUIREMENTS. VERIFY ALL INFORMATION WITH THE APPROPRIATE CONTRACTOR.

18. ALL DIMENSIONS RELATED TO STRUCTURAL STEEL USED TO SUPPORT EQUIPMENT OR FRAME OPENINGS SHALL BE VERIFIED WITH CERTIFIED AND APPROVED SHOP DRAWINGS OF PURCHASED EQUIPMENT PRIOR TO DETAILING AND FABRICATION.

19. PROVIDE L3x3x1/4 SHELF ANGLES AT TOPS OF COLUMNS AS REQUIRED TO SUPPORT ROOF DECK.

20. ALL EDGES OF METAL DECK SHALL BE SUPPORTED AT A CHANGE IN DECK SPAN WHETHER SHOWN ON DRAWINGS OR NOT. PROVIDE TUBE STEEL OR A DOUBLE ANGLE BETWEEN JOIST OR STRUCTURAL STEEL AND METAL DECK.

21. ALL FREE EDGES OF METAL DECK SHALL BE SUPPORTED WITH AN EDGE ANGLE L3x3x1/4 OR OTHER SUITABLE SUPPORT. THIS SHALL BE PROVIDED WHETHER SHOWN ON DRAWINGS OR NOT.

22. ALL BEAMS, JOISTS, OR LINTELS BEARING ON MASONRY WALLS SHALL HAVE BEARING PLATES WITH ANCHOR BOLTS. IF NOT NOTED ON PLAN, SEE TYPICAL DETAILS.

23. ALL WF BEAMS SUPPORTING MASONRY AND WITH SPANS GREATER THAN 6'-0" SHALL HAVE 1/2" DIAMETER BY 6" LONG HEADED CONCRETE ANCHORS SPACED AT 2'-0" O.C. WELDED TO THE TOP FLANGE.

24. ALL STEEL IN EXTERIOR MASONRY WALLS IS TO BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A-123.

DIVISION 5 - STEEL DECK

1. THE LATEST REVISION OF THE FOLLOWING CODES GOVERN THE DESIGN, DETAILING, MANUFACTURING AND ERECTION OF STEEL DECK.

   A. STEEL DECK INSTITUTE (SDI) MOC3, MANUAL OF CONSTRUCTION WITH STEEL DECK.
   B. SDI FDDM, FLOOR DECK DESIGN MANUAL.
   C. SDI RDDM, ROOF DECK DESIGN MANUAL.

2. ALL ROOF DECK SHALL BE AS FOLLOWS:

   A. ALL ROOF DECK SHALL BE 3" DEEP 22 GA WIDE RIB GALVANIZED DECK, 3 SPAN MINIMUM. 1.5B BY VULCRAFT OR AN APPROVED EQUAL.
   B. FASTEN ROOF DECK TO ALL SUPPORTS AND AT PERIMETER WITH 5/8" DIAMETER PUDDLE WELDS @ 6" O.C. AT SUPPORTS AND 6" O.C. AT PERIMETER. FASTEN SIDE LAPS WITH #10 TEK SCREWS, 2 PER SPAN.

3. PROVIDE ADDITIONAL SUPPORT FRAMING AT OPENINGS IN ROOF AND FLOOR PER TYPICAL DETAILS. COORDINATE LOCATIONS WITH APPROPRIATE TRADES.

4. THE CONTRACTOR SHALL FURNISH ALL ACCESSORIES INCLUDING CLOSURES, "Z" CLOSURES, COLUMN CLOSURES, SCREED ANGLES, GIRDER FILLERS, CANT STRIP, FILLER SHEET AND REINFORCING CHANNEL, AS REQUIRED.

5. ALL DECKING SHALL BE WELDED TO STRUCTURAL STEEL BY QUALIFIED WELDERS USING PRE-QUALIFIED PROCEDURES. THE ERECTOR SHALL ESTABLISH A WELDING PROCEDURE FOR THE PLUG WELD OF THE STEEL DECKING TO THE STRUCTURAL STEEL FOR THE PARTICULAR GAGE USED. PRIOR TO THE START OF ERECTION OF THE STEEL DECK, EACH WELDER SHALL BE QUALIFIED USING THIS PROCEDURE AS WITNESSED BY THE OWNER'S TESTING AGENCY.

6. THE METAL DECK SHALL BE DESIGNED TO BE CONTINUOUS OVER THREE (3) SPANS IN THE DIRECTION INDICATED, SINGLE AND DOUBLE SPANS, IF REQUIRED, SHALL SATISFY LOAD AND DEFLECTION REQUIREMENTS.

7. NO LOADS SHALL BE PERMITTED TO BE HUNG FROM ANY ROOF DECK. ALL HANGERS FOR CEILINGS, DUCTWORK, ELECTRICAL CONDUIT, PIPING, ETC. SHALL BE HUNG DIRECTLY FROM STRUCTURAL STEEL WORK OR SUPPLEMENTARY MEMBERS.

DESIGN CRITERIA

MICHIGAN BUILDING CODE 2015 (ASCE 7-10)
RISK CATEGORY III

ROOF DEAD LOADS (ASSUMED)

• ROOFING & INSULATION	5 PSF
• STEEL	3 PSF
• ROOF DECK	2 PSF
• MISCELLANEOUS	8 PSF
TOTAL	**18 PSF**

ROOF LIVE LOADS

• MINIMUM LOAD	20 PSF

SNOW LOADS

• IMPORTANCE FACTOR	$I_s = 1.1$
• GROUND SNOW LOAD	$P_G = 35$ PSF
• SNOW EXPOSURE FACTOR	$C_e = 1.0$
• THERMAL FACTOR	$C_t = 1.0$
• FLAT USE SNOW	$P_f = 27$ PSF (TYPICAL ROOF)
• SNOW DRIFT PER ASCE 7	

WIND LOADS

• BASIC WIND SPEED	120 MPH (3 SEC GUST)
• EXPOSURE CATEGORY	B
• COMPONENTS AND CLADDING PER ASCE 7	

SEISMIC DESIGN DATA

• SITE CLASS	D
• RESPONSE COEFFICIENTS	$SD_S = 0.071$ $SD_1 = 0.062$
• SEISMIC DESIGN CATEGORY	A

ABBREVIATIONS

@	AT
A.B.	ANCHOR BOLT
ADD'L	ADDITIONAL
A.F.F.	ABOVE FINISHED FLOOR
B.C.	BOTTOM CHORD
B.O.	BOTTOM OF
B.O.D.	BOTTOM OF DECK
B.O.F.	BOTTOM OF FOOTING
B.O.S.	BOTTOM OF STEEL
B.O.T.	BOTTOM OF TRUSS
B.S.	BOTH SIDES
BM	BEAM
BOTT	BOTTOM
BRG	BEARING
C.L.	CENTER LINE
CJ	CONTROL JOINT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS
CSJ	CONSTRUCTION JOINT
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DWG	DRAWING
EA	EACH
ELEV	ELEVATION
EQ	EQUAL
EX	EXISTING
F.S.	FAR SIDE
F.V.	FIELD VERIFY
FIN	FINISH
FLG	FLANGE
FLR	FLOOR
FDN	FOUNDATION
FT	FOOT
FTG	FOOTING
GA	GAGE
G.L.	GIRT LINE
H.P.	HIGH POINT
HORIZ	HORIZONTAL
k	KIPS
LG	LONG
L.P.	LOW POINT
LL	LIVE LOAD
L.L.H.	LONG LEG HORIZONTAL
L.L.V.	LONG LEG VERTICAL
LN	LINE
MAX	MAXIMUM
MTL	METAL
MIN	MINIMUM
MISC	MISCELLANEOUS
N.S.	NEAR SIDE
N.T.S.	NOT TO SCALE
NO	NUMBER
O.C.	ON CENTER
OPP	OPPOSITE
PC	PIECE
PL	PLATE
PLCS	PLACES
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
REF	REFERENCE
REINF	RINFORC-ED, -ING, EMENT
REQ'D	REQUIRED
SCHED	SCHEDULE
SECT	SECTION
SIM	SIMILAR
SPA	SPACES
STD	STANDARD
STL	STEEL
T.O.	TOP OF
T.O.C.	TOP OF CONCRETE
T.O.F.	TOP OF FOOTING
T.O.M.	TOP OF MASONRY
T.O.S.	TOP OF STEEL
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W.P.	WORK POINT
W/	WITH
WWR	WELDED WIRE REINFORCEMENT

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
JOHN GLENN
BAY CITY, MICHIGAN

STRUCTURAL GENERAL NOTES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03-30-23

CHCK'D BY: E. MANNOR
DES'D BY: E. MANNOR
DRAWN BY: E. FREDERICK
PROJ #: 21-1719-0435

SHEET
G-S0.0

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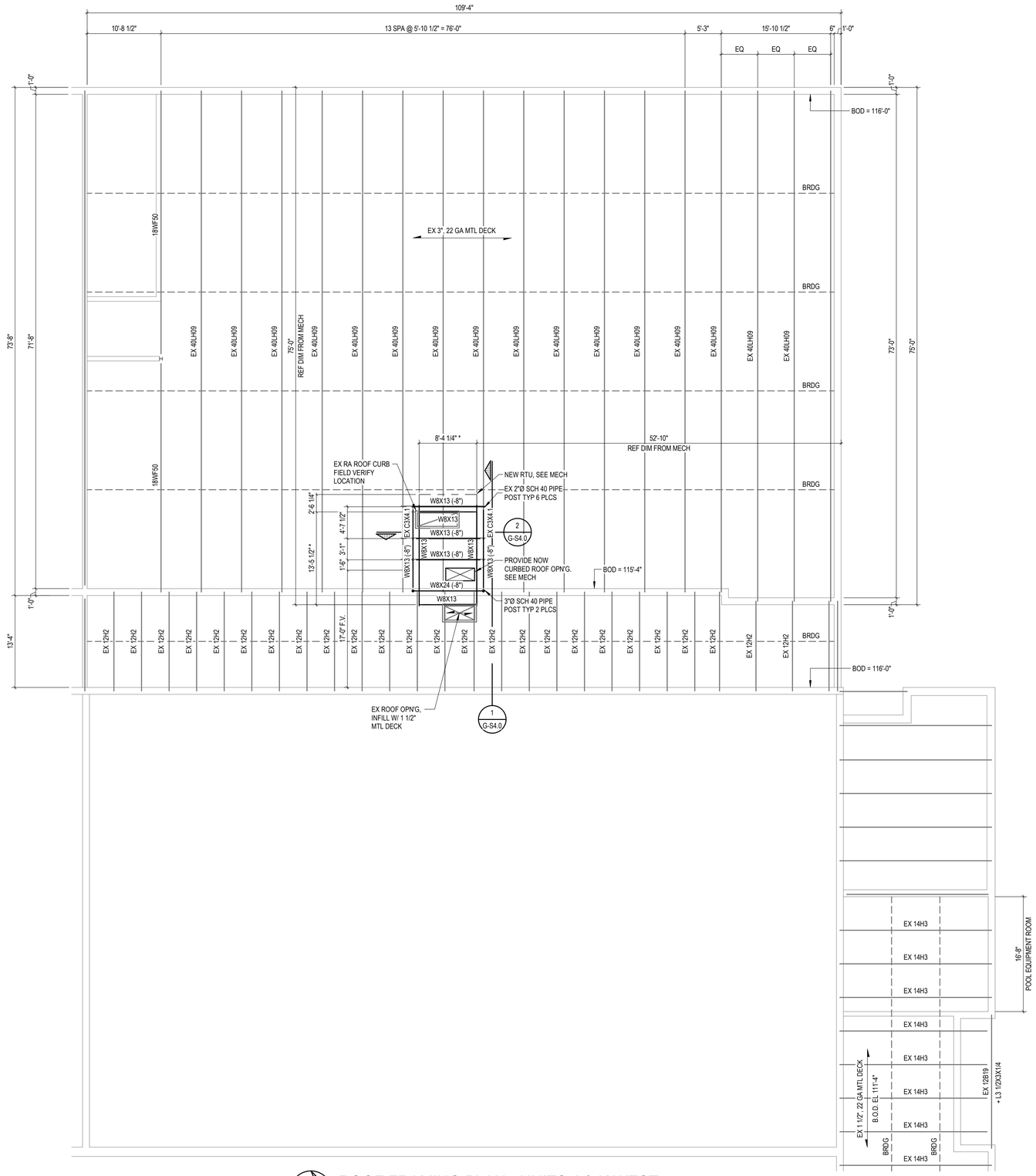


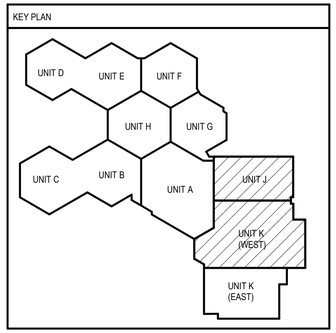
ROOF FRAMING PLAN - UNITS J & K WEST

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

T.O.S. = 119'-0"
(+/-) INDICATES T.O.S. RELATIVE TO 119'-0"

* COORDINATE FRAMING W/ RTU

KEY PLAN



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MECHANICAL UPGRADES
JOHN GLENN
BAY CITY, MICHIGAN

ROOF FRAMING PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03-30-23

CHCK'D BY: E. MANNOR
DES'D BY: E. MANNOR
DRAWN BY: E. FREDERICK
PROJ #: 21-1719-0435

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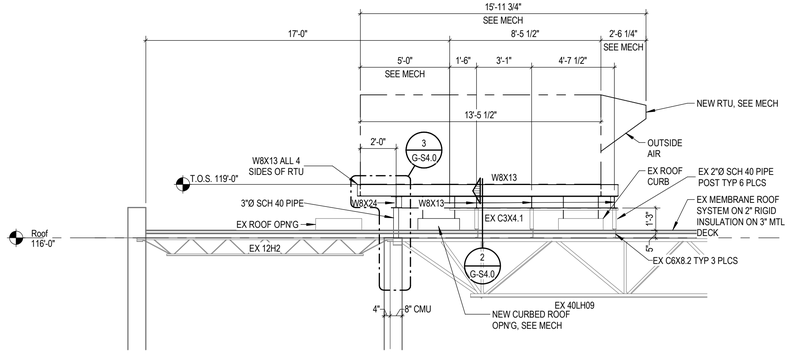
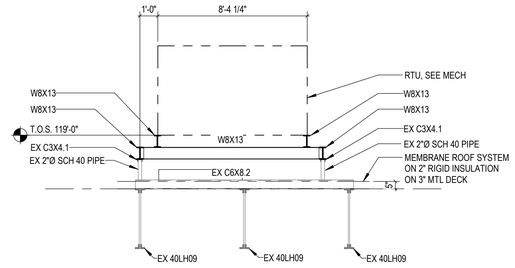
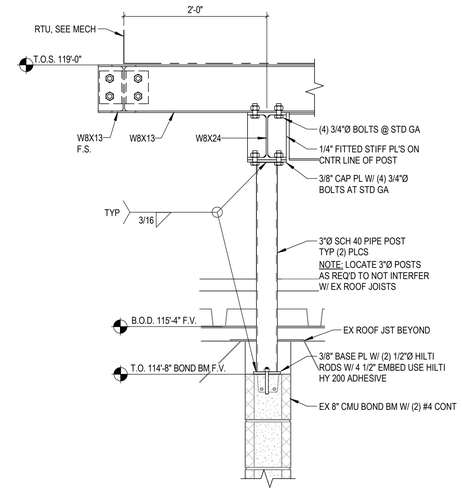


1 G-S4.0 SECTION
SCALE: 1/4" = 1'-0"



2 G-S4.0 SECTION
SCALE: 1/4" = 1'-0"



3 G-S4.0 DETAIL
SCALE: 1" = 1'-0"

WILLIAM A. KIBBE & ASSOCIATES, INC.
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BANGOR SCHOOLS
MECHANICAL UPGRADES
JOHN GLENN
BAY CITY, MICHIGAN

FRAMING SECTIONS AND DETAILS

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03-30-23

CHCK'D BY: E. MANNOR
DES'D BY: E. MANNOR
DRAWN BY: E. FREDERICK
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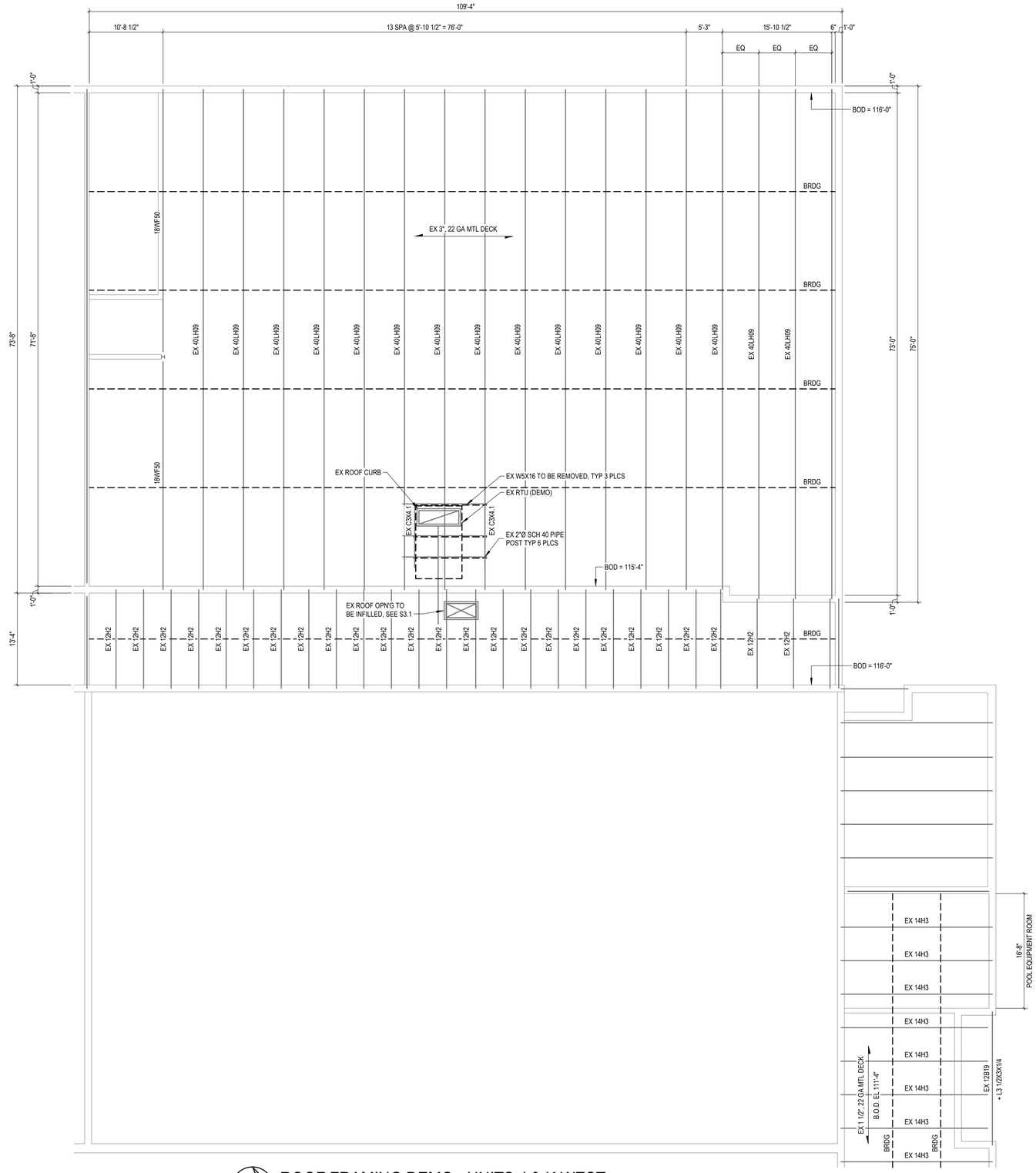
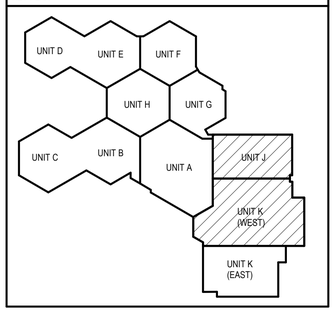


ROOF FRAMING DEMO - UNITS J & K WEST

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

KEY PLAN



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BANGOR SCHOOLS
MECHANICAL UPGRADES
JOHN GLENN
BAY CITY, MICHIGAN

DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03-30-23

CHCK'D BY: E. MANNOR
DES'D BY: E. MANNOR
DRAWN BY: E. FREDERICK
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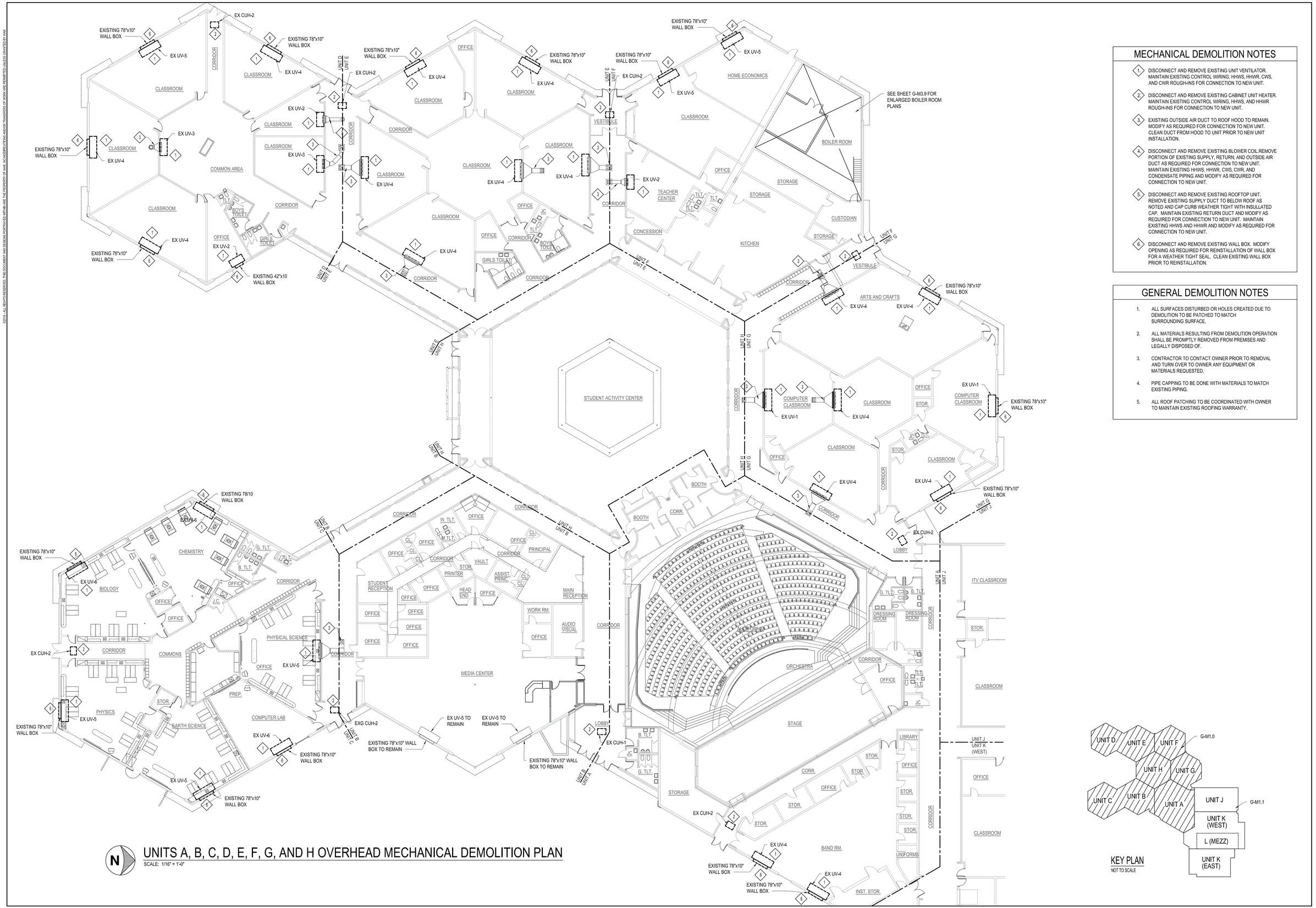

UNITS A, B, C, D, E, F, G, AND H OVERHEAD MECHANICAL DEMOLITION PLAN

SCALE: 1/16" = 1'-0"

MECHANICAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING UNIT VENTILATOR. MAINTAIN EXISTING CONTROL WIRING, HHWS, HHWR, CWS, AND CWR ROUGH-INS FOR CONNECTION TO NEW UNIT.
2. DISCONNECT AND REMOVE EXISTING CABINET UNIT HEATER. MAINTAIN EXISTING CONTROL WIRING, HHWS, AND HHWR ROUGH-INS FOR CONNECTION TO NEW UNIT.
3. EXISTING OUTSIDE AIR DUCT TO ROOF HOOD TO REMAIN. MODIFY AS REQUIRED FOR CONNECTION TO NEW UNIT. CLEAN DUCT FROM HOOD TO UNIT PRIOR TO NEW UNIT INSTALLATION.
4. DISCONNECT AND REMOVE EXISTING BLOWER COIL.REMOVE PORTION OF EXISTING SUPPLY, RETURN, AND OUTSIDE AIR DUCT AS REQUIRED FOR CONNECTION TO NEW UNIT. MAINTAIN EXISTING HHWS, HHWR, CWS, CWR, AND CONDENSATE PIPING AND MODIFY AS REQUIRED FOR CONNECTION TO NEW UNIT.
5. DISCONNECT AND REMOVE EXISTING ROOFTOP UNIT. REMOVE EXISTING SUPPLY DUCT TO BELOW ROOF AS NOTED AND CAP CURB WEATHER TIGHT WITH INSULLATED CAP. MAINTAIN EXISTING RETURN DUCT AND MODIFY AS REQUIRED FOR CONNECTION TO NEW UNIT. MAINTAIN EXISTING HHWS AND HHWR AND MODIFY AS REQUIRED FOR CONNECTION TO NEW UNIT.
6. DISCONNECT AND REMOVE EXISTING WALL BOX. MODIFY OPENING AS REQUIRED FOR REINSTALLATION OF WALL BOX FOR A WEATHER TIGHT SEAL. CLEAN EXISTING WALL BOX PRIOR TO REINSTALLATION.

GENERAL DEMOLITION NOTES

1. ALL SURFACES DISTURBED OR HOLES CREATED DUE TO DEMOLITION TO BE PATCHED TO MATCH SURROUNDING SURFACE.
2. ALL MATERIALS RESULTING FROM DEMOLITION OPERATION SHALL BE PROMPTLY REMOVED FROM PREMISES AND LEGALLY DISPOSED OF.
3. CONTRACTOR TO CONTACT OWNER PRIOR TO REMOVAL AND TURN OVER TO OWNER ANY EQUIPMENT OR MATERIALS REQUESTED.
4. PIPE CAPPING TO BE DONE WITH MATERIALS TO MATCH EXISTING PIPING.
5. ALL ROOF PATCHING TO BE COORDINATED WITH OWNER TO MAINTAIN EXISTING ROOFING WARRANTY.

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRAGES
JOHN GLENN
BAY CITY, MICHIGAN

OVERHEAD MECHANICAL PLAN - DEMOLITION

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
PROJ #: 21-1719-0435

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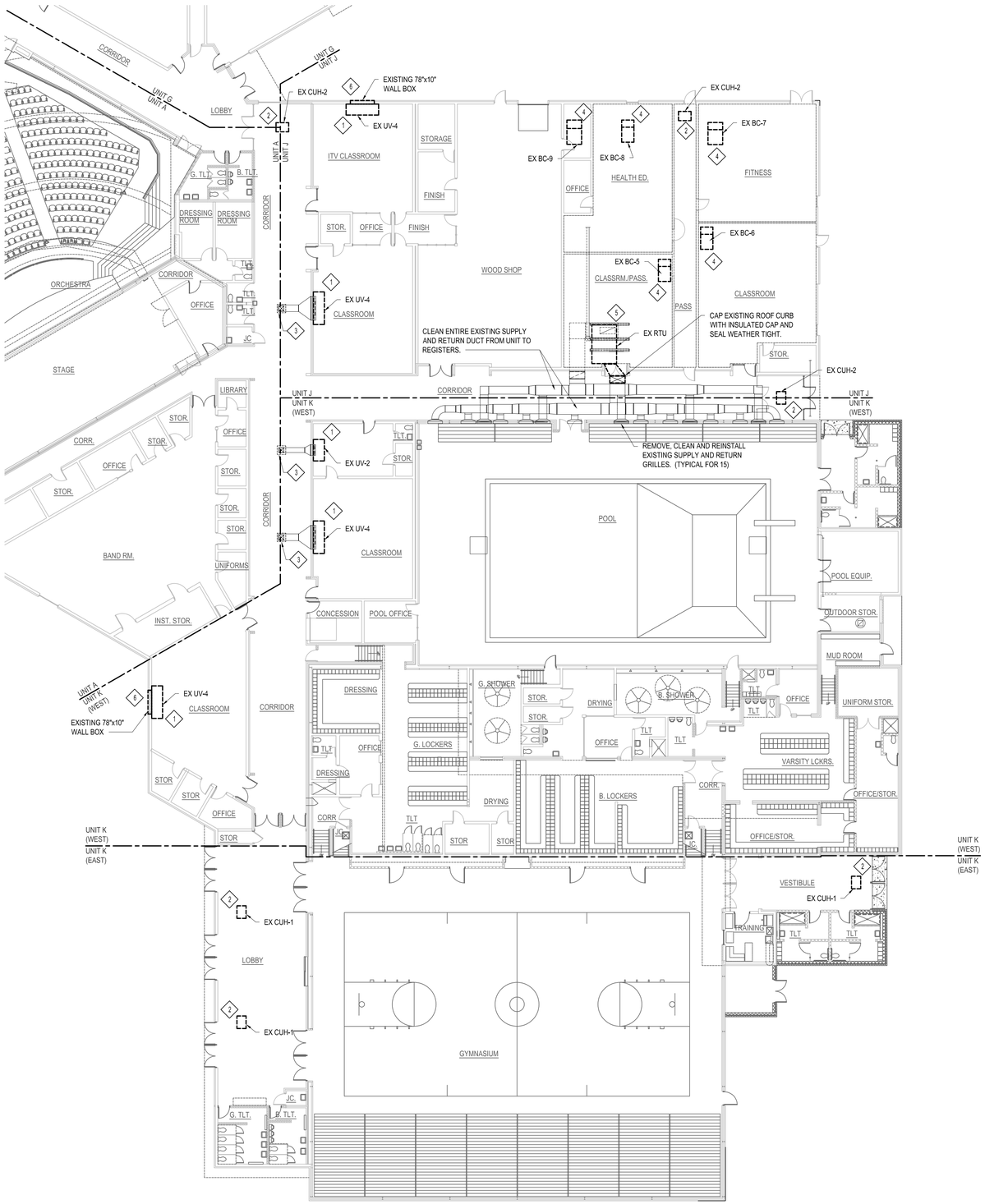


N

UNITS J AND K OVERHEAD MECHANICAL DEMOLITION PLAN

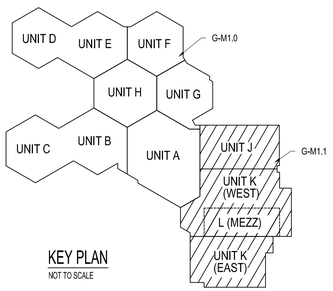
SCALE: 1/16" = 1'-0"

MECHANICAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING UNIT VENTILATOR. MAINTAIN EXISTING CONTROL WIRING, HHWS, HHWR, CWS, AND CWR ROUGH-INS FOR CONNECTION TO NEW UNIT.
2. DISCONNECT AND REMOVE EXISTING CABINET UNIT HEATER. MAINTAIN EXISTING CONTROL WIRING, HHWS, AND HHWR ROUGH-INS FOR CONNECTION TO NEW UNIT.
3. EXISTING OUTSIDE AIR DUCT TO ROOF HOOD TO REMAIN. MODIFY AS REQUIRED FOR CONNECTION TO NEW UNIT. CLEAN DUCT FROM HOOD TO UNIT PRIOR TO NEW UNIT INSTALLATION.
4. DISCONNECT AND REMOVE EXISTING BLOWER COIL.REMOVE PORTION OF EXISTING SUPPLY, RETURN, AND OUTSIDE AIR DUCT AS REQUIRED FOR CONNECTION TO NEW UNIT. MAINTAIN EXISTING HHWS, HHWR, CWS, CWR, AND CONDENSATE PIPING AND MODIFY AS REQUIRED FOR CONNECTION TO NEW UNIT.
5. DISCONNECT AND REMOVE EXISTING ROOFTOP UNIT. REMOVE EXISTING SUPPLY DUCT TO BELOW ROOF AS NOTED AND CAP CURB WEATHER TIGHT WITH INSULLATED CAP. MAINTAIN EXISTING RETURN DUCT AND MODIFY AS REQUIRED FOR CONNECTION TO NEW UNIT. MAINTAIN EXISTING HHWS AND HHWR AND MODIFY AS REQUIRED FOR CONNECTION TO NEW UNIT.
6. DISCONNECT AND REMOVE EXISTING WALL BOX. MODIFY OPENING AS REQUIRED FOR REINSTALLATION OF WALL BOX FOR A WEATHER TIGHT SEAL. CLEAN EXISTING WALL BOX PRIOR TO REINSTALLATION.

GENERAL DEMOLITION NOTES

1. ALL SURFACES DISTURBED OR HOLES CREATED DUE TO DEMOLITION TO BE PATCHED TO MATCH SURROUNDING SURFACE.
2. ALL MATERIALS RESULTING FROM DEMOLITION OPERATION SHALL BE PROMPTLY REMOVED FROM PREMISES AND LEGALLY DISPOSED OF.
3. CONTRACTOR TO CONTACT OWNER PRIOR TO REMOVAL AND TURN OVER TO OWNER ANY EQUIPMENT OR MATERIALS REQUESTED.
4. PIPE CAPPING TO BE DONE WITH MATERIALS TO MATCH EXISTING PIPING.
5. ALL ROOF PATCHING TO BE COORDINATED WITH OWNER TO MAINTAIN EXISTING ROOFING WARRANTY.



KEY PLAN
NOT TO SCALE

WILLIAM A. KORBER & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRAGES
JOHN GLENN
BAY CITY, MICHIGAN

OVERHEAD MECHANICAL PLAN - DEMOLITION

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
PROJ #: 21-1719-0435

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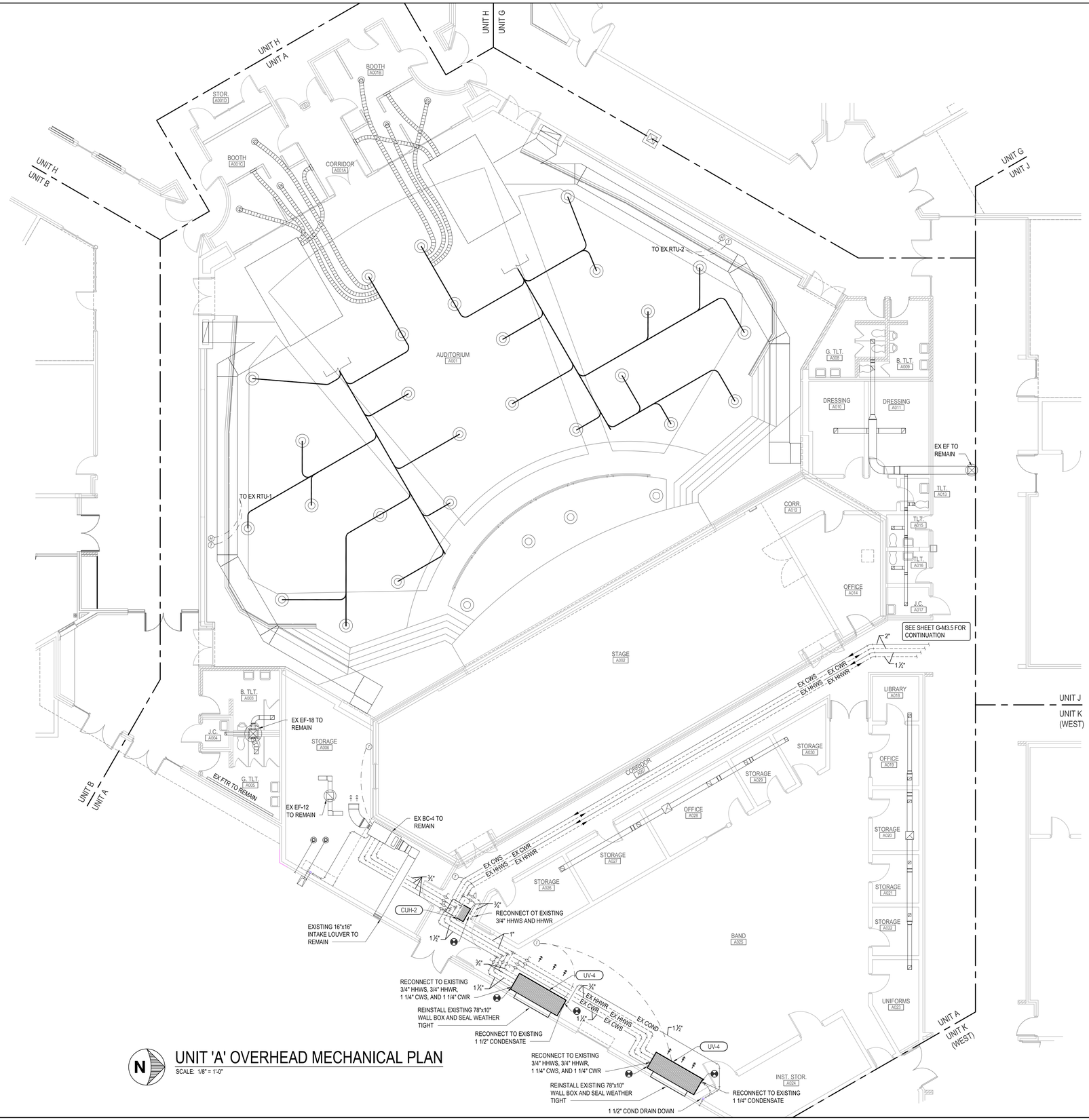
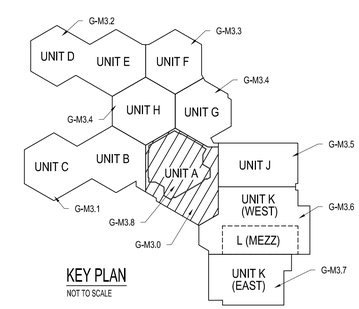


UNIT 'A' OVERHEAD MECHANICAL PLAN

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



KEY PLAN

NOT TO SCALE

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRAGES
JOHN GLENN
BAY CITY, MICHIGAN

UNIT 'A' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
PROJ #: 21-1719-0435

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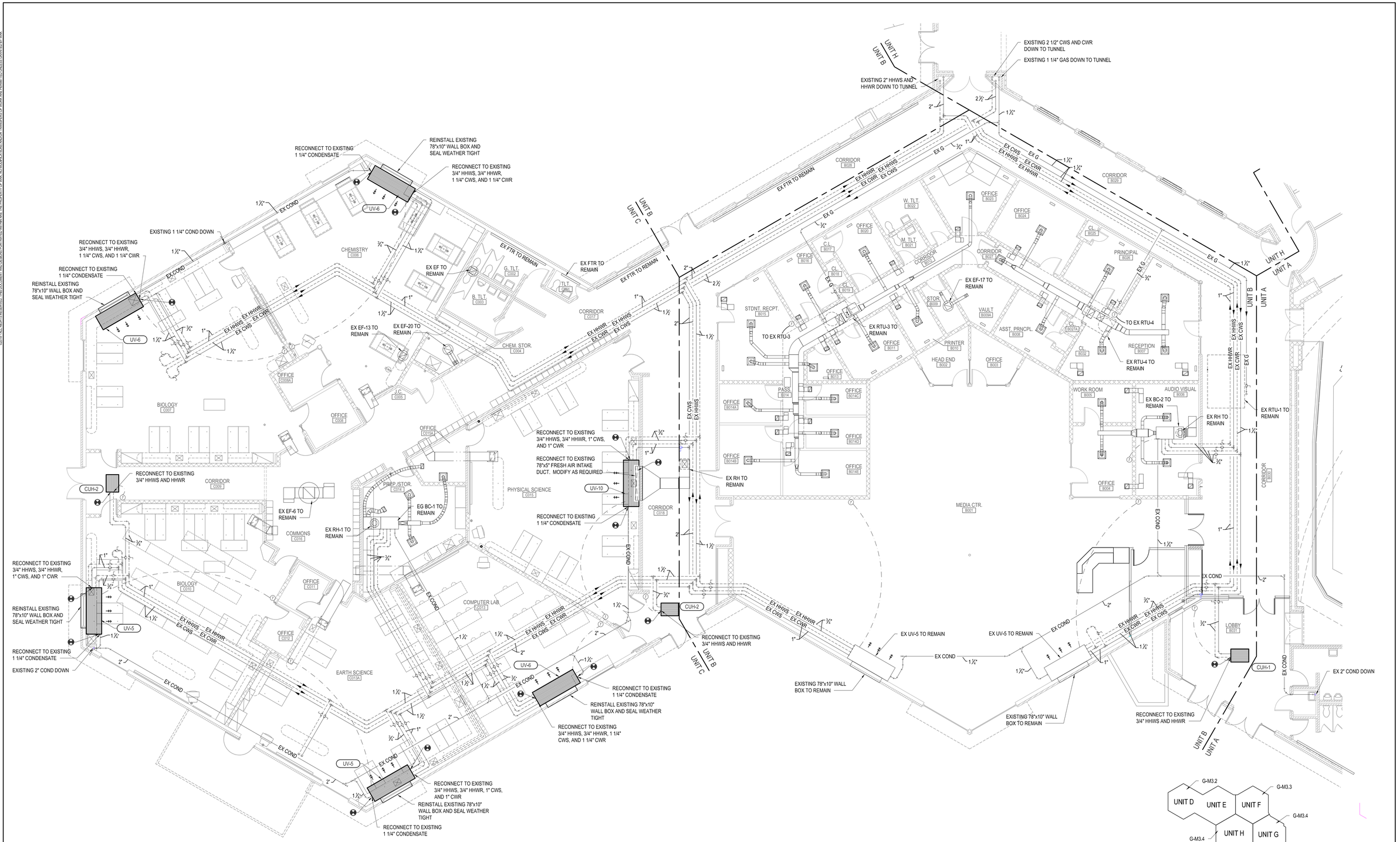
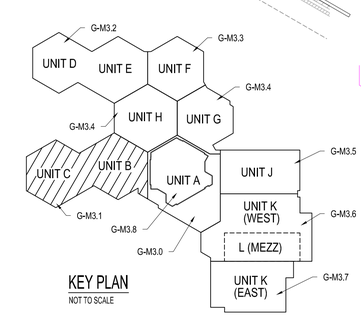


UNIT B & C OVERHEAD MECHANICAL PLAN

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



KEY PLAN

NOT TO SCALE

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRADES

JOHN GLENN
BAY CITY, MICHIGAN

UNIT 'B' & 'C' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
PROJ #: 21-1719-0435

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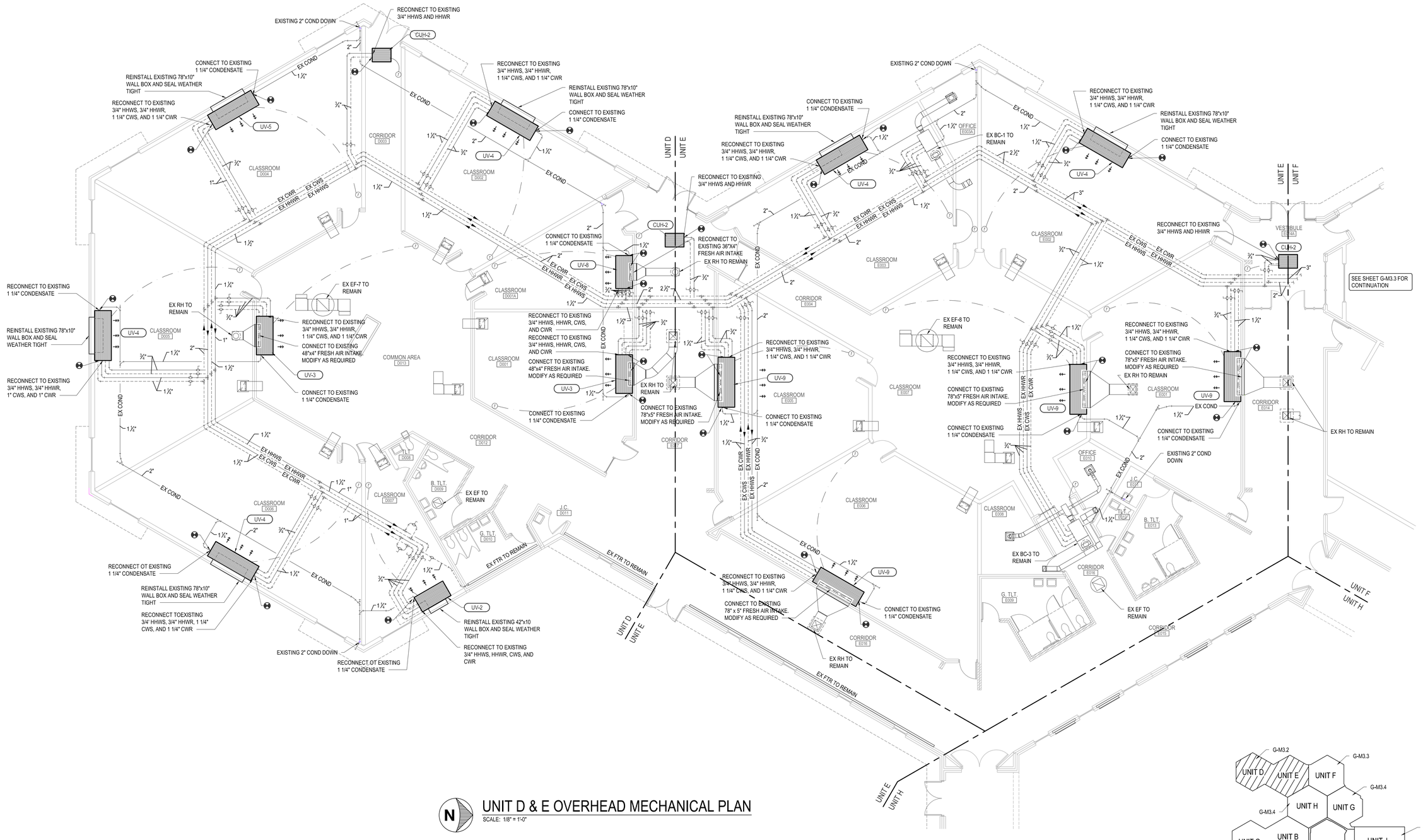
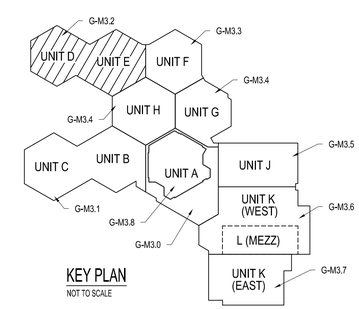


UNIT D & E OVERHEAD MECHANICAL PLAN

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



KEY PLAN

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ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRAGES

JOHN GLENN

BAY CITY, MICHIGAN

UNIT 'D' & 'E' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

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DES'D BY: R. MEYER

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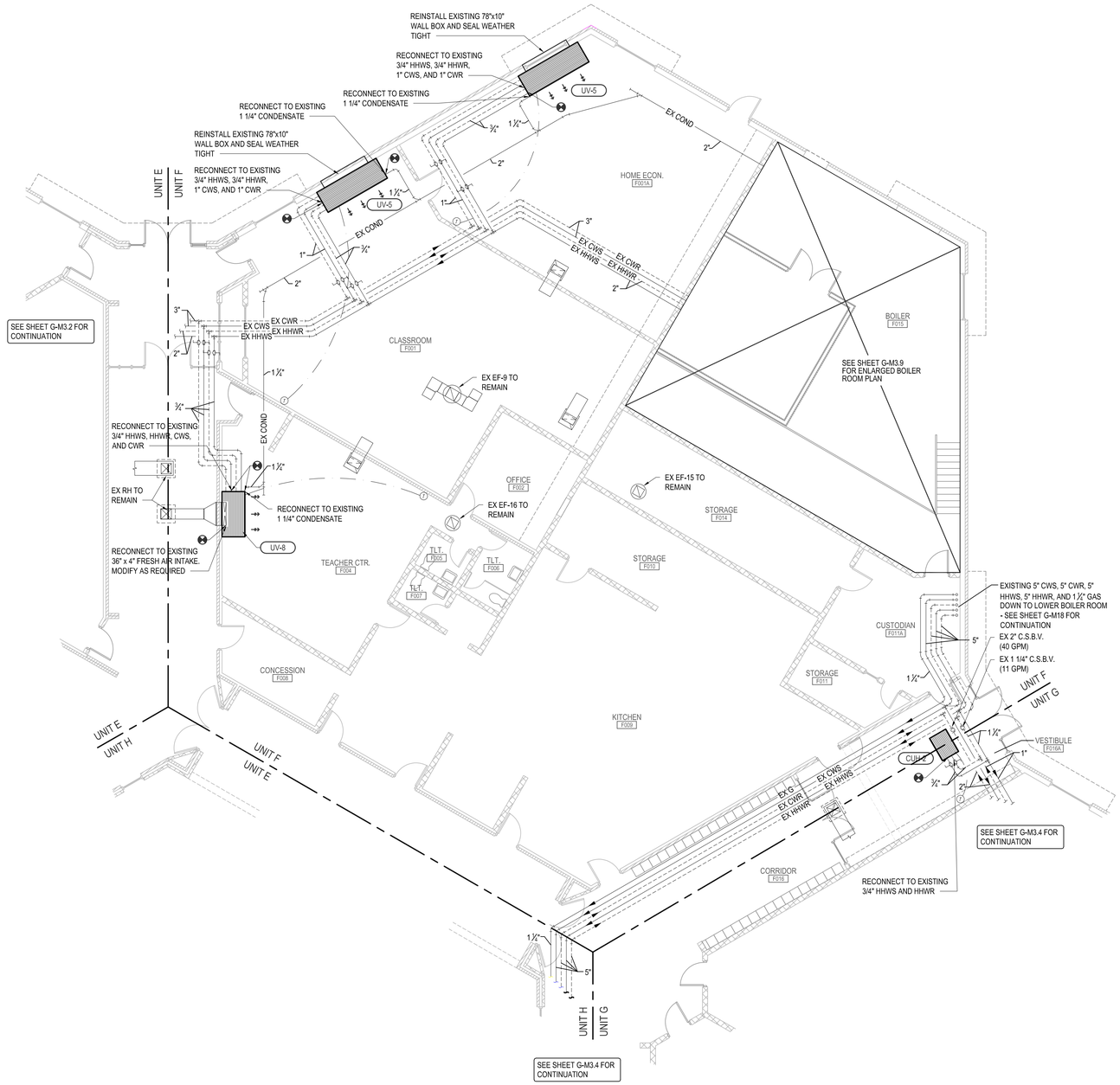
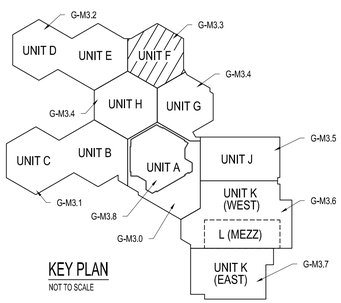


UNIT F OVERHEAD MECHANICAL PLAN

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



KEY PLAN

NOT TO SCALE

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BANGOR SCHOOLS MECHANICAL UPGRAGES

JOHN GLENN
BAY CITY, MICHIGAN

UNIT 'F' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
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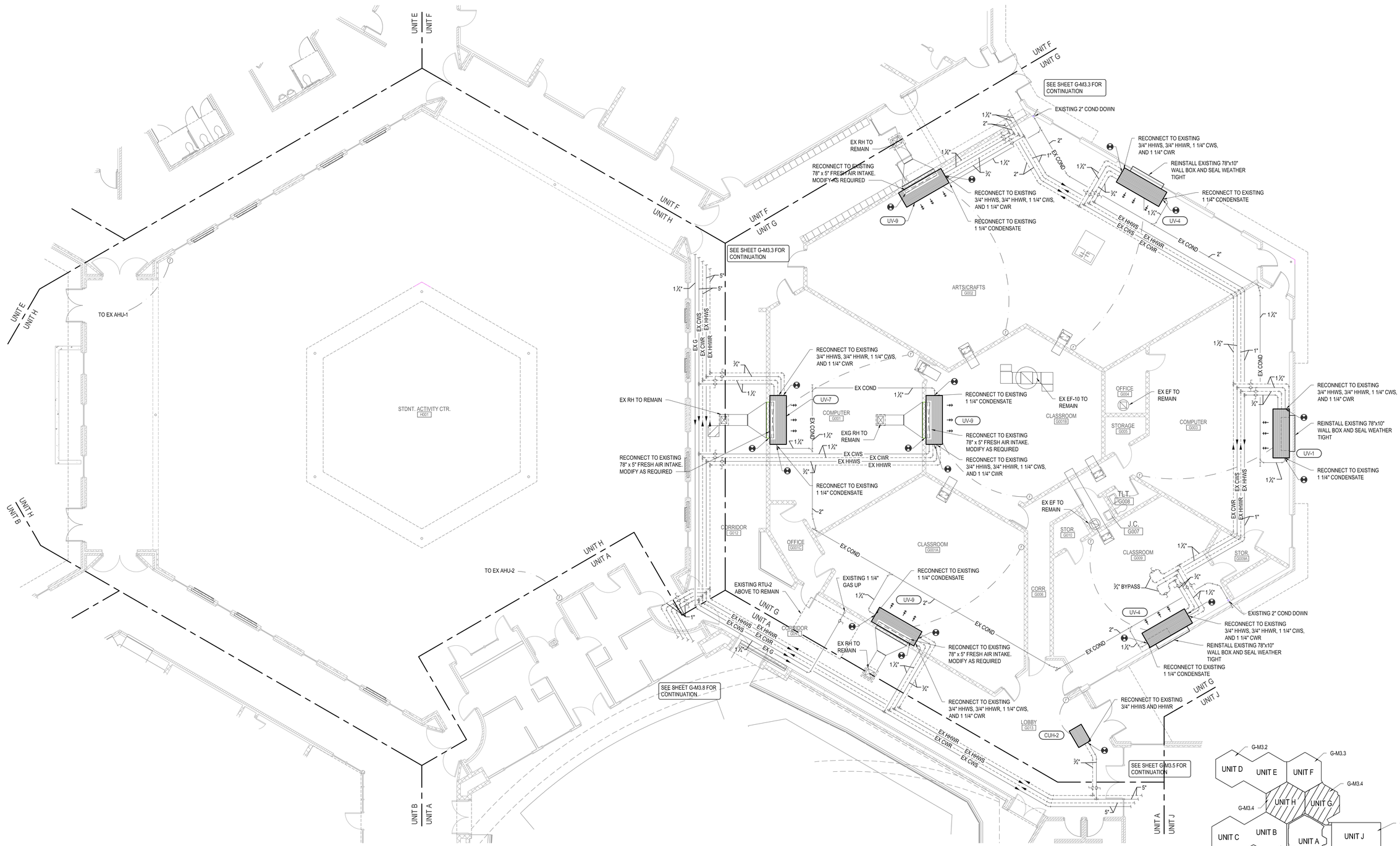
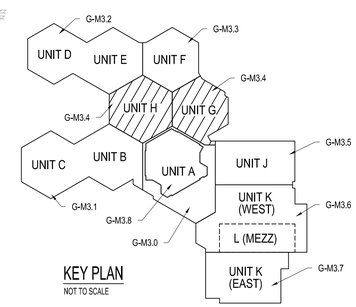


UNIT G & H OVERHEAD MECHANICAL PLAN

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



KEY PLAN

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ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRAGES

JOHN GLENN
BAY CITY, MICHIGAN

UNIT 'G' & 'H' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
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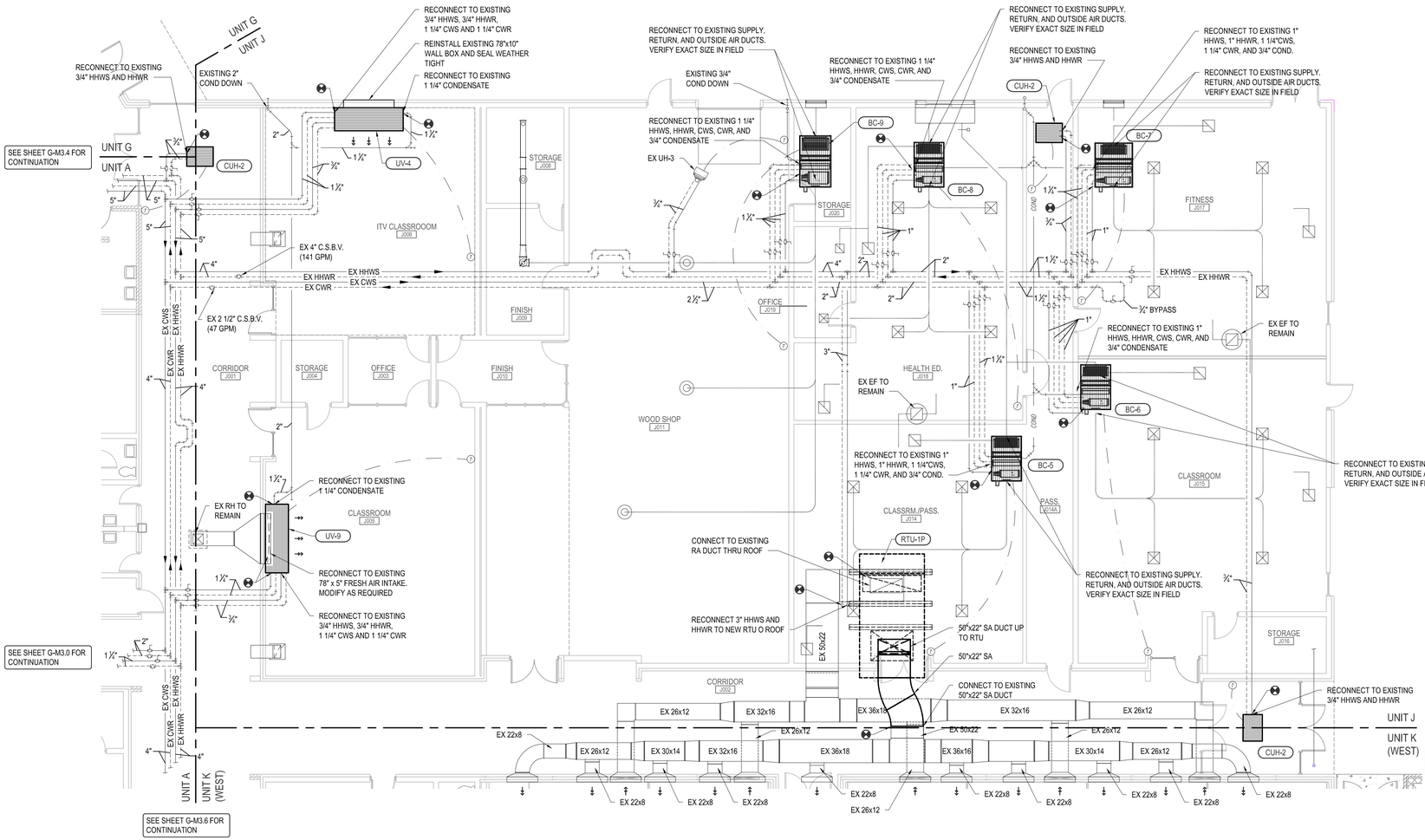

UNIT J OVERHEAD MECHANICAL PLAN

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

KEY PLAN

NOT TO SCALE

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRAGES

JOHN GLENN
BAY CITY, MICHIGAN

UNIT 'J' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
PROJ #: 21-1719-0435

SHEET
G-M3.5

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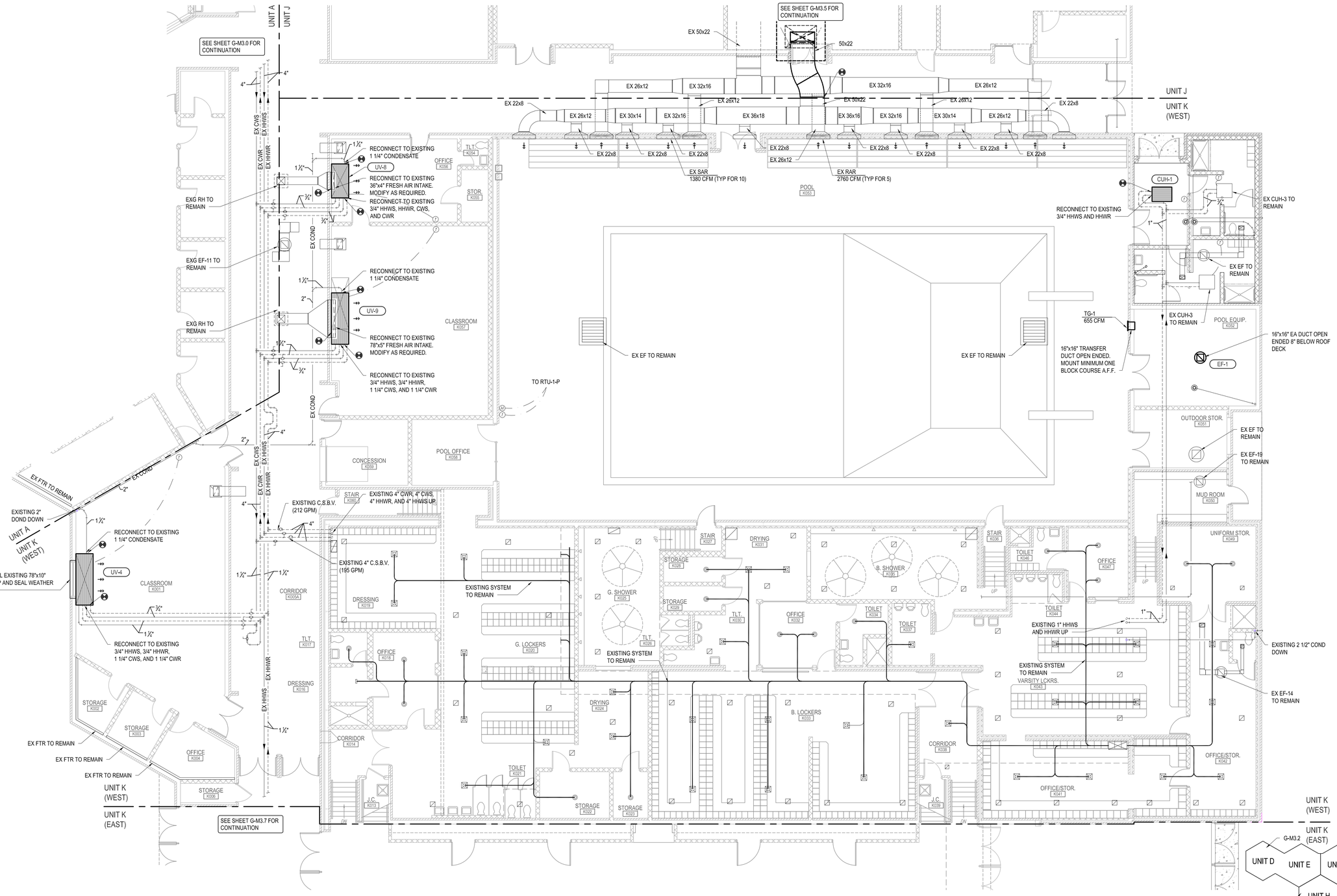
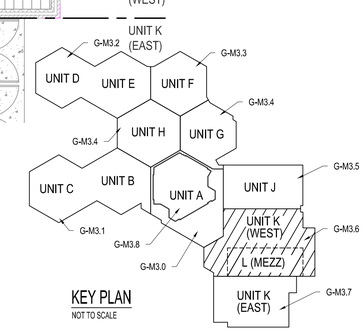


UNIT K (WEST) OVERHEAD MECHANICAL PLAN

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



KEY PLAN

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WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRAGES
JOHN GLENN
BAY CITY, MICHIGAN

UNIT 'K' WEST OVERHEAD MECHANICAL PLAN

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	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
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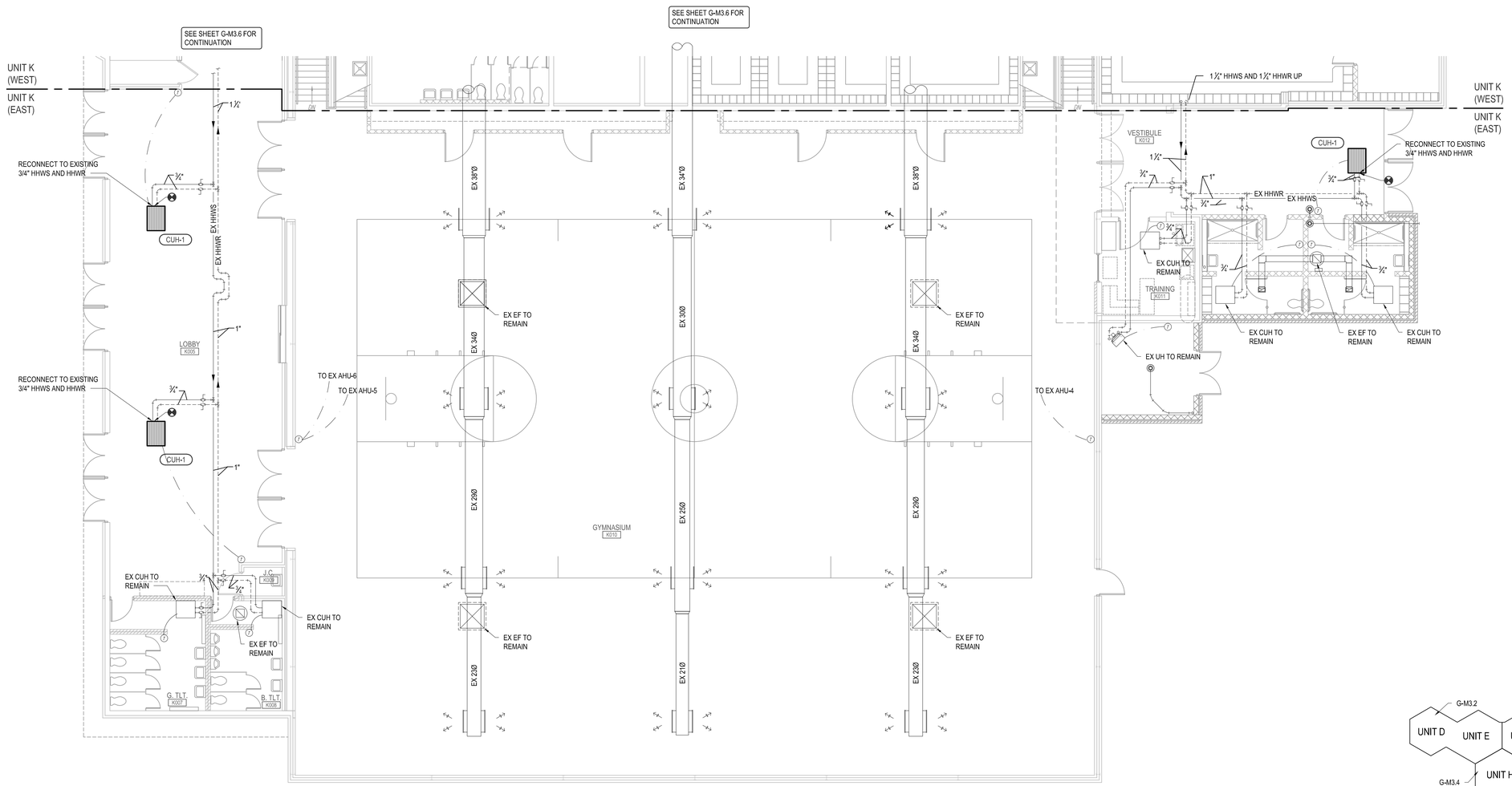
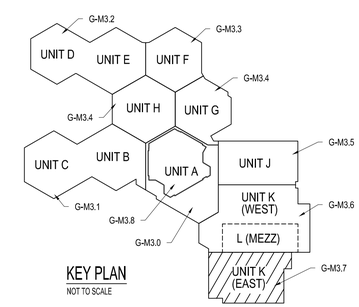


UNIT K (EAST) OVERHEAD MECHANICAL PLAN

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



KEY PLAN

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BANGOR SCHOOLS
MECHANICAL UPGRAGES
JOHN GLENN
BAY CITY, MICHIGAN

UNIT 'K' (EAST) OVERHEAD MECHANICAL PLAN

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	ISSUED FOR BIDS	03/30/2023

CHK'D BY: J. WHEELER
DES'D BY: R. MEYER
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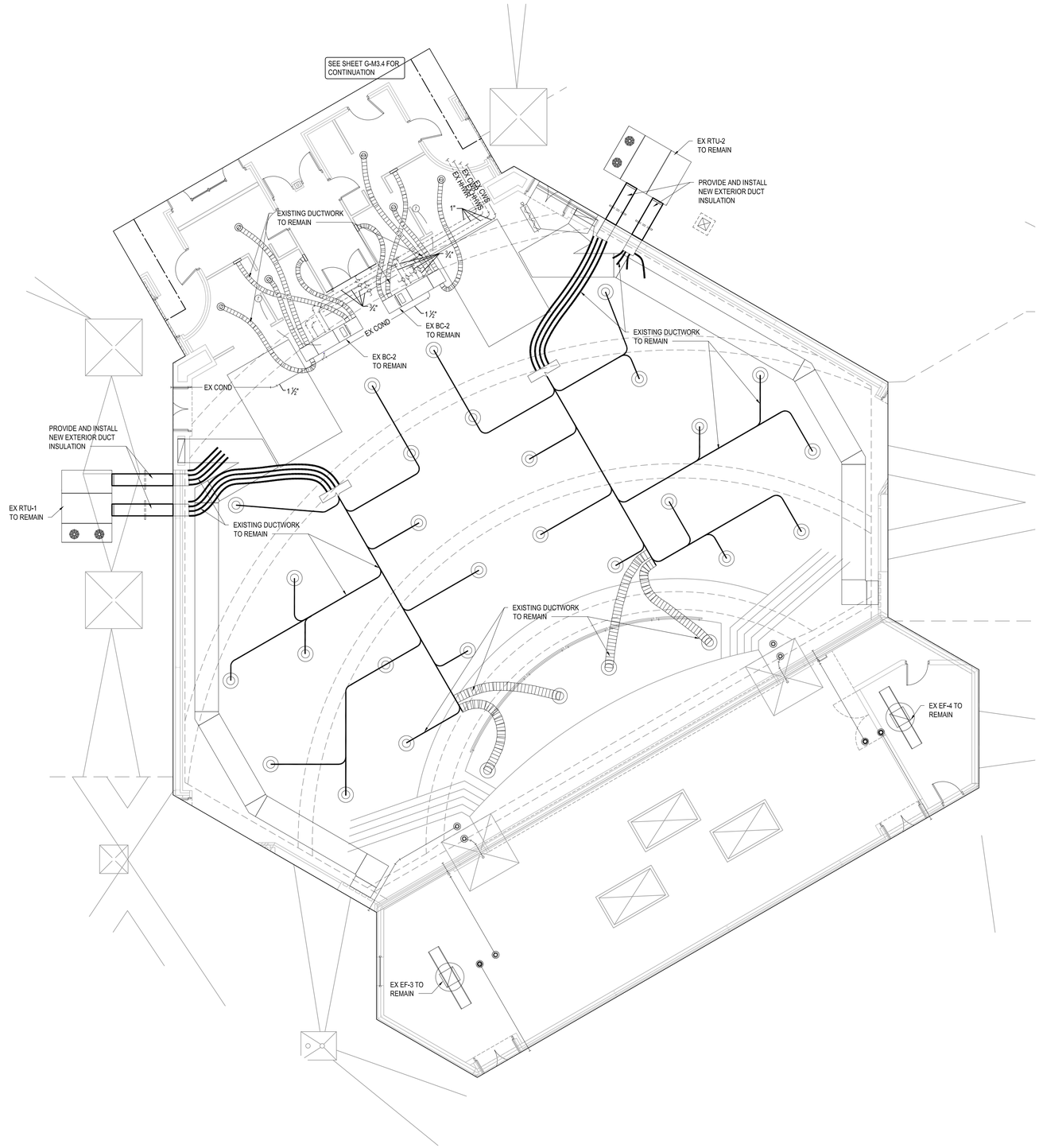
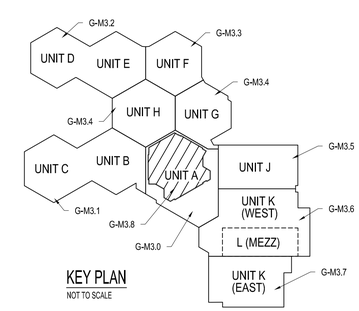


UNIT 'A' AUDITORIUM OVERHEAD MECHANICAL PLAN

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



KEY PLAN

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BANGOR SCHOOLS
MECHANICAL UPGRAGES
JOHN GLENN
BAY CITY, MICHIGAN

UNIT 'A' AUDITORIUM OVERHEAD MECHANICAL

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	ISSUED FOR BIDS	03/30/2023

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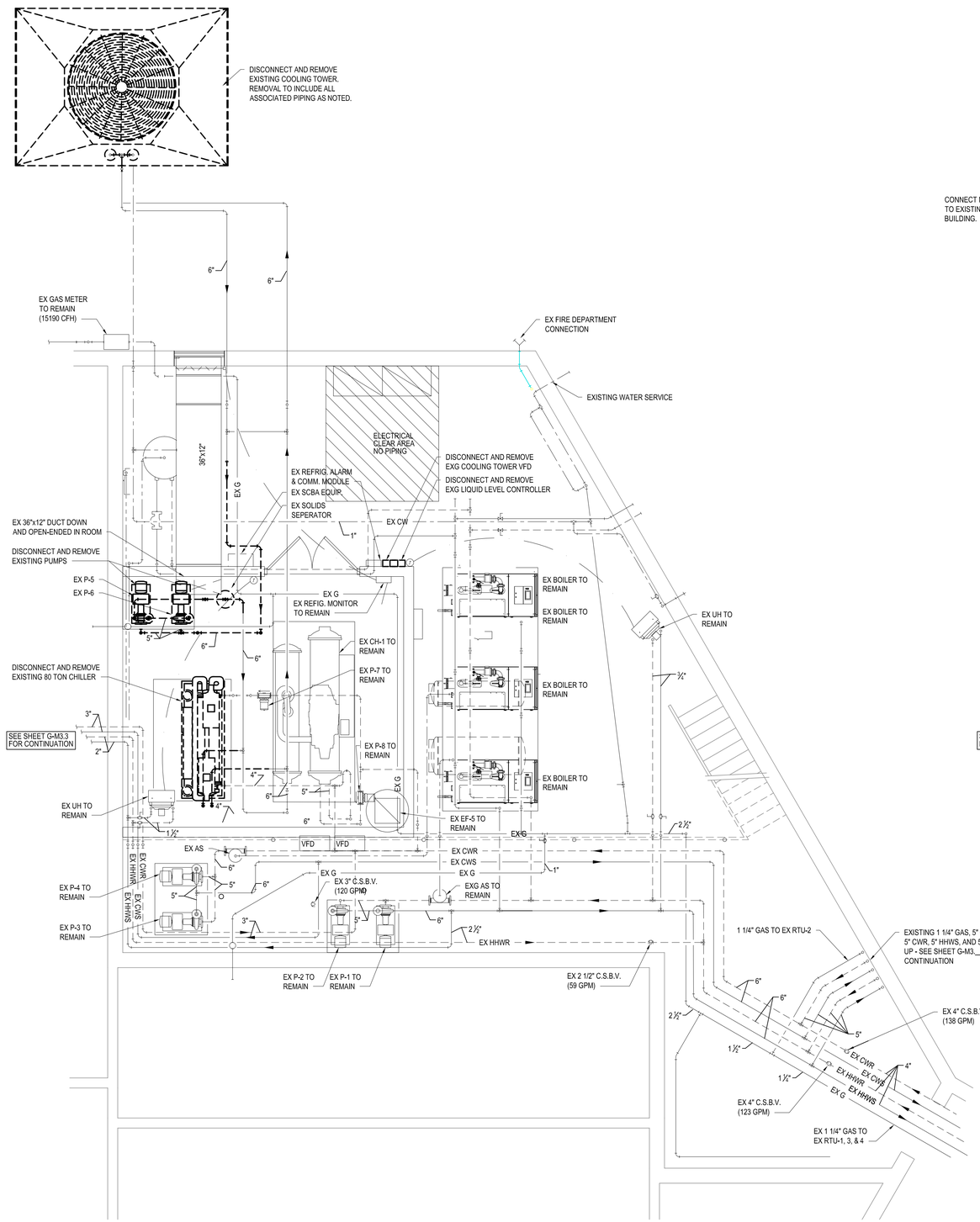
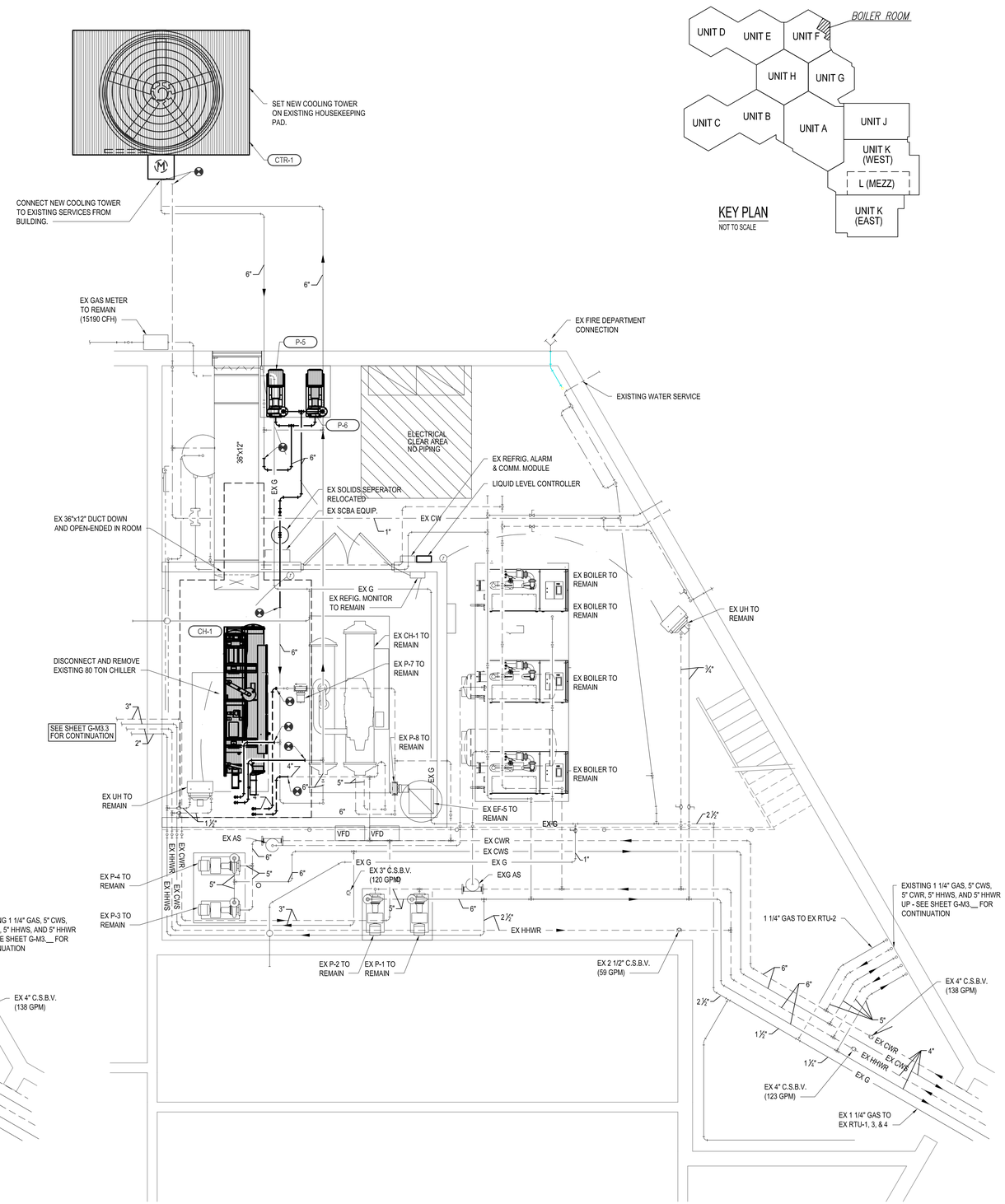


ENLARGED BOILER ROOM MECHANICAL DEMOLITION PLAN

SCALE: 1/4" = 1'-0"



ENLARGED BOILER ROOM MECHANICAL RENOVATION PLAN

SCALE: 1/4" = 1'-0"

KEY PLAN

NOT TO SCALE

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ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS MECHANICAL UPGRAGES

JOHN GLENN
BAY CITY, MICHIGAN

ENLARGED BOILER ROOM PLANS

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/03/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
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ROOFTOP AIR HANDLING UNIT SCHEDULE

SEE (-/-)

MARK	AREA	SUPPLY FAN			MIN. O.A. CFM	HEATING					COOLING								ELECTRICAL				MODEL
		CFM	E.S.P.	HP		MBH	GPM	FT.P.D.	EAT	LAT	MBH	GPM	FT.P.D.	EAT D.B.	EAT W.B.	LAT D.B.	LAT W.B.	V/Ø	MCA	FLA	MOCP		
RTU-1P	POOL	13800	3.0	15	4269	677.5	80	20	57.2	101.6	563.9	10	7.18	83.1	73.6	66.3	63.1	460/3	120	115	125	RNA-040-D-0-3-AABJ6-J/GEQ0	

BASED ON AAON
OPTIONS:
1. EQUIPMENT RAILS.
2. MICROCHANNEL AIR-COOLED CONDENSER.
3. HINGED ACCESS DOORS WITH LOCKABLE HANDLES.
4. ECONOMIZER.
5. SINGLE POINT POWER CONNECTION.
6. NON-FUSED DISCONNECT.
7. BACNET CONTROLS.

UNIT VENTILATOR SCHEDULE

DESIGN TEMPERATURES — SUMMER : OUTDOOR = 87°/72° ROOM = 74°/50% 45° EWT; WINTER : OUTDOOR = 0° ROOM = 70° 180° EWT

SEE (1/G-M8.1)

MARK	TYPE	AREA	CFM	HEATING			COOLING			H.P.	V/Ø	MIN. O.A. CFM	ARRANGEMENT		MODEL
				MBH	GPM	FT.P.D.	MBH	GPM	FT.P.D.				INLET	DISCHARGE	
UV-1	HORIZONTAL	CLASSROOM	1535	82.7	2	0.45	56.2	10	7.18	1	115/1	450	H	5	HUVC200
UV-2	HORIZONTAL	CLASSROOM	707	35.2	1	0.09	17.5	2.5	1.01	1	115/1	100	H	5	HUVC075
UV-3	HORIZONTAL	CLASSROOM	944	40.2	1	0.10	22.8	3	1.66	1	115/1	300	C	5	HUVC100
UV-4	HORIZONTAL	CLASSROOM	1381	65.9	1.5	0.27	48.8	9	5.95	1	115/1	450	H	5	HUVC150
UV-5	HORIZONTAL	CLASSROOM	1535	82.7	2	0.45	44.6	6	2.85	1	115/1	600	H	5	HUVC200
UV-6	HORIZONTAL	CLASSROOM	1535	82.7	2	0.45	52.8	8.5	5.35	1	115/1	450	H	5	HUVC200
UV-7	HORIZONTAL	CLASSROOM	1535	82.7	2	0.45	56.2	10	7.18	1	115/1	450	C	5	HUVC200
UV-8	HORIZONTAL	CLASSROOM	707	35.2	1	0.09	17.5	2.5	1.01	1	115/1	100	C	5	HUVC075
UV-9	HORIZONTAL	CLASSROOM	1381	65.9	1.5	0.27	48.8	9	5.95	1	115/1	450	C	5	HUVC150
UV-10	HORIZONTAL	CLASSROOM	1535	82.7	2	0.45	44.6	6	2.85	1	115/1	600	C	5	HUVC200

BASED ON TRANE

CABINET UNIT HEATER SCHEDULE

180° E.W.T.
60° E.A.T.

SEE (2/G-M8.1)

MARK	TYPE	AREA	CFM	MBH	GPM	FT.P.D.	H.P.	V/Ø	MODEL	REMARKS
CUH-1	HORIZ. RECESSED	ENTRANCE	600	35.3	1.5	0.91	1/12	115/1	FFEB060	
CUH-2	HORIZ. RECESSED	ENTRANCE	400	29.7	2.5	8.03	1/15	115/1	FFEB040	
CUH-3	HORIZ. RECESSED	TOILET/TRAINING	133	11.9	1.5	9.9	1/30	115/1	FFBE020	

BASED ON TRANE "FORCE-FLO"

COOLING TOWER SCHEDULE

SEE (2/G-M8.2)

MARK	TYPE	NOMINAL TONS	GPM	H.P.	V/Ø	WEIGHT (LBS.)	DIMENSIONS L x W x H	MODEL	REMARKS
CTR-1	INDUCED-DRAFT	240	720	10	460/3	9,440	8'-5" X 11'-11" X 12'-8"	AT 19-3I12	

BASED ON EVAPCO.
OPTIONS:
1. EXTERNAL SERVICE PLATFORM.
2. 3-PROBE ELECTRONIC WATER LEVEL CONTROL PACKAGE.
3. CONTACTOR W/ DISCONNECT FOR HEATER PACKAGE.
4. EL. HEATERS 7KW; 460V/3PH.

CHILLER SCHEDULE

SEE (1/G-M8.2)

MARK	TYPE	NOMINAL TONS	FLOW GPM	WEIGHT (LBS.)	MCA	M.O.P.	V/Ø	MODEL
CH-1	WATER COOLED	80	173	5899	94	125	460/3	RTWD080F2

BASED ON TRANE

BLOWER COIL UNIT SCHEDULE

HEATING:180° E.W.T.
COOLING: 45° E.W.T.

DESIGN TEMPERATURES — SUMMER : OUTDOOR =87/72 ROOM = 72; WINTER : OUTDOOR =0 ROOM = 70

SEE (6/G-M8.1)

MARK	TYPE	CFM	COOLING			HEATING			TOTAL S.P.*	V/Ø	H.P.	MIN. O.A.	WEIGHT (LBS.)	MODEL	REMARKS
			MBH	GPM	FT.P.D.	MBH	GPM	FT.P.D.							
BC-5	HORIZONTAL	1300	55.6	11.1	3.34	65.3	5.7	1.38	1.19	115/1	1	450	416	BCHE054	
BC-6	HORIZONTAL	1400	46.5	7.2	1.53	66.3	5.2	1.16	1.25	115/1	1	450	416	BCHE054	
BC-7	HORIZONTAL	2200	72.3	9.7	2.53	101.5	6.8	0.8	1.45	115/1	1	450	515	BCHE090	
BC-8	HORIZONTAL	1400	46.5	7.2	1.53	66.3	5.2	1.16	1.25	115/1	1	450	416	BCHE054	
BC-9	HORIZONTAL	2000	68.6	9.3	2.38	108.4	11.9	2.81	1.2	115/1	1	450	515	BCHC090A	

BASED ON TRANE: W/ MIXING BOX AND BOTTOM FILTER ACCESS. PROVIDE CONDENSATE PUMPS.

EXHAUST FAN SCHEDULE

SEE (7/G-M8.1)

MARK	TYPE	AREA	CFM	RPM	S.P.	V/Ø	H.P.	INLET DIA. "	MODEL	CONTROL
EF-1	ROOFTOP	POOL EQUIP. RM	655	1593	0.25	115/1	1/10	12" x12"	G-090-VG	BMS

PUMP SCHEDULE

SEE (15/G-M0T) (19/G-M0T)

MARK	TYPE	SYSTEM	GPM	FT.P.D.	SUCTION "	DISCHARGE "	V/Ø	H.P.	RPM	MODEL	REMARKS
P-5 & 6	BASE MOUNTED	CONDENSER WATER CIRC.	360	60	4	3	460/3	10	1800	1510-3BD	

MECHANICAL SYMBOLS LIST

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISH FLOOR	RA	RETURN AIR
AGA	AMERICAN GAS ASSOCIATION	RAR	RETURN AIR REGISTER
AHU	AIR HANDLING UNIT	SA	SUPPLY AIR
ASME	AMERICAN SOCIETY OF MECH. ENGINEERS	SAR	SUPPLY AIR REGISTER
BTUH	BRITISH THERMAL UNITS PER HOUR	S.C.C.V.	SELF CONTAINED CONTROL VALVE
CA	COMBUSTION AIR	S.P.	STATIC PRESSURE
CD	CEILING DIFFUSER	TCC	TEMPERATURE CONTROL CONTRACTOR
CFM	CUBIC FEET PER MINUTE	UH	UNIT HEATER
COND	CONDENSATE	U.L.	UNDERWRITERS LABORATORIES
C.S.B.V.	CIRCUIT SETTER BALANCE VALVE	U.N.O.	UNLESS NOTED OTHERWISE
CUH	CABINET UNIT HEATER	UV	UNIT VENTILATOR
CWS	CHILLED WATER SUPPLY	WH	WATER HEATER
CWR	CHILLED WATER RETURN	WM	WATER METER
EAR	EXHAUST AIR REGISTER	WTD	WATER TEMPERATURE DROP
EAT	ENTERING AIR TEMPERATURE	WTR	WATER TEMPERATURE RISE
EC	ELECTRIC CONTRACTOR		CHECK VALVE
EF	EXHAUST FAN		BALANCE VALVE (CIRCUIT SETTER)
EWT	ENTERING WATER TEMPERATURE		CONTROL VALVE
EX	EXISTING		PRESSURE AND TEMPERATURE RELIEF VALVE
FD	FLOOR DRAIN		THREE-WAY VALVE
FFE	FINISHED FLOOR ELEVATION		HOSE END VALVE
FPF	FINS PER FOOT		BALL VALVE
FT.P.D.	FEET OF PRESSURE DROP		BUTTERFLY VALVE
FTR	FIN-TUBE RADIATION	PRV	PRESSURE REDUCING VALVE
G	GAS	BFP	BACKFLOW PREVENTOR
GC	GENERAL CONTRACTOR		UNION
GPM	GALLONS PER MINUTE		STRAINER
HHWR	HEATING HOT WATER RETURN		MANUAL AIR VENT
HHWS	HEATING HOT WATER SUPPLY	FS	FLOW SWITCH
HP	HORSE POWER		GAUGE
LAT	LEAVING AIR TEMPERATURE		THERMOMETER
LWT	LEAVING WATER TEMPERATURE		CONNECT TO EXISTING
MC	MECHANICAL CONTRACTOR	H	HUMIDISTAT
OA	OUTSIDE AIR	T	THERMOSTAT
			PUMP (INLINE)

MECHANICAL GENERAL NOTES

1. ALL WORK TO COMPLY WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND ORDINANCES
2. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING.
3. SEAL ALL DUCT JOINTS.
4. PROVIDE ACCESS PANELS TO ALL VALVES, DAMPERS, TRAPS, FILTERS, EQUIPMENT, ETC.
5. COORDINATE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND CEILING MOUNTED EQUIPMENT WITH THE REFLECTED CEILING PLAN.
6. DUCT SIZES NOTED REPRESENT NET FREE INTERIOR DIMENSIONS.
7. PROVIDE BALANCE DAMPERS IN EACH SUPPLY AND EXHAUST DUCT BRANCH.
8. ALL ROUND DUCTWORK TO BE SPIRAL TYPE UNLESS NOTED OTHERWISE.
9. HEATING PIPING TO BE MINIMUM 3/4" DIAMETER.
10. VERIFY MOUNTING HEIGHTS OF WALL CAPS AND LOUVERS WITH ARCHITECTURAL DRAWINGS.
11. ALL VALVES SHOWN ON FLOOR PLANS ARE IN ADDITION TO ALL VALVES SHOWN ON PIPING SCHEMATICS.
12. REFER TO PIPING SCHEMATIC DETAILS FOR UNIONS, VALVES, AIR VENTS, THERMOMETERS, ETC. REQUIRED AT SPECIFIC PIECES OF EQUIPMENT.
13. ALL ROOF CURBS FOR MECHANICAL EQUIPMENT TO BE MINIMUM 16" ABOVE FINISHED ROOF SURFACE.
14. EQUIPMENT, DUCTS, PIPING, ETC. TO BE SUPPORTED FROM PANEL POINTS OF STRUCTURAL MEMBERS. NO MECHANICAL ITEMS TO BE SUPPORTED FROM DECKING. CONCENTRATED MECHANICAL LOADS TO BE DISTRIBUTED OVER TWO OR MORE JOISTS. CONCENTRATED LOADING ON A SINGLE STRUCTURAL MEMBER IS TO BE AVOIDED.
15. SUPPLY AIR DIFFUSERS MAY BE CONNECTED WITH A MAXIMUM 5 FEET OF INSULATED FLEXIBLE DUCT WHEN DUCT IS CONCEALED. ALL RETURN AIR REGISTERS AND EXHAUST AIR REGISTERS TO BE DUCTED WITH SHEET METAL.
16. NEW THERMOSTATS TO BE LOCATED AT OLD THERMOSTATS' LOCATIONS WHERE POSSIBLE. IF NEW T'STATS ARE NOT IN OLD LOCATIONS, THEN OLD LOCATION IS TO BE REMOVED AND WALL PATCHED TO MATCH EXISTING.
17. MECHANICAL CONTRACTOR TO COORDINATE WITH GENERAL ON REMOVAL, REINSTALLATION, AND PATCHING OF EXISTING CEILINGS WHERE ACCESS IS NEEDED FOR INSTALLATION OF NEW EQUIPMENT, PIPING, ETC.
18. MECHANICAL CONTRACTOR TO COORDINATE WITH OWNER FOR ALL NEW ROOFING WORK TO MAINTAIN EXISTING ROOFING WARRANTY.

NOTE: EQUIPMENT LISTED IN SCHEDULES IS NOT TO BE USED FOR THE SOLE PURPOSE OF OBTAINING QUANTITIES. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES UTILIZING THESE SCHEDULES AND CAREFUL REVIEW OF LAYOUT DRAWINGS.

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
JOHN GLENN
BAY CITY, MICHIGAN

MECHANICAL SHEDULES AND NOTES

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DES'D BY: R. MEYER
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PROJ #: 21-1719-0435

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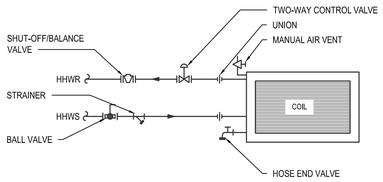
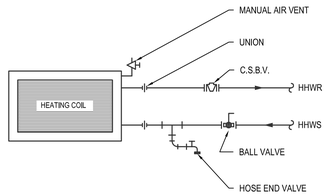
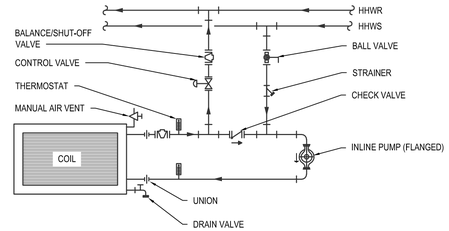


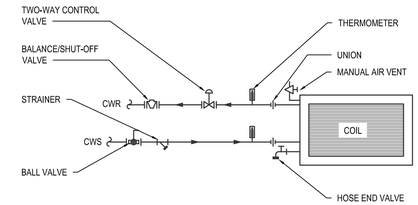
1 G-M8.1 UNIT VENTILATOR PIPING SCHEMATIC
NO SCALE HEATING/COOLING



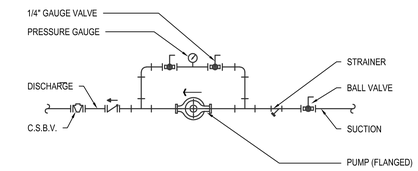
2 G-M8.1 CABINET UNIT HEATER PIPING SCHEMATIC
NO SCALE



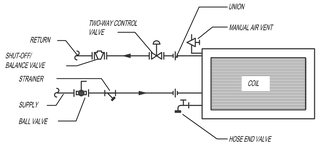
3 G-M8.1 AIR HANDLING UNIT W/ PUMP PIPING SCHEMATIC
NO SCALE HEATING COIL



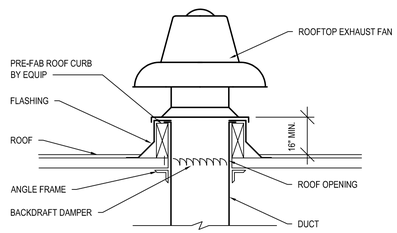
4 G-M8.1 AIR HANDLING UNIT PIPING SCHEMATIC
NO SCALE COOLING ONLY



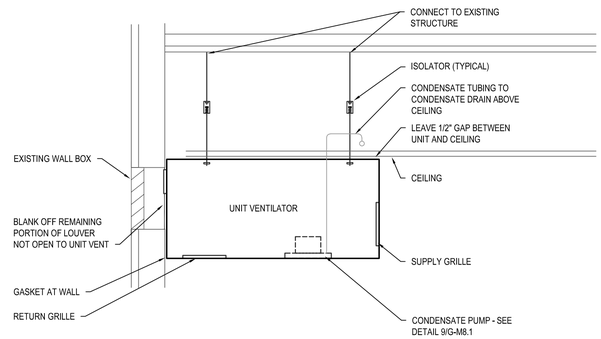
5 G-M8.1 INLINE PUMP PIPING SCHEMATIC
NO SCALE



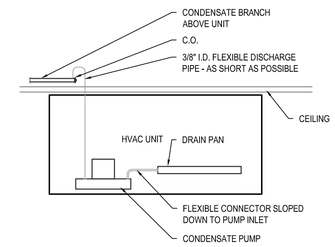
6 G-M8.1 BLOWER COIL UNIT PIPING SCHEMATIC
NO SCALE HEATING/COOLING



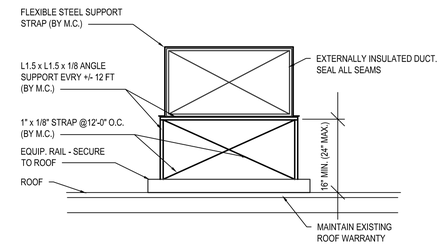
7 G-M8.1 ROOFTOP EXHAUST FAN
NO SCALE



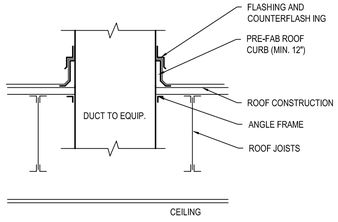
8 G-M8.1 UNDER CEILING UNIT VENTILATOR SECTION
NO SCALE



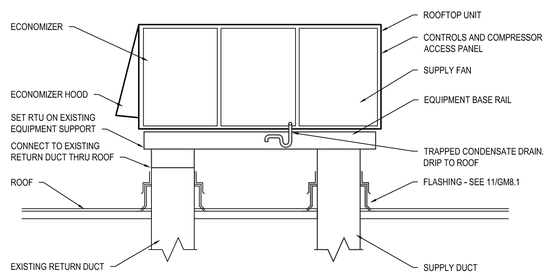
9 G-M8.1 CONDENSATE PUMP PIPING SCHEMATIC
SCALE: 1" = 1'-0"



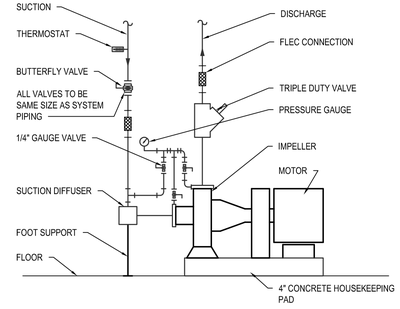
10 G-M8.1 DUCT ON ROOF SUPPORT DETAIL
NO SCALE



11 G-M8.1 DUCT THRU ROOF DETAIL
NO SCALE



12 G-M8.1 ROOFTOP UNIT DETAIL
NO SCALE



13 G-M8.1 BASE-MOUNTED PUMP PIPING SCHEMATIC
NO SCALE

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BANGOR SCHOOLS MECHANICAL UPGRADES

JOHN GLENN
BAY CITY, MICHIGAN

MECHANICAL DETAILS

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/03/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
PROJ #: 21-1719-0435

SHEET
G-M8.1

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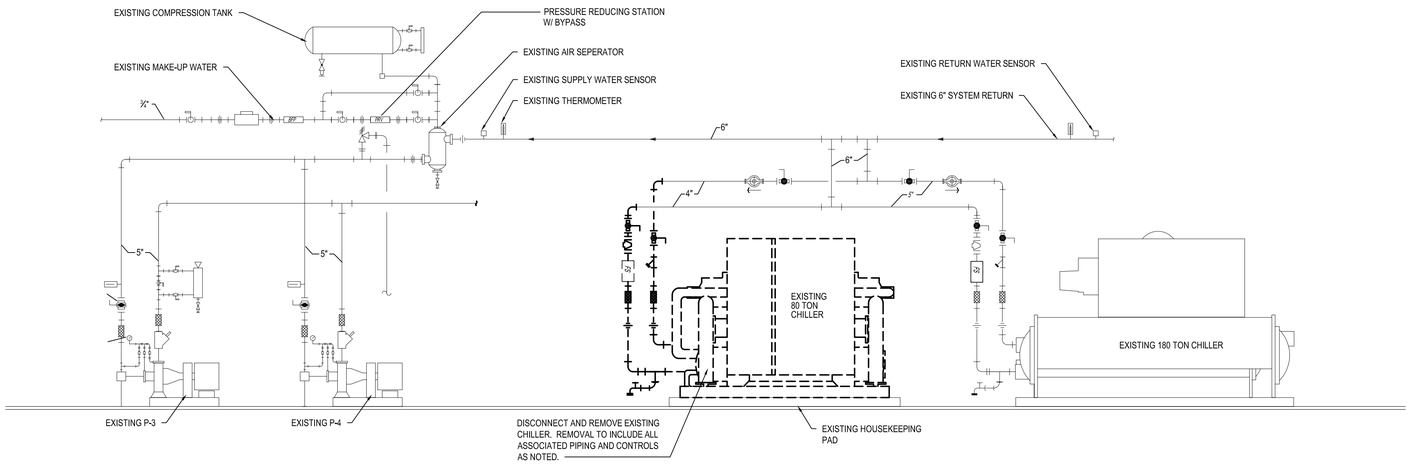
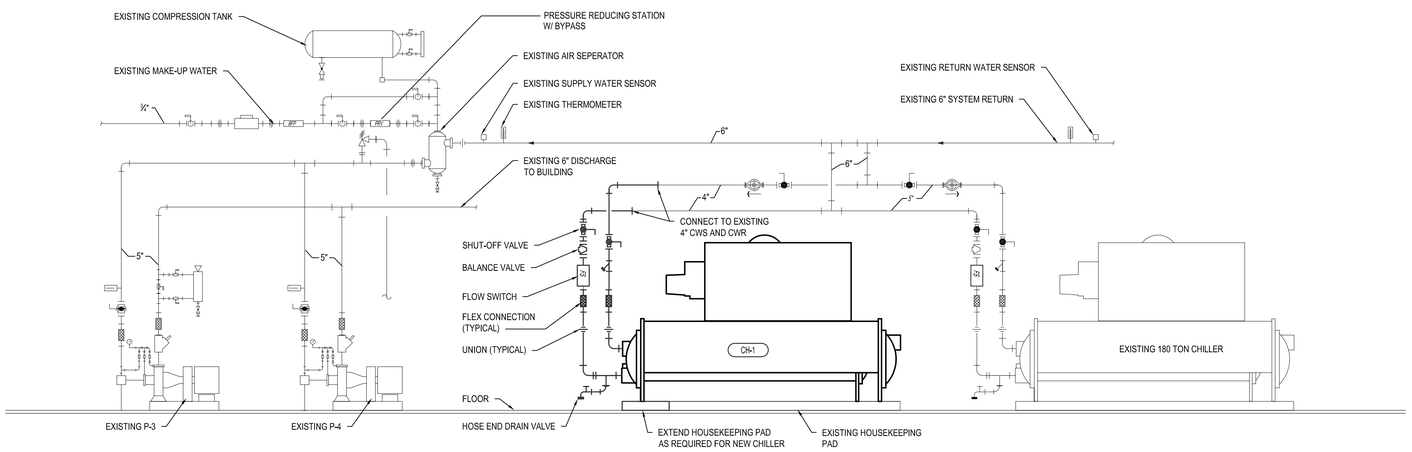


1 G-M8.2 CHILLER CHILLED WATER PIPING SCHEMATIC DEMOLITION
NO SCALE



2 G-M8.2 CHILLER CHILLED WATER PIPING SCHEMATIC RENOVATION
NO SCALE

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PIPING SCHEMATICS

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/03/2023

CHCK'D BY: J. WHEELER
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G-M8.2

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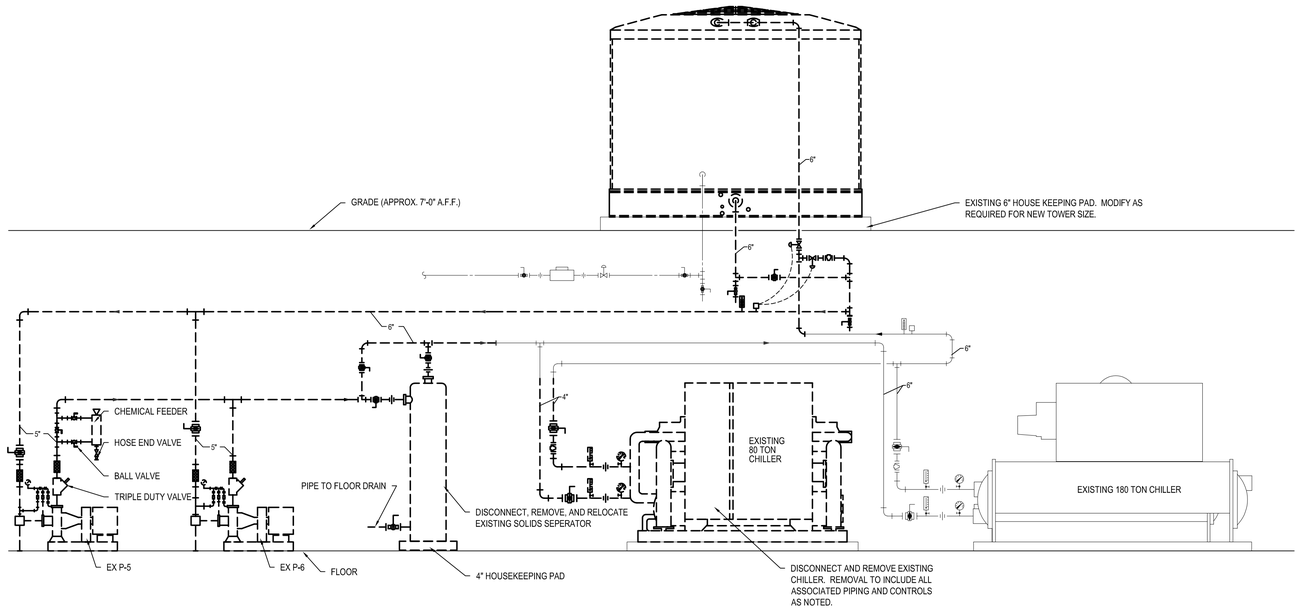
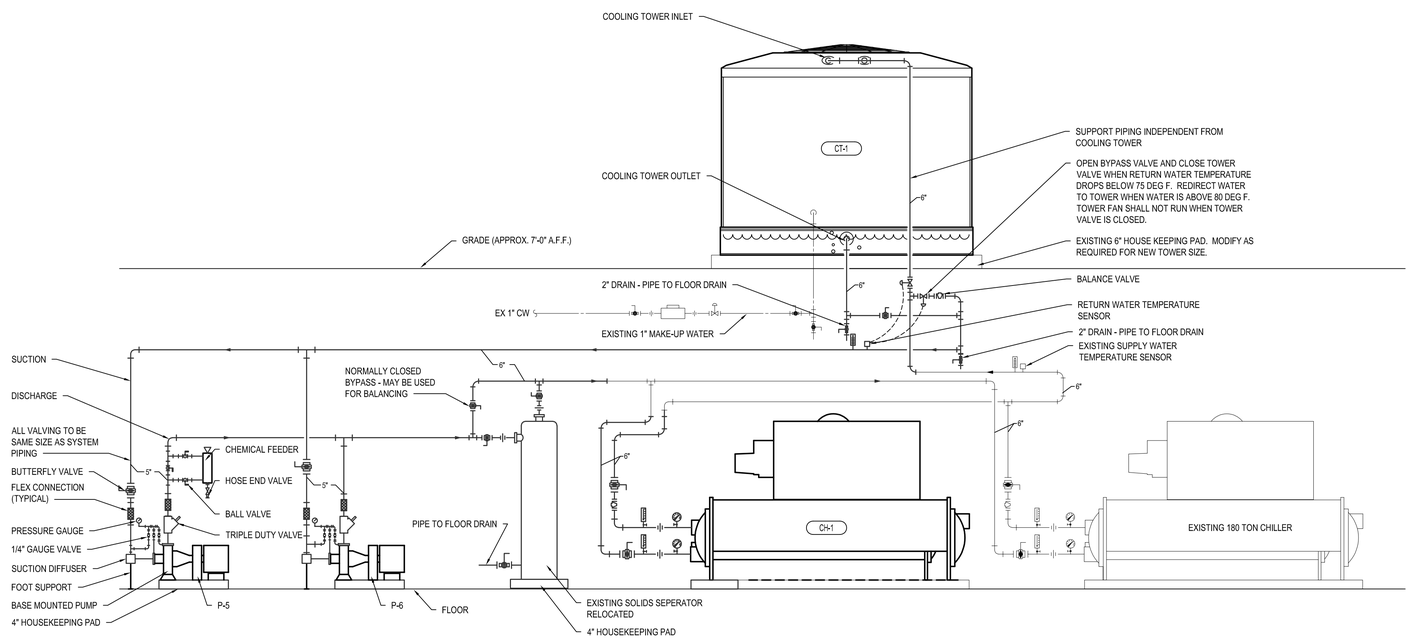


2 G-M8.2 CHILLER CONDENSER WATER PIPING SCHEMATIC RENOVATION
NO SCALE



2 G-M8.2 CHILLER CONDENSER WATER PIPING SCHEMATIC RENOVATION
NO SCALE

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PIPING SCHEMATICS

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/03/2023

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SHEET
G-M8.3

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CIRCUIT CONDUIT & CONDUCTOR SCHEDULE

FUSE/CIRCUIT BREAKER - AMP/POLE	PHASE/NEUTRAL (NOTE 3)	GROUND	CONDUIT
15A/1P & 20A/1P	2 - 12 AWG	1 - 12 AWG	3/4"
15A/2P & 20A/2P	2 OR 3 - 12 AWG	1 - 12 AWG	3/4"
15A/3P & 20A/3P	3 OR 4 - 12 AWG	1 - 12 AWG	3/4"
25A/1P & 30A/1P	2 - 10 AWG	1 - 10 AWG	3/4"
25A/2P & 30A/2P	2 OR 3 - 10 AWG	1 - 10 AWG	3/4"
25A/3P & 30A/3P	3 OR 4 - 10 AWG	1 - 10 AWG	3/4"
35A/1P & 40A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
35A/2P & 40A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
35A/3P & 40A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
40A/1P & 45A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
40A/2P & 45A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
40A/3P & 45A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
60A/1P	2 - 6 AWG	1 - 10 AWG	3/4"
60A/2P	2 OR 3 - 6 AWG	1 - 10 AWG	3/4"
60A/3P	3 OR 4 - 6 AWG	1 - 10 AWG	1"
70A/1P	2 - 4 AWG	1 - 8 AWG	1"
70A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
70A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
80A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
80A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
90A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
90A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
100A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
100A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
110A/2P	2 OR 3 - 2 AWG	1 - 6 AWG	1 1/4"
110A/3P	3 OR 4 - 2 AWG	1 - 6 AWG	1 1/4"
125A/2P	2 OR 3 - 1 AWG	1 - 6 AWG	1 1/4"
125A/3P	3 OR 4 - 1 AWG	1 - 6 AWG	1 1/2"
150A/2P	2 OR 3 - 1/0 AWG	1 - 6 AWG	1 1/2"
150A/3P	3 OR 4 - 1/0 AWG	1 - 6 AWG	2"
175A/2P	2 OR 3 - 2/0 AWG	1 - 6 AWG	2"
175A/3P	3 OR 4 - 2/0 AWG	1 - 6 AWG	2"
200A/2P	2 OR 3 - 3/0 AWG	1 - 6 AWG	2"
200A/3P	3 OR 4 - 3/0 AWG	1 - 6 AWG	2"
225A/2P	2 OR 3 - 4/0 AWG	1 - 4 AWG	2"
225A/3P	3 OR 4 - 4/0 AWG	1 - 4 AWG	2 1/2"
250A/2P	2 OR 3 - 250 MCM	1 - 4 AWG	2 1/2"
250A/3P	3 OR 4 - 250 MCM	1 - 4 AWG	3"
300A/2P	2 OR 3 - 350 MCM	1 - 4 AWG	3"
300A/3P	3 OR 4 - 350 MCM	1 - 3 AWG	3"
350A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
350A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"
400A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
400A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"

NOTES:

1. PROVIDE CIRCUIT CONDUCTOR AND CONDUIT SIZES INDICATED ABOVE UNLESS OTHERWISE NOTED.
2. CONDUCTOR SIZING BASED UPON 75C THWN INSULATED COPPER CONDUCTORS.
3. FOR TWO AND THREE POLE CIRCUITS PROVIDE NEUTRAL CONDUCTOR IF REQUIRED BY EQUIPMENT SERVED.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, 18" A.F.F. TO TOP
GFCI	DUPLEX RECEPTACLE GFI, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, CEILING MOUNTED
GFCI	DUPLEX RECEPTACLE GFI, CEILING MOUNTED
USB	DUPLEX RECEPTACLE USB, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, 6" ABOVE COUNTER
GFCI	DUPLEX RECEPTACLE GFI, 6" ABOVE COUNTER
	DUPLEX RECEPTACLE, FLOOR MOUNTED
GFCI	DUPLEX RECEPTACLE GFI , FLOOR MOUNTED
	SPECIALTY OUTLET, SEE DRAWINGS W/ MTG HT
	QUAD RECEPTACLE, 18" A.F.F. TO TOP
GFCI	QUAD RECEPTACLE GFI, 18" A.F.F. TO TOP
	QUAD RECEPTACLE, CEILING MOUNTED
GFCI	QUAD RECEPTACLE GFI, CEILING MOUNTED
M	MOTOR SWITCH
	OVERHEAD DOOR 3-BUTTON SWITCH, OPEN-CLOSE-STOP
PP	POWER POLE
JB	JUNCTION BOX
FF	FURNITURE FEED
	MOTOR
	NON-FUSED DISCONNECT
	COMBINATION MOTOR STARTER/ DISCONNECT
	FUSED DISCONNECT
	MANUAL MOTOR STARTER
	MOTOR STARTER
	SURFACE MOUNTED PANEL BOARD
	RECESSED PANEL BOARD
	SWITCH, SINGLE POLE, 48" A.F.F. TO TOP UNO
3	SWITCH, 3-POLE, 48" A.F.F. TO TOP UNO
4	SWITCH, 4-POLE, 48" A.F.F. TO TOP UNO
D	SWITCH, WALL BOX DIMMER, 48" A.F.F. TO TOP UNO
LV	SWITCH, LOW VOLTAGE, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
LVD	SWITCH, LOW VOLTAGE DIMMER, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
F	SWITCH, FUSED: 125V, SINGLE POLE, DUAL ELEMENT PLUG FUSE
K	SWITCH, KEYED, 48" A.F.F. TO TOP UNO
P	SWITCH, PILOT LIGHT, 48" A.F.F. TO TOP UNO
T	SWITCH, TIMER, 48" A.F.F. TO TOP
OS	SWITCH, MULTI-TECH OCCUPANCY SENSOR, WALL
	SWITCH, MULTI-TECH OCCUPANCY SENSOR, CEILING
	SWITCH, EXTERIOR PHOTOCELL
OP	POWER PACK FOR OCCUPANCY SENSORS
S	CONTROLS: SPEAKER (SEE SCHEDULE)
DO	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH DOOR REQUIREMENTS
ADA	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH SECURITY, AUTO AND MANUAL CONTROL
	SECURITY: PAN - TILT - ZOOM CAMERA
	SECURITY: PUSH BUTTON
CR	SECURITY: CARD READER
DC	SECURITY: DOOR CONTACT
	LUMINAIRE: WALL MOUNTED W/ TYPE
	LUMINAIRE: RECESSED DOWNLIGHT OR PENDANT W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: SURFACE OR RECESSED W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: ON EMERGENCY, LIFE SAFETY, OR LOCAL LIGHTING CIRCUIT W/ TYPE, REFER TO SCHEDULE
	EXIT SIGN: CEILING MOUNTED W/ TYPE, SEE SCHEDULE
	EXIT SIGN: WALL MOUNTED W/ TYPE, SEE SCHEDULE
	EM LIGHTS: WALL MOUNTED UNO, REFER TO SCHEDULE
	REMOTE HEADS: WALL MOUNTED, REFER TO SCHEDULE
TV	TV CONNECTION: 96" TO TOP, COAX CONNECTION, UNO
	VOICE/ DATA OUTLET: 18" TO TOP, UNO
C	VOICE/ DATA OUTLET: CEILING MOUNTED, UNO
	VOICE/ DATA/ TV OUTLET: FLOOR MOUNTED, UNO
	TELEPHONE: 18" TO TOP, UNO
	DATA/ TELEPHONE: 18" TO TOP, UNO
P	FIRE: MANUAL PULL STATION, WALL MOUNTED, 48" AFF TO TOP UNO
#CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: AUDIBLE ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
AV #CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, CEILING MOUNTED
V #CD	FIRE: VISUAL ANNUNCIATION, CEILING MOUNTED
A	FIRE: AUDIBLE ANNUNCIATION, CEILING MOUNTED
SD	FIRE: SMOKE DETECTOR, CEILING
HD	FIRE: HEAT DETECTOR, CEILING
S/H	FIRE: SMOKE AND HEAT DETECTOR
DSD	FIRE: DUCT SMOKE DETECTOR, CEILING, PROVIDED / INSTALLED BY EC, MOUNTED BY MC, UNO
RT	FIRE ALARM: REMOTE TEST STATION
TS	FIRE: TAMPER SWITCH
FS	FIRE: FLOW SWITCH
DH	FIRE: MAGNETIC DOOR HOLD
FR	FIRE: DOOR LOCK RELEASE
PS	FIRE: PRESSURE SWITCH
	HOME RUN W/ DIRECTION
E	ELECTRICAL CIRCUIT
UG	UNDERGROUND ELECTRICAL W/ INCDICATOR
	SITE: LIGHT, POLE, AND BASE
XF	TRANSFORMER W/ LABEL
	DEVICE OR EQUIPMENT CONNECTION

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
AMP OR A	AMPERES
ATS	AUTOMATIC TRANSFER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
CKT	CIRCUIT
CB	CIRCUIT BREAKER
C	CONDUIT
CLG	CEILING
CP	CONTROL PANEL
CU	COPPER
D	DATA
DS	DISCONNECT SWITCH
DWG	DRAWING(S)
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EX	EXISTING
EXT	EXTERNAL
FIN. FLR.	FINISH FLOOR
FACP	FIRE ALARM CONTROL PANEL
FF	FURNITURE FEED
FT	FOOT, FEET
GRC	GALVANIZED RIGID CONDUIT
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERUPPTER
GFI	GROUND FAULT PROTECTION
HH	HAND HOLE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
IU	INDOOR UNIT
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KVA	KILO VOLT-AMPERES
KVAR	KILO VOLT-AMPERES REACTIVE
LC	LIGHTING CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTOR PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MH	MAN HOLE
MFR	MANUFACTURER'S
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N.L.	NIGHT LIGHT
NC	NORMALLY CLOSED CONTACT
NO	NORMALLY OPEN CONTACT
N.T.S.	NOT TO SCALE
OU	OUTDOOR UNIT
O.D.	OUTSIDE DIAMETER
OL	OVERLOADS-THERMAL
PNL	PANEL W/ INDICATION
Ø	PHASE
PH	PHASE
PC	PHOTO-SWITCH
P	POLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PB	PULL BOX
PTT	PUSH-TO-TEST
RMC	RIGID METAL COUNT
SPEC	SPECIFICATION
SW	SWITCH
SWD	SWITCHING DUTY
TEL	TELEPHONE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
VFC	VARIABLE FREQUENCY CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WATT
WP	WEATHER PROOF
W	WIRE
W/	WITH
XF/ XFMR	TRANSFORMER
XXAF	XX AMPERE FUSE
XXAS	XX AMPERE SWITCH
XP	X POLES

GENERAL NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS WITH ARCHITECTURAL AND MECHANICAL PLANS, SPECIFICATIONS AND EQUIPMENT DRAWINGS. PROVIDE ALL NECESSARY EQUIPMENT POWER AND CONTROL CONNECTIONS NOT PROVIDED BY OTHERS WHETHER INDICATED ON THE DRAWINGS OR NOT.
3. UNLESS OTHERWISE NOTED, WHERE ELECTRICAL DEMOLITION WORK IS SHOWN, REMOVE ALL CONDUCTOR AND EXPOSED CONDUITS FROM EQUIPMENT OR OUTLET LOCATION BACK TO THE POWER SOURCE(S) FOR THE CIRCUIT.
4. SEAL ALL WALL AND FLOOR PENETRATIONS TO MAINTAIN RATING.
5. BACK-TO-BACK OR THROUGH THE WALL BOXES SHALL NOT BE USED.
6. ALL LOW VOLTAGE CONDUCTORS SHALL BE STRANDED COPPER.
7. SPLICE CABLES OR CONDUCTORS IN OUTLET BOXES, DEVICE BOXES, PULL BOXES, JUNCTION BOXES. DO NOT SPLICE CABLES OR CONDUCTORS IN CONDUIT BODIES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER (GFI) TYPE MUST BE GFI RECEPTACLE, NO FEED THROUGH.
9. BRANCH CIRCUITS FROM CIRCUIT BREAKER TYPE DISTRIBUTION EQUIPMENT WHICH SUPPLY MOTOR LOADS THAT ARE LESS THAN 6.0 AMP SHALL BE PROTECTED BY A 15 AMP CIRCUIT BREAKER.
10. FINAL CONNECTIONS TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT . LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE USED AS A GROUNDING CONDUCTOR. PROVIDE A SEPARATE GREEN GROUNDING CONDUCTOR.
11. IN THE EVENT OF CONFLICTS BETWEEN THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS OR WITHIN THE DRAWINGS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL BE ASSUMED TO BE CORRECT. REFER UNCERTAINTIES IN REQUIREMENTS TO THE ENGINEER FOR CLARIFICATION.
12. ALL BELOW GRADE LOCATIONS WITHIN BUILDINGS ARE DAMP LOCATIONS UNLESS OTHERWISE NOTED.
13. 120V AC CONTROL WIRING ASSOCIATED WITH MOTOR CONTROL CIRCUITS MAY BE RUN IN THE SAME RACEWAY WITH MOTOR POWER WIRING FOR CONSTANT SPEED MOTORS LESS THAN 30HP. FOR MOTORS 30HP AND GREATER OR FOR MOTORS POWERED FROM VARIABLE FREQUENCY CONTROLLERS, SEPARATE RACEWAYS SHALL BE USED FOR POWER AND CONTROL CONDUCTORS.
14. 120/240V CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS AS REQUIRED UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
15. CONDUIT PENETRATIONS OF FLOORS, LOWER LEVEL EXTERIOR WALLS OR WETWELL WALLS SHALL BE SLEEVED AND SEALED WITH LINKSEAL. SEE DETAILS ON MECHANICAL DRAWINGS.
16. IF COMPLIANCE WITH TWO OR MORE DIFFERING STANDARDS, REQUIREMENTS, DRAWINGS OR SPECIFICATIONS, OR ANY COMBINATION THEREOF, IS SPECIFIED AND THESE ESTABLISH DIFFERENT OR CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT. THE MOST STRINGENT REQUIREMENT WILL BE THE BETTER QUALITY OR GREATER QUANTITY OF WORK, AND WILL TYPICALLY BE THE MORE EXPENSIVE OPTION. REFER UNCERTAINTIES AND REQUIREMENTS THAT ARE DIFFERENT, BUT APPARENTLY EQUAL, TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
17. THE QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE THE MINIMUM PROVIDED OR PERFORMED. THE ACTUAL INSTALLATION MAY COMPLY EXACTLY WITH THE MINIMUM QUANTITY OR QUALITY SPECIFIED, OR IT MAY EXCEED THE MINIMUM WITHIN REASONABLE LIMITS. TO COMPLY WITH THESE REQUIREMENTS, INDICATED NUMERIC VALUES ARE MINIMUM OR MAXIMUM, AS APPROPRIATE, FOR THE CONTEXT OF REQUIREMENTS. REFER UNCERTAINTIES TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
18. DESIGN DOCUMENTS MUST BE REPRODUCED IN THEIR ENTIRETY, INCLUDING ALL PLANS, SPECIFICATIONS, AND FRONT END DOCUMENTS.
19. ONLY COMPLETE DOCUMENT SETS ARE TO BE DISTRIBUTED TO SUBCONTRACTORS AND SUPPLIERS OF THE CONTRACTOR DURING BIDDING OR CONSTRUCTION.
20. FAILURE TO REVIEW AND COMPLY WITH A FULL SET OF CONTRACT DOCUMENTS WILL NOT BE ACCEPTED AS A VALID REASON FOR FAILURE TO MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
21. ALL ABOVE CEILING SYSTEMS AND COMPONENTS (INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) SHALL BE COORDINATED SUCH THAT THE SYSTEMS ARE PROPERLY INTEGRATED IN THE SPACE PROVIDED ABOVE CEILING AT THE CEILING HEIGHTS NOTED. IT IS THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE PATHWAYS WITHIN THE SPACE PROVIDED. CEILING HEIGHTS WILL NOT BE MODIFIED.
22. EQUIPMENT WHICH SHALL BE MOUNTED 6'-0" AWAY FROM HEAT PRODUCING EQUIPMENT. U.N.O.

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MECHANICAL UPGRADES
BAY CITY, MICHIGAN

GENERAL NOTES

NO.	STATUS REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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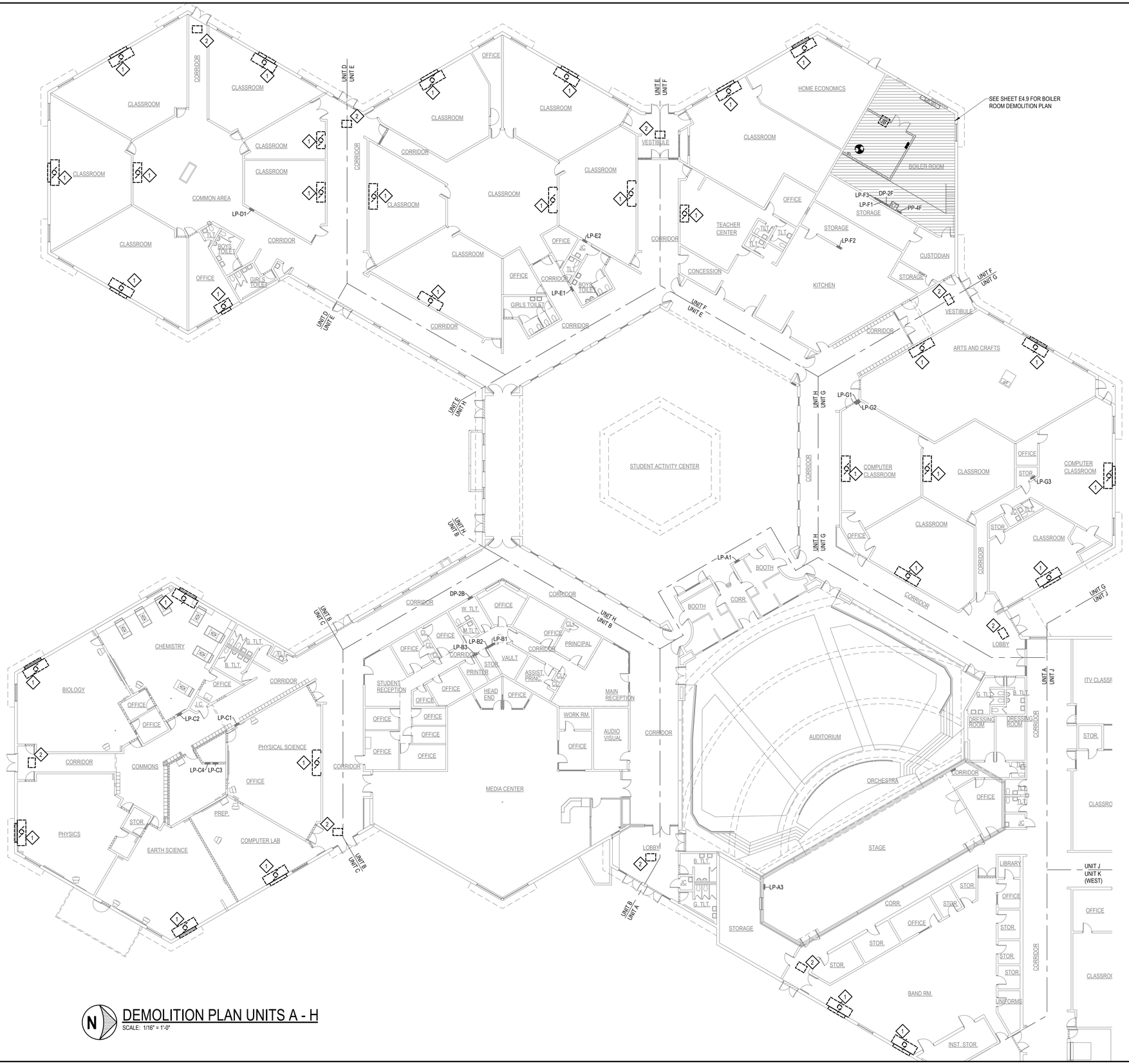
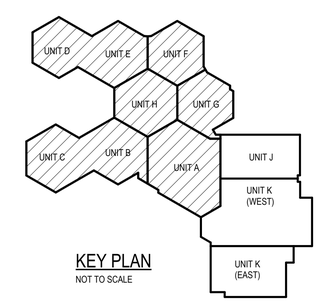


GENERAL DEMOLITION NOTES

1. NOTES AND GRAPHIC REPRESENTATION SHALL NOTE LIMIT THE EXTENT OF DEMOLITION REQUIRED. ELECTRICAL CONTRACTOR TO PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF DEMOLITION WORK SHALL INCLUDE, BUT NOT LIMITED TO, REMOVAL OF LIGHT FIXTURES, WIRING DEVICES, CONNECTIONS TO EQUIPMENT, DISTRIBUTION PANELS, AND ALL ASSOCIATED RACEWAY AND WIRING. EXTENT OF DEMOLITION SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
2. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE, BUT INTERFERES WITH RENOVATIONS, SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. ELECTRICAL CONTRACTOR SHALL TRACE AND RELOCATE ALL EXISTING FEEDERS AND BRANCH CIRCUITS PASSING THROUGH THE DEMOLITION AREA THAT SERVE EXISTING SPACES TO REMAIN.
5. ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS FOR EXISTING EQUIPMENT AND DEVICES THAT ARE TO REMAIN. WHEN DEVICES ARE REMOVED AND NOT THE CIRCUIT DEAD END, EXTEND CIRCUIT AS REQUIRED TO MAINTAIN INTEGRITY OF ORIGINAL CIRCUIT.
6. ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED SHALL GET FIRST REFUSAL FROM OWNER AND IS THEN RESPONSIBILITY OF ELECTRICAL CONTRACTOR FOR PROPER DISPOSAL. EQUIPMENT TO BE RE-INSTALLED OR TURNED OVER TO OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION.
7. FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN. WHERE EMPTY CONDUITS REMAIN, INSTALL PULLSTRING AND IDENTIFY BOTH ENDS.
8. FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICT WITH NEW WORK. INSTALL JUNCTIONS BOX, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED AND NOT INDICATED TO BE REPLACED.
10. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT CHANGES OR REMOVALS.
11. FIRE ALARM SYSTEM SHALL REMAIN IN OPERATION DURING BOTH DEMOLITION AND CONSTRUCTION STAGES OF THIS PROJECT.

KEYED DEMOLITION NOTES

SYMBOL	DESCRIPTION
◇	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	DISCONNECT EXISTING UNIT VENTILATOR AND ASSOCIATED EQUIPMENT. SALVAGE EXISTING CIRCUIT FOR POWER TO NEW UNIT.
2	DISCONNECT EXISTING UNIT HEATER. SALVAGE CIRCUIT TO BE USED WITH NEW UNIT HEATER.
3	DISCONNECT EXISTING POOL UNIT CIRCUIT. REMOVE ALL CONDUITS AND CONDUCTORS BACK TO THE SOURCE. COORDINATE REMOVAL WITH MECHANICAL CONTRACTOR.
4	DISCONNECT EXISTING BLOWER COIL. REMOVE ALL CONDUIT AND CONDUCTORS BACK TO THE SOURCE. COORDINATE REMOVAL WITH MECHANICAL CONTRACTOR.



KEY PLAN
NOT TO SCALE

N

DEMOLITION PLAN UNITS A - H
SCALE: 1/16" = 1'-0"

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

DEMOLITION PLAN UNITS A - H

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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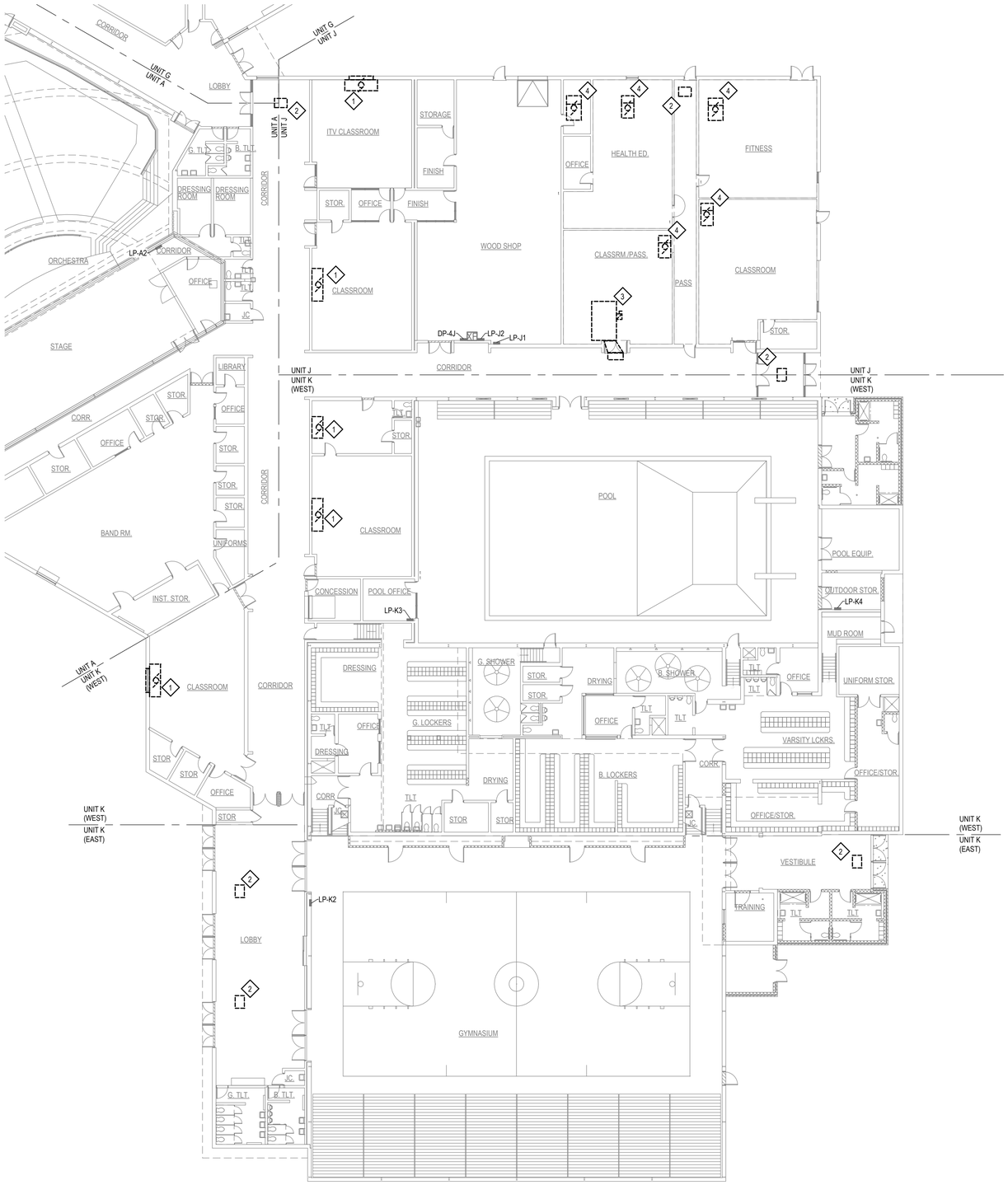

DEMOLITION PLAN UNITS J & K

SCALE: 1/16" = 1'-0"

GENERAL DEMOLITION NOTES

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SYMBOL	DESCRIPTION
◇	*NOT ALL NOTES APPEAR ON EVERY SHEET*
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3	DISCONNECT EXISTING POOL UNIT CIRCUIT. REMOVE ALL CONDUITS AND CONDUCTORS BACK TO THE SOURCE. COORDINATE REMOVAL WITH MECHANICAL CONTRACTOR.
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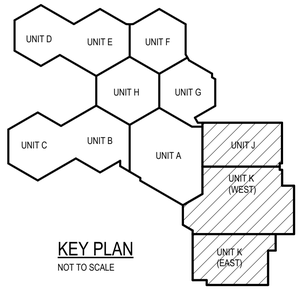

KEY PLAN
NOT TO SCALE

WILLIAM A. KIRBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

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JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

DEMOLITION PLAN UNITS J & K

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DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
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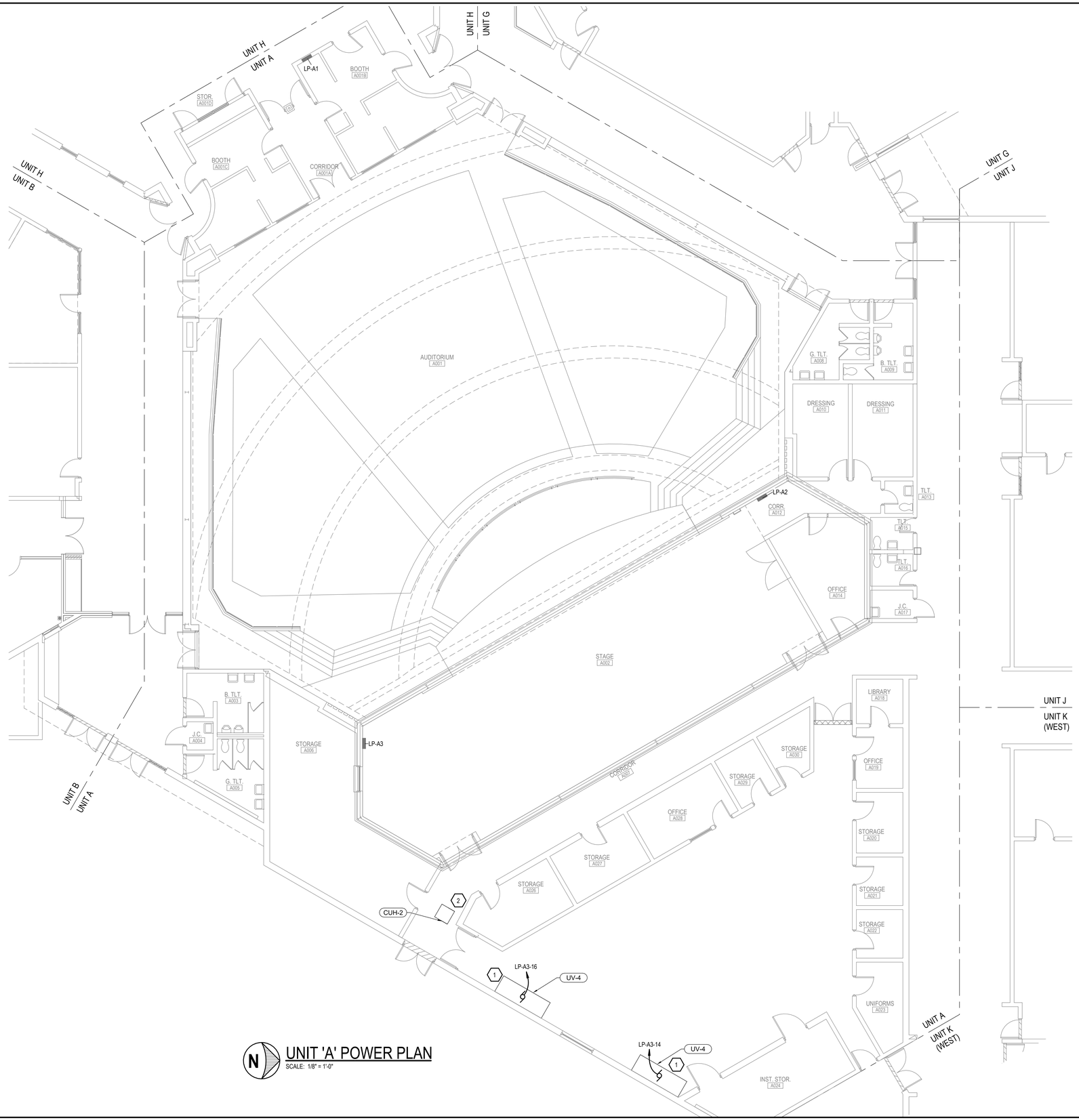
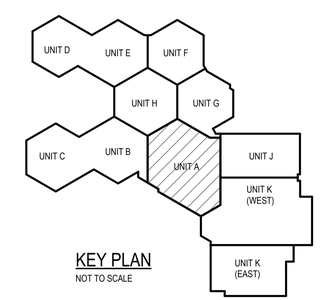


UNIT 'A' POWER PLAN
SCALE: 1/8" = 1'-0"

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	PROVIDE 200A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 125A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. PROVIDE NEW CIRCUIT FROM PANEL DP-4K FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
4	INSTALL NEW 25A BREAKERS IN PANEL LP-K4 FOR BLOWER COIL CIRUITS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE MOTOR STARTER FOR EF-1. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
6	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. PROVIDE NEW REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.



KEY PLAN
NOT TO SCALE

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JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

UNIT 'A' POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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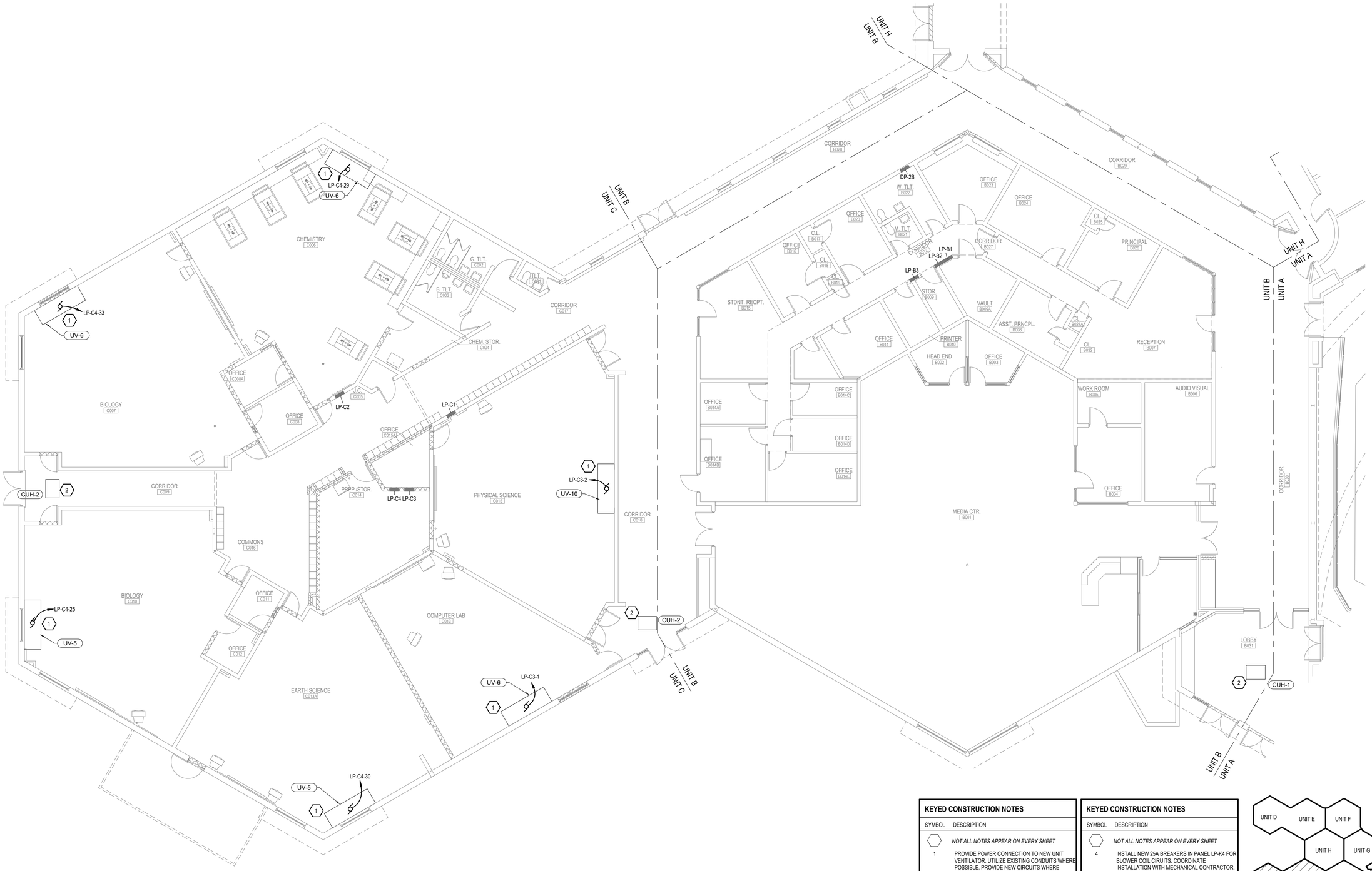


UNIT 'B/C' POWER PLAN

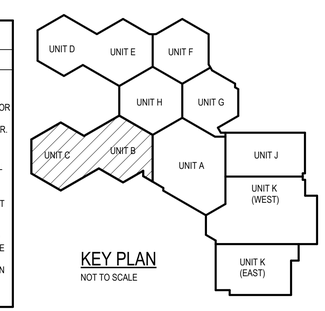
SCALE: 1/8" = 1'-0"

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
	NOT ALL NOTES APPEAR ON EVERY SHEET
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	PROVIDE 200A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 125A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. PROVIDE NEW CIRCUIT FROM PANEL DP-4K FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
	NOT ALL NOTES APPEAR ON EVERY SHEET
4	INSTALL NEW 25A BREAKERS IN PANEL LP-K4 FOR BLOWER COIL CIRUITS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE MOTOR STARTER FOR EF-1. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
6	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. PROVIDE NEW REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.



KEY PLAN
NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

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JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

UNIT 'B/C' POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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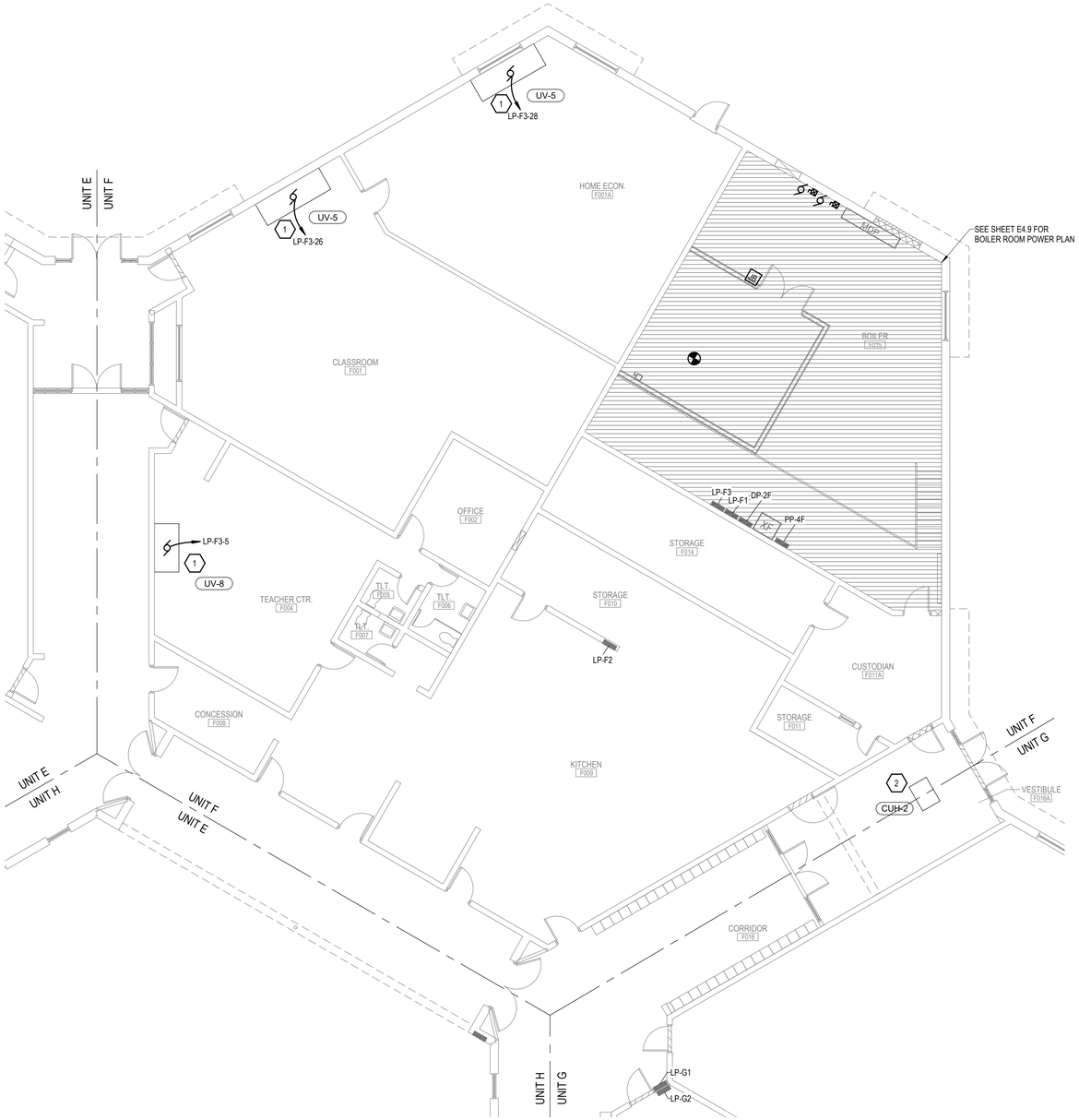
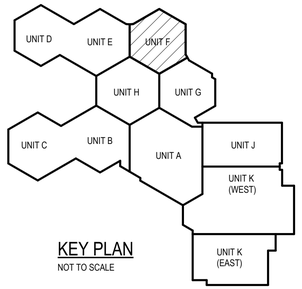


UNIT 'F' POWER PLAN

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

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	PROVIDE 200A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 125A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. PROVIDE NEW CIRCUIT FROM PANEL DP-4K FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
4	INSTALL NEW 25A BREAKERS IN PANEL LP-K4 FOR BLOWER COIL CIRUITS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE MOTOR STARTER FOR EF-1. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
6	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. PROVIDE NEW REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.



KEY PLAN
NOT TO SCALE

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JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

UNIT 'F' POWER PLAN

NO.	STATUS / REVISIONS	DATE
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CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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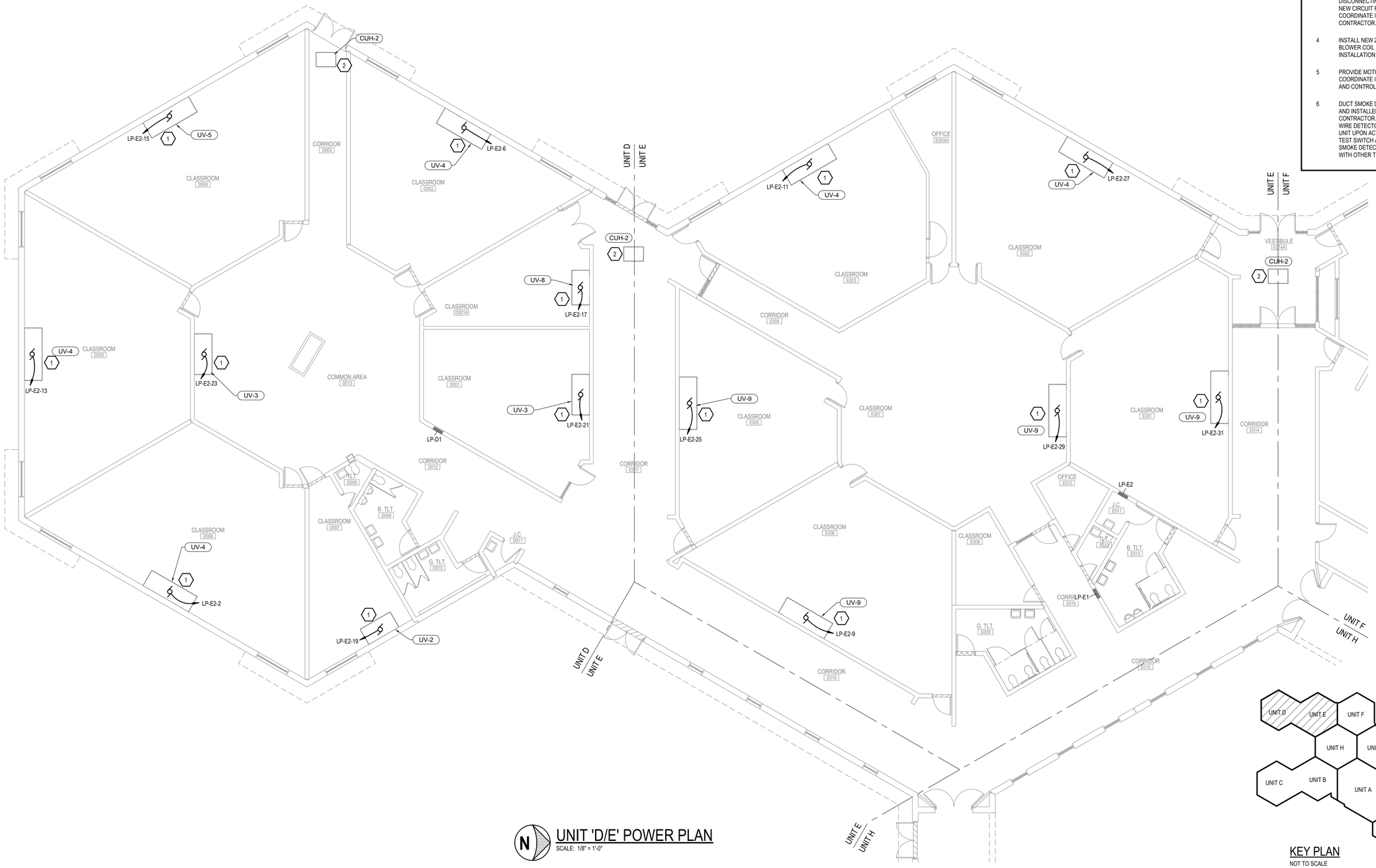
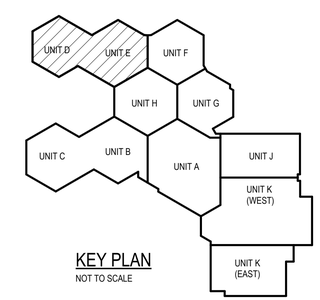


UNIT 'D/E' POWER PLAN

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



KEY PLAN

NOT TO SCALE

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UNIT 'D/E' POWER PLAN

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DRAWN BY: B. KUSHION
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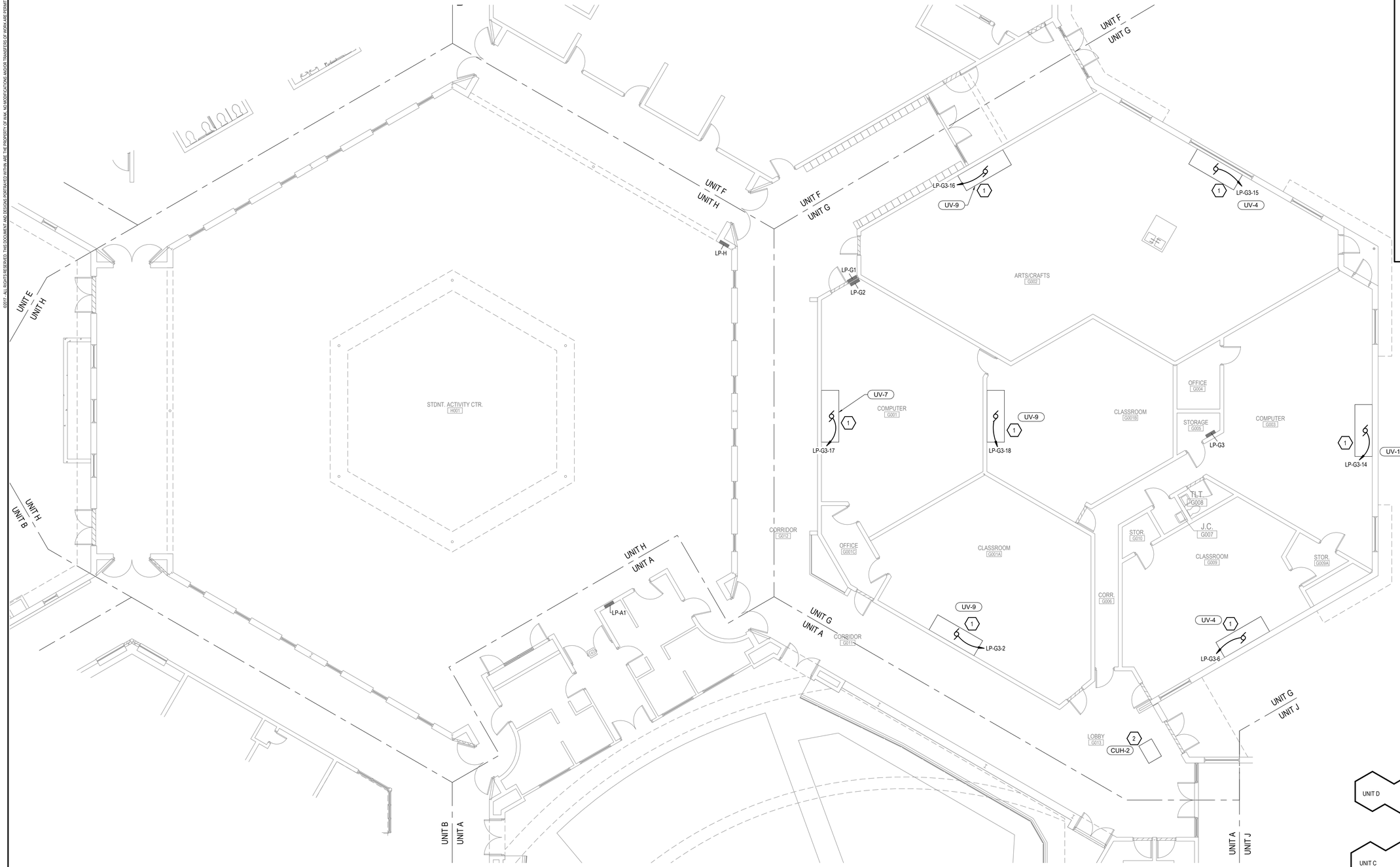

UNIT 'G/H' POWER PLAN

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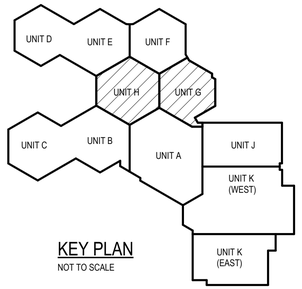

KEY PLAN
NOT TO SCALE

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BAY CITY, MICHIGAN

UNIT 'G/H' POWER PLAN

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⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
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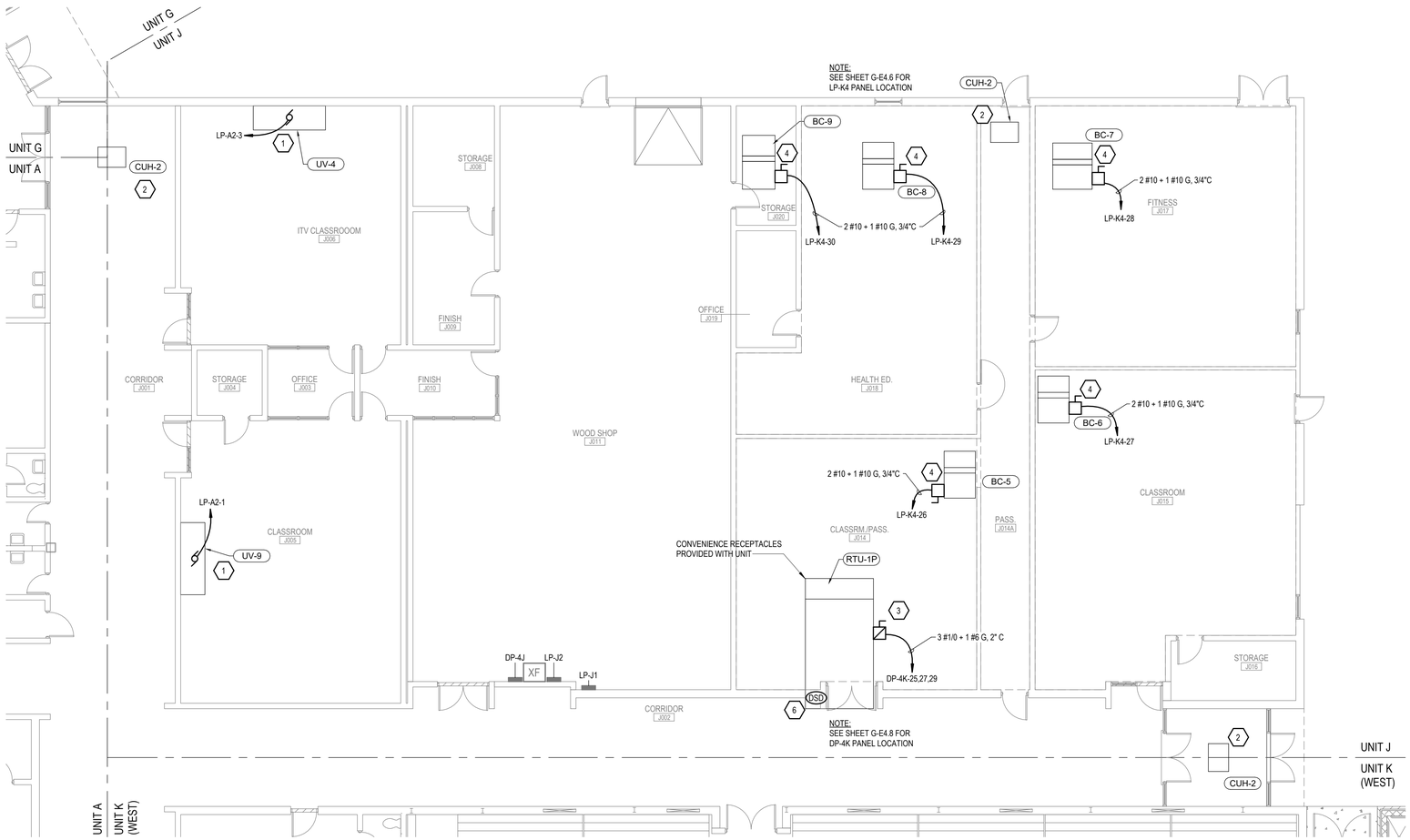
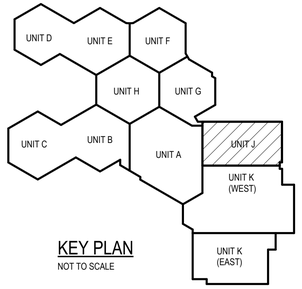
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	PROVIDE 200A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 125A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. PROVIDE NEW CIRCUIT FROM PANEL DP-4K FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
4	INSTALL NEW 25A BREAKERS IN PANEL LP-K4 FOR BLOWER COIL CIRUITS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE MOTOR STARTER FOR EF-1. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
6	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. PROVIDE NEW REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.



UNIT 'J' POWER PLAN

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



KEY PLAN
NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

UNIT 'J' POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

SHEET
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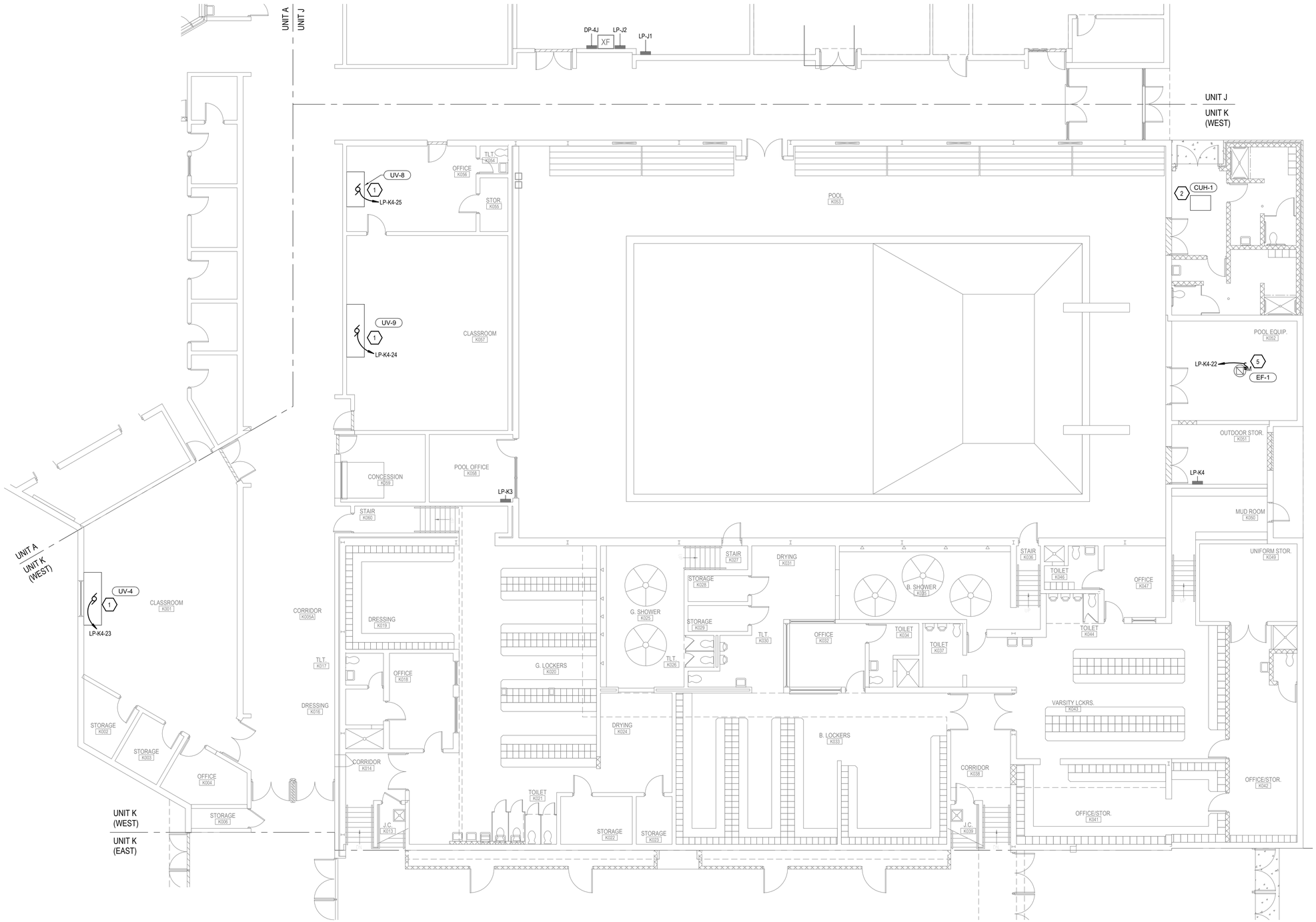
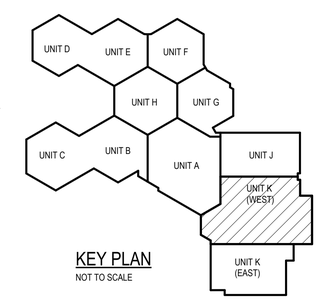


UNIT K (WEST) POWER PLAN

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

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	PROVIDE 200A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 125A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. PROVIDE NEW CIRCUIT FROM PANEL DP-4K FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
4	INSTALL NEW 25A BREAKERS IN PANEL LP-K4 FOR BLOWER COIL CIRUITS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE MOTOR STARTER FOR EF-1. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
6	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. PROVIDE NEW REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.



KEY PLAN
NOT TO SCALE

WILLIAM A. KRIBE & ASSOCIATES, INC.
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JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

UNIT K (WEST) POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

SHEET
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KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	*NOT ALL NOTES APPEAR ON EVERY SHEET*
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
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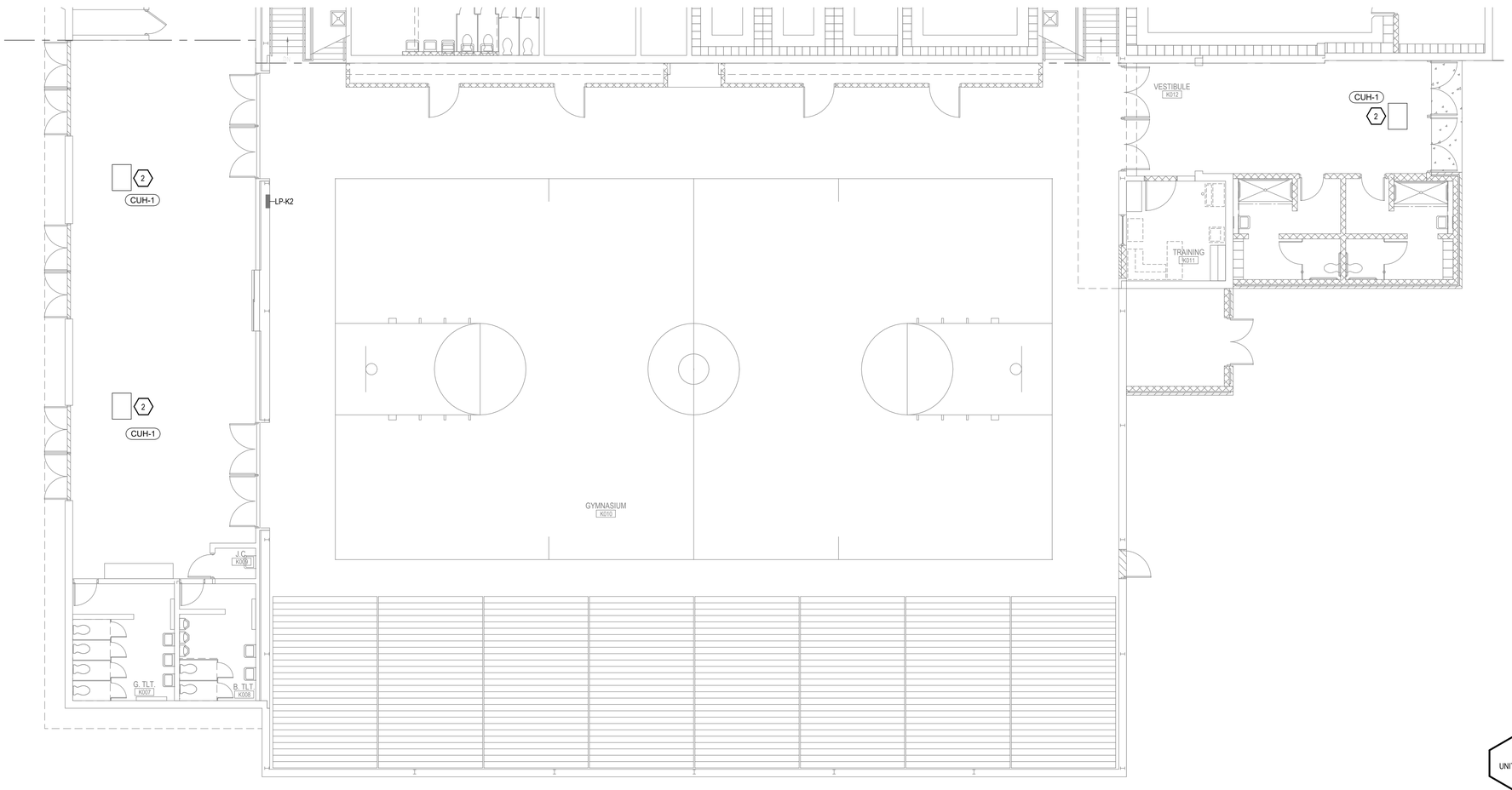
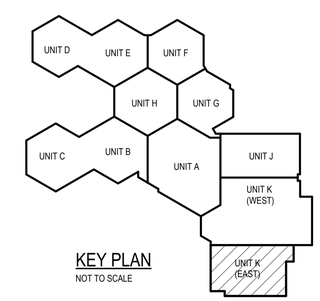
5	PROVIDE MOTOR STARTER FOR EF-1. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
6	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. PROVIDE NEW REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.



N

UNIT K (EAST) POWER PLAN

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



KEY PLAN

NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
JOHN GLENN HIGH SCHOOL

MECHANICAL UPGRADES

BAY CITY, MICHIGAN

UNIT K (EAST) POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER

DES'D BY: B. KUSHION

DRAWN BY: B. KUSHION

PROJ #: 21-1719-0435

SHEET

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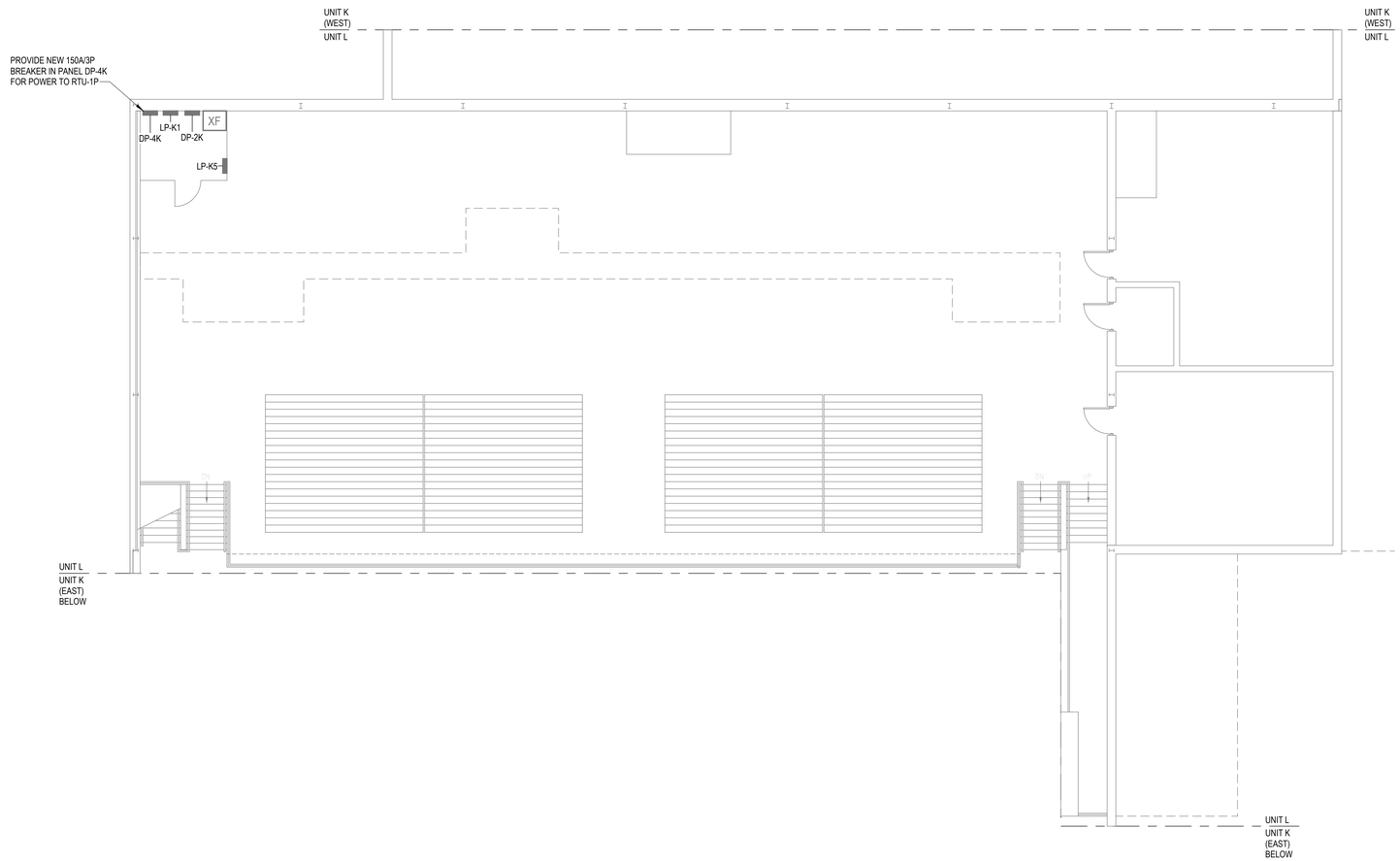
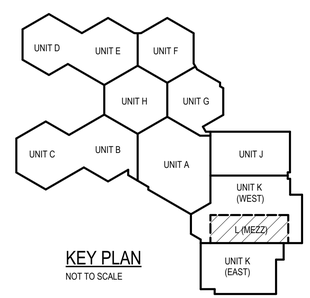


UNIT 'L' (MEZZANINE) POWER PLAN

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



KEY PLAN

NOT TO SCALE

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
	NOT ALL NOTES APPEAR ON EVERY SHEET
1	PROVIDE POWER CONNECTION TO NEW UNIT VENTILATOR. UTILIZE EXISTING CONDUITS WHERE POSSIBLE. PROVIDE NEW CIRCUITS WHERE NEEDED. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	CONNECT NEW UNIT HEATER TO EXISTING CIRCUIT. DISCONNECT SWITCH PROVIDED WITH UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	PROVIDE 200A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 125A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU. PROVIDE NEW CIRCUIT FROM PANEL DP-4K FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
4	INSTALL NEW 25A BREAKERS IN PANEL LP-K4 FOR BLOWER COIL CIRUITS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
5	PROVIDE MOTOR STARTER FOR EF-1. COORDINATE INSTALLATION WITH MECHANICAL AND CONTROLS CONTRACTOR.
6	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. PROVIDE NEW REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORDINATE INSTALLATION WITH OTHER TRADES.

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BAY CITY, MICHIGAN

UNIT 'L' (MEZZANINE) POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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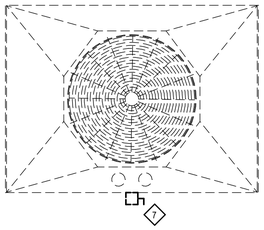
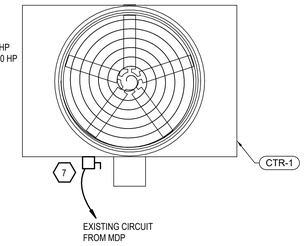


NOTE:
EXISTING COOLING TOWER: 10 HP
PROPOSED COOLING TOWER: 10 HP

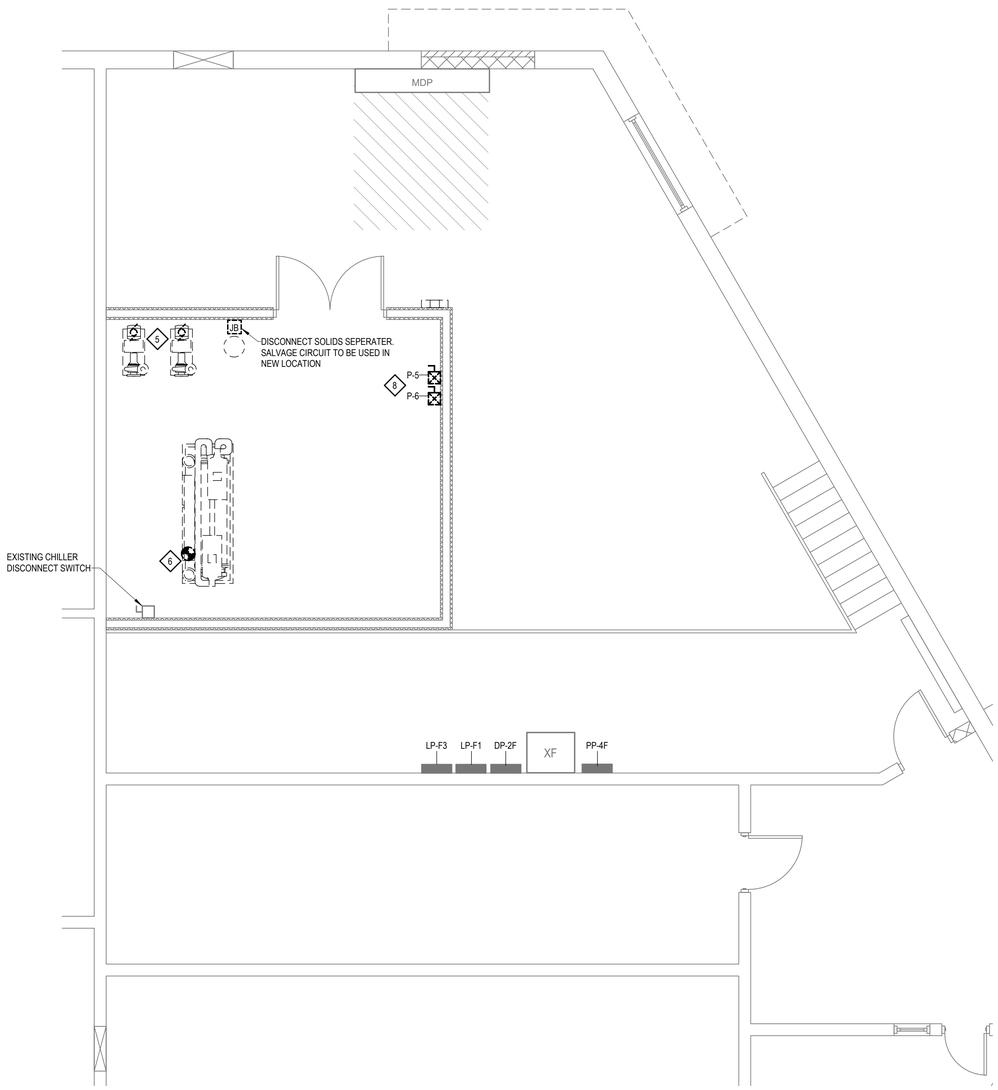


KEYED DEMOLITION NOTES

SYMBOL	DESCRIPTION
◇	*NOT ALL NOTES APPEAR ON EVERY SHEET*
5	DISCONNECT EXISTING PUMP CIRCUITS, REMOVE ALL CONDUIT AND CONDUCTORS BACK TO MOTOR STARTER. COORDINATE REMOVAL WITH MECHANICAL CONTRACTOR.
6	DISCONNECT EXISTING CHILLER. SALVAGE CIRCUIT TO BE USED WITH NEW CHILLER. COORDINATE REMOVAL WITH MECHANICAL CONTRACTOR.
7	DISCONNECT EXISTING COOLING TOWER. SALVAGE EXISTING CIRCUIT FOR NEW COOLING TOWER. COORDINATE WITH MECHANICAL CONTRACTOR.
8	DISCONNECT EXISTING COMBINATION STARTER DISCONNECTS AND RELOCATE TO NEW PUMP LOCATION.

BOILER ROOM KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
⬡	
5	UTILIZE EXISTING COMBONATION MOTOR STARTER DISCONNECTS FOR POWER TO NEW PUMPS. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
6	UTILIZE EXISTING CIRCUIT FOR POWER TO NEW CHILLER. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
7	PROVIDE POWER CONNECTION TO COOLING TOWER. UTILIZE EXISTING CIRCUIT FROM MDP. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
8	PROVIDE NEW FUSE KIT AND 125AF FOR EXISTING 200A DISCONNECT SWITCH. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
9	RELOCATE PUMP COMBINATION MOTOR STARTER DISCONNECTS. FIELD VERIFY FINAL LOCATION. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.

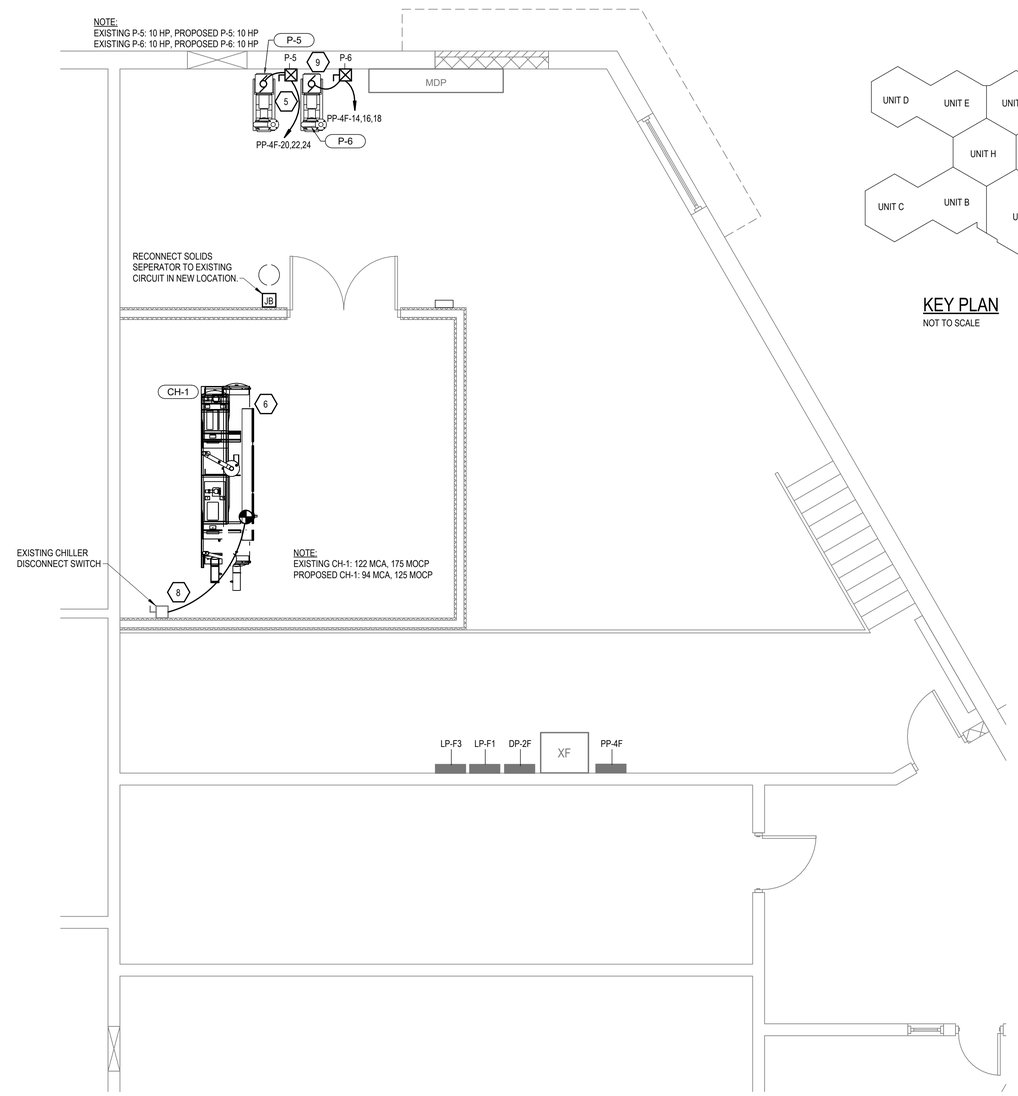


N

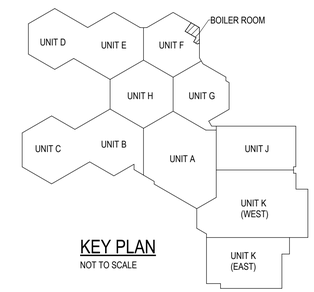
BOILER ROOM DEMOLITION PLAN

SCALE: 1/4" = 1'-0"

NOTE:
EXISTING P-5: 10 HP, PROPOSED P-5: 10 HP
EXISTING P-6: 10 HP, PROPOSED P-6: 10 HP



NOTE:
EXISTING CH-1: 122 MCA, 175 MOCP
PROPOSED CH-1: 94 MCA, 125 MOCP



KEY PLAN
NOT TO SCALE

N

BOILER ROOM POWER PLAN

SCALE: 1/4" = 1'-0"

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MECHANICAL UPGRADES
BAY CITY, MICHIGAN

BOILER ROOM DEMOLITION & POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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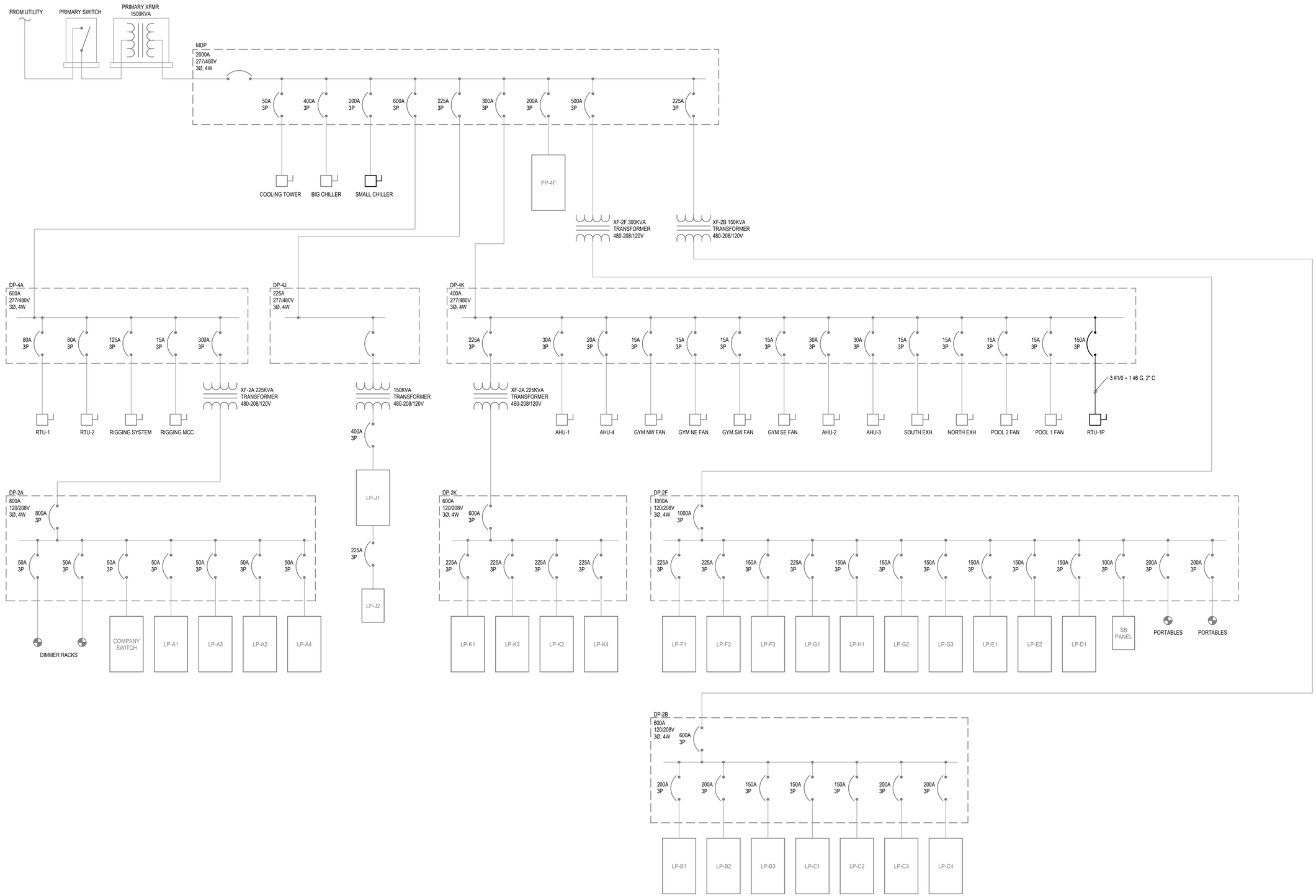

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JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

ONE-LINE DIAGRAM

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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BRANCH PANEL: LP-A2

LOCATION: CORR. A012
SUPPLY FROM: DP-2A
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 100 A

NOTES:
EXISTING PANEL IS A SIEMENS INDOOR LOAD CENTER

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	**UV-9 J005**	**20 A**	**1**	1440	--					1	--	SPACE	2
3	**UV-4 J006**	**20 A**	**1**			1440	--			1	--	SPACE	4
5	39	20 A	1					600	--	1	--	SPACE	6
7	40	20 A	1	600	600					1	20 A	EXISTING	8
9	WORKS	20 A	1			600	600			1	20 A	EXISTING	10
11	ROH	20 A	1					600	600	1	20 A	PIT	12
13	EXISTING	20 A	2	600	600					1	20 A	EXISTING	14
15	--	--	--			600	600			1	20 A	EXISTING	16
17	SPACE	--	1					--	--	1	--	SPACE	18
		Total Load:		3840.0 VA		3840.0 VA		1800.0 VA					
		Total Amps:		35 A		35 A		15 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	2880.0 VA	112.50%	3240.0 VA		
				TOTAL CONN LOAD:	9480.0 VA
				TOTAL EST DEMAND:	9840.0 VA
				TOTAL CONN CURRENT:	26 A
				TOTAL EST DEMAND CURRENT:	27 A

NOTES:

BRANCH PANEL: LP-A3

LOCATION: STAGE A002
SUPPLY FROM: DP-2A
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 100 A

NOTES:
EXISTING PANEL IS A SIEMENS INDOOR LOAD CENTER

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	SERV.	50 A	2	4000	1200					2	20 A	SERV.	2
3	--	--	--			4000	1200			--	--	--	4
5	PLUG UNDER TABLE	20 A	1					1180	360	1	20 A	PLUG UNDER TABLE	6
7	SERV.	30 A	2	2400	360					1	20 A	EXIT LIGHTS	8
9	--	--	--			2400	1200			2	20 A	HYDROLIC PUMP	10
11	EF	20 A	1					360	1200	--	--	--	12
13	**CUH-2**	**20 A**	**1**	446	1440					**1**	**20 A**	**UV-4 A025**	**14**
15	VORTEK	20 A	1			180	1440			**1**	**20 A**	**UV-4 A025**	**16**
17	SPACE	--	1					--	--	1	--	SPACE	18
		Total Load:		9846.2 VA		10420.0 VA		3100.0 VA					
		Total Amps:		91 A		95 A		26 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	2880.0 VA	112.50%	3240.0 VA		
Heating	446.2 VA	50.00%	223.1 VA	**TOTAL CONN LOAD:**	23366.2 VA
				TOTAL EST DEMAND:	23503.1 VA
				TOTAL CONN CURRENT:	65 A
				TOTAL EST DEMAND CURRENT:	65 A

NOTES:

BRANCH PANEL: LP-B3

LOCATION: CORRIDOR B012
SUPPLY FROM: DP-2B
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A
MCB RATING:

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	RTU-3	20 A	3	0	0					3	30 A	RTU	2
3	--	--	--			0	0			--	--	--	4
5	--	--	--					0	0	--	--	--	6
7	BC-2 AUDIO B006	20 A	1	0	0					1	20 A	EF-17 STOR B009	8
9	**CUH-1 B031**	**20 A**	**1**			446	0			1	20 A	REC-MEDIA CTR B001	10
11	ROOF TOP REC	20 A	1					0	0	1	20 A	CEILING REC-MEDIA CTR B001	12
13	Spare	20 A	1	0	0					1	20 A	UV-5 MEDIA CTR B001	14
15	UPS	60 A	2			0	0			1	20 A	UV-5 MEDIA CTR B001	16
17	--	--	--					0	0	2	30 A	LIBRARY UPS	18
19	LIBRARY WIREMOLD	20 A	2	0	0					--	--	--	20
21	--	--	--			0	0			2	20 A	DESK B001	22
23	SPACE	--	1					--	0	--	--	--	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	DATA RECEP	20 A	1					0	0	1	20 A	COPIER LIBRARY	30
31	COFFEE TABLE	20 A	1	0	0					1	20 A	SPARE	32
33	SPARE	20 A	1			0	0			1	20 A	SPARE	34
35	SPARE	20 A	1					0	0	1	20 A	SPARE	36
37	SPARE	20 A	1	0	0					1	20 A	SPARE	38
39	SPARE	20 A	1			0	0			1	20 A	SPARE	40
41	SPARE	20 A	1					0	0	1	20 A	SPARE	42
		Total Load:		0.0 VA		446.2 VA		0.0 VA					
		Total Amps:		0 A		4 A		0 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Heating	446.2 VA	50.00%	223.1 VA		
				TOTAL CONN LOAD:	446.2 VA
				TOTAL EST DEMAND:	223.1 VA
				TOTAL CONN CURRENT:	1 A
				TOTAL EST DEMAND CURRENT:	1 A

NOTES:

BRANCH PANEL: LP-C4

LOCATION: PREP./STOR. 014
SUPPLY FROM: DP-2B
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	REC-E. SCIENCE C013A	20 A	1	720	540					1	20 A	REC-STORE C004/CHEM C006	2
3	REC-E. SCIENCE C013A	20 A	1			720	360			1	20 A	REC-CHEMISTRY C006	4
5	REC-E. SCIENCE C013A	20 A	1					720	360	1	20 A	REC-CHEMISTRY C006	6
7	REC-E. SCIENCE C013A	20 A	1	720	360					1	20 A	REC-CHEMISTRY C006/OFF C008	8
9	REC-E. SCIENCE C013A	20 A	1			720	540			1	20 A	REC-OFF C008A/BIOLOGY C007	10
11	CEILING REC-E. SCIENCE C013A	20 A	1					180	720	1	20 A	C6 SMART	12
13	REC - BIOLOGY C010	20 A	1	720	180					1	20 A	CEILING REC-CHEMISTRY C006	14
15	REC - BIOLOGY C010	20 A	1			720	720			1	20 A	C7 SMART	16
17	REC - BIOLOGY C010	20 A	1					720	720	1	20 A	CEILING REC-BIOLOGY C007	18
19	CEILING REC - BIOLOGY C010	20 A	1	180	720					1	20 A	REC-BIOLOGY C007	20
21	REC - BIOLOGY C010	20 A	1			720	360			1	20 A	REC-BIOLOGY C007	22
23	REC - BIOLOGY C010	20 A	1					360	540	1	20 A	REC-BIOLOGY C007	24
25	**UV-5 C010**	**20 A**	**1**	1440	360					1	20 A	REC-BIOLOGY C007	26
27	EF-13 CHEMISTRY C006, P-10 TUNNEL	20 A	1			860	446			**1**	**20 A**	**CUH-2 C009**	**28**
29	**UV-6 C006**	**20 A**	**1**					1440	1440	**1**	**20 A**	**UV-5 C013A**	**30**
31	SPACE	--	1	--	540					1	20 A	REC-BIOLOGY C010	32
33	**UV-6 C007**	**20 A**	**1**			1440	360			1	20 A	REC-BIOLOGY C010	34
35	REC-BIOLOGY C010	20 A	1					540	360	1	20 A	REC-BIOLOGY C010	36
37	REC-E SCIENCE C013A	20 A	1	360	360					1	20 A	REC-BIOLOGY C010	38
39	REC-E SCIENCE C013A	20 A	1			540	360			1	20 A	REC-BIOLOGY C010	40
41	REC-E SCIENCE C013A	20 A	1					720	360	1	20 A	REC-CHEMISTRY C006	42
		Total Load:		7200.0 VA		8866.2 VA		9180.0 VA					
		Total Amps:		60 A		76 A		79 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	5760.0 VA	106.25%	6120.0 VA		
Heating	446.2 VA	50.00%	223.1 VA	**TOTAL CONN LOAD:**	25246.2 VA
				TOTAL EST DEMAND:	25383.1 VA
				TOTAL CONN CURRENT:	70 A
				TOTAL EST DEMAND CURRENT:	70 A

NOTES:

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MECHANICAL UPGRADES
BAY CITY, MICHIGAN

PANEL SCHEDULES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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BRANCH PANEL: LP-E2

LOCATION: J.C. E011
SUPPLY FROM: DP-2F
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	REC-CLRM E002, E003	20 A	1	720	1440					**1**	**20 A**	**UV-4 D006**	**2**
3	**CUH-2 D003, E014A, & E017**	**20 A**	**1**			1339	1660			1	20 A	EF-6 CLRM E007/BC-3 CORR E016	4
5	BC-1 CLRM E003	20 A	1					830	1440	**1**	**20 A**	**UV-4 D002**	**6**
7	PRINTER LOUNGE	20 A	1	500	4500					2	60 A	PIZZA OVEN	8
9	**UV-9 E006**	**20 A**	**1**			1440	4500			--	--	--	10
11	**UV-4 E003**	**20 A**	**1**					1440	4500	2	60 A	PIZZA OVEN	12
13	**UV-4 D005**	**20 A**	**1**	1440	4500					--	--	--	14
15	**UV-5 D004**	**20 A**	**1**			1440	--			1	--	Space	16
17	**UV-8 D001A**	**20 A**	**1**					1440	--	1	--	Space	18
19	**UV-2 D007**	**20 A**	**1**	1440	--					1	--	Space	20
21	**UV-3 D001**	**20 A**	**1**			1440	--			1	--	Space	22
23	**UV-3 D013**	**20 A**	**1**					1440	--	1	--	Space	24
25	**UV-9 E005**	**20 A**	**1**	1440	--					1	--	Space	26
27	**UV-4 E002**	**20 A**	**1**			1440	--			1	--	Space	28
29	**UV-9 E007**	**20 A**	**1**					1440	--	1	--	Space	30
31	**UV-9 E001**	**20 A**	**1**	1440	--					1	--	Space	32
33	Space	--	1			--	--			1	--	Space	34
35	Space	--	1					--	--	1	--	Space	36
37	Spare	20 A	2	0	0					1	20 A	Spare	38
39	--	--	--			0	0			1	20 A	Spare	40
41	Spare	20 A	1					0	0	1	20 A	Spare	42
		Total Load:		17420.0 VA		13258.6 VA		12530.0 VA					
		Total Amps:		146 A		111 A		104 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	20160.0 VA	101.79%	20520.0 VA		
Heating	1338.6 VA	50.00%	669.3 VA	**TOTAL CONN LOAD:**	43208.6 VA
				TOTAL EST DEMAND:	42899.3 VA
				TOTAL CONN CURRENT:	120 A
				TOTAL EST DEMAND CURRENT:	119 A

NOTES:

BRANCH PANEL: LP-F3

LOCATION:
SUPPLY FROM:
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	**CUH-2 F016A**	**20 A**	**1**	446	0					1	20 A	LTS-MECH F015A	2
3	EF-9 CLRM F007	20 A	1			0	0			1	20 A	REC-BOILER F015, MECH F015A	4
5	**UV-8 F004**	**20 A**	**1**					1440	0	1	20 A	REC-BOILER F015, MECH F015A	6
7	EF-5 MECH F015A	20 A	1	0	0					1	20 A	#1 BOILER CONTROL	8
9	UH-1 MECH F015A/UH-2/BOILER F015	20 A	1			0	0			1	20 A	#2 BOILER CONTROL	10
11	BOILER #4	20 A	1					0	0	1	20 A	#3 BOILER CONTROL	12
13	LAKOS PURGE	20 A	1	0	0					1	20 A	F1 REC	14
15	CONTROL LOCHINVAR BOILER	20 A	1			0	0			1	20 A	SPARE	16
17	GEN HTR	20 A	1					0	0	1	20 A	TRANE BCU CONTROLS	18
19	KIT COOLER	20 A	3	0	0					1	20 A	SPARE	20
21	--	--	--			0	0			1	20 A	FREEZER DOOR HTS	22
23	--	--	--					0	0	1	20 A	FREEZER LIGHTS	24
25	CONDENSOR	20 A	3	0	1440					**1**	**20 A**	**UV-5 F001**	**26**
27	--	--	--			0	1440			**1**	**20 A**	**UV-5 F001A**	**28**
29	--	--	--					0	0	1	20 A	SPARE	30
31	CONDENSOR	20 A	3	0	0					1	20 A	SPARE	32
33	--	--	--			0	0			1	20 A	SPARE	34
35	--	--	--					0	0	1	20 A	SPARE	36
37	EXIT PANEL	20 A	2	0	0					2	20 A	FREEZER	38
39	--	--	--			0	0			--	--	--	40
41	GEN CONTROLS	20 A	1					0	0	1	20 A	RECEP - BELOW PANEL	42
		Total Load:		1886.2 VA		1440.0 VA		1440.0 VA					
		Total Amps:		16 A		12 A		12 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	4320.0 VA	108.33%	4680.0 VA		
Heating	446.2 VA	50.00%	223.1 VA	**TOTAL CONN LOAD:**	4766.2 VA
				TOTAL EST DEMAND:	4903.1 VA
				TOTAL CONN CURRENT:	13 A
				TOTAL EST DEMAND CURRENT:	14 A

NOTES:

BRANCH PANEL: LP-G3

LOCATION:
SUPPLY FROM:
MOUNTING: Surface
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE:
MAINS RATING: 225 A
MCB RATING:

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	REC-CLRM G009/COMP G003	20 A	1	720	1440					**1**	**20 A**	**UV-9 G001A**	**2**
3	**CUH-2 G013**	**20 A**	**1**			446	590			1	20 A	EF-10 CRLM G001B	4
5	REC ART G002	20 A	1					720	1440	**1**	**20 A**	**UV-4 G009**	**6**
7	UPS	20 A	1	720	--					1	--	SPACE	8
9	UPS	20 A	1			720	180			1	20 A	REC-ART G002	10
11	UPS	30 A	2					720	180	1	20 A	REC-ART G002	12
13	--	--	--	720	1440					**1**	**20 A**	**UV-1 G003**	**14**
15	**UV-4 G002**	**20 A**	**1**			1440	1440			**1**	**20 A**	**UV-9 G002**	**16**
17	**UV-7 G001**	**20 A**	**1**					1440	1440	**1**	**20 A**	**UV-9 G001B**	**18**
19	SPACE	--	1	--	--					1	--	SPACE	20
21	SPACE	--	1			--	--			1	--	SPACE	22
23	SPACE	--	1					--	--	1	--	SPACE	24
25	SPACE	--	1	--	--					1	--	SPACE	26
27	SPACE	--	1			--	--			1	--	SPACE	28
29	SPACE	--	1					--	--	1	--	SPACE	30
		Total Load:		5040.0 VA		4816.2 VA		5940.0 VA					
		Total Amps:		42 A		40 A		50 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	10080.0 VA	103.57%	10440.0 VA		
Heating	446.2 VA	50.00%	223.1 VA	**TOTAL CONN LOAD:**	15796.2 VA
				TOTAL EST DEMAND:	15933.1 VA
				TOTAL CONN CURRENT:	44 A
				TOTAL EST DEMAND CURRENT:	44 A

NOTES:

BRANCH PANEL: LP-K4

LOCATION:
SUPPLY FROM:
MOUNTING: Surface
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE:
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	LTS-RMS K042, K042A, K051	20 A	1	680	540					1	20 A	REC-RMS K061-K063	2
3	LTS-RMS K061-K063/EXT	20 A	1			830	360			1	20 A	REC-OUTDOOR STOR K051	4
5	REC-COACHES K042	20 A	1					540	980	1	20 A	LTS-VEST K012/EXTERIOR	6
7	(3) CUH-3/UH-4/CUH-1/EF-1	20 A	1	1112	850					1	20 A	LTS-RMS K011,K013, K014, K015	8
9	(2) CUH-3/CUH-1/EF-2	20 A	1			1070	540			1	20 A	REC-STOR K015/EXT	10
11	EF-14	20 A	1					670	360	1	20 A	REC-TRAINING K011	12
13	BOILER PUMP	20 A	1	600	540					1	20 A	REC-TRAINING K011	14
15	REC-GYM STORAGE (ALT.13)	20 A	1			720	360			1	20 A	REC-LKR K013, VEST K012	16
17	LTS-GYM STORAGE (ALT.13)	20 A	1					170	540	1	20 A	REC-LKR K014/EXTERIOR	18
19	EF-19 MUD ROOM K050	20 A	1	500	540					1	20 A	REC TRAINING K011	20
21	**CUH-1 K061**	**20 A**	**1**			446	1012			**1**	**20 A**	**EF-1 K052**	**22**
23	**UV-4 K001**	**20 A**	**1**					1440	1440	**1**	**20 A**	**UV-9 K057**	**24**
25	**UV-8 K056**	**20 A**	**1**	1440	1996					**1**	**25 A**	**BC-5**	**26**
27	**BC-6**	**25 A**	**1**			1996	1996			**1**	**25 A**	**BC-7**	**28**
29	**BC-8**	**25 A**	**1**					1996	1996	**1**	**25 A**	**BC-9**	**30**
31	SPACE	--	1	--	--					1	--	SPACE	32
33	SPACE	--	1			--	--			1	--	SPACE	34
35	SPACE	--	1					--	--	1	--	SPACE	36
37	SPACE	--	1	--	--					1	--	SPACE	38
39	SPACE	--	1			--	--			1	--	SPACE	40
41	SPACE	--	1					--	--	1	--	SPACE	42
		Total Load:		8797.6 VA		9329.4 VA		10131.2 VA					
		Total Amps:		73 A		78 A		85 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	5332.0 VA	106.75%	5692.0 VA		
Heating	10424.2 VA	50.00%	5212.1 VA	**TOTAL CONN LOAD:**	28258.2 VA
				TOTAL EST DEMAND:	23406.1 VA
				TOTAL CONN CURRENT:	78 A
				TOTAL EST DEMAND CURRENT:	65 A

NOTES:

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BANGOR TOWNSHIP SCHOOLS
JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

PANEL SCHEDULES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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BRANCH PANEL: DP-4K

LOCATION: MEZZANINE
SUPPLY FROM: MDP
MOUNTING: Surface
ENCLOSURE: Type 1

VOLTS: 480/277 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 400 A

NOTES:
EXISTING PANEL IS SQUARE-D I-LINE PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	AHU-3	20 A	3	2100	39635					3	225 A	XF-2K	2
3	--	--	--			2100	39635			--	--	--	4
5	--	--	--					2100	39635	--	--	--	6
7	AHU-4	30 A	3	3900	600					3	15 A	SWIMMING POOL FAN NORTH	8
9	--	--	--			3900	600			--	--	--	10
11	--	--	--					3900	600	--	--	--	12
13	AHU-5	30 A	3	3900	600					3	15 A	SWIMMING POOL FAN SOUTH	14
15	--	--	--			3900	600			--	--	--	16
17	--	--	--					3900	600	--	--	--	18
19	AHU-6	30 A	3	3100	600					3	15 A	SOUTH EXH FAN	20
21	--	--	--			3100	600			--	--	--	22
23	--	--	--					3100	600	--	--	--	24
25	**RTU-1P**	**150 A**	**3**	30542	600					3	15 A	NORTH EXH FAN	26
27	**--**	**--**	**--**			30542	600			--	--	--	28
29	**--**	**--**	**--**					30542	600	--	--	--	30
31					600					3	15 A	GYM N.E. EXH FAN	32
33							600			--	--	--	34
35									600	--	--	--	36
37					600					3	15 A	GYM N.W. EXH FAN	38
39							600			--	--	--	40
41									600	--	--	--	42
43					600					3	15 A	GYM S.E. EXH FAN	44
45							600			--	--	--	46
47									600	--	--	--	48
49					600					3	15 A	GYM S.W. EXH FAN	50
51							600			--	--	--	52
53									600	--	--	--	54
55													56
57													58
59													60
61													62
63													64
65													66
		Total Load:		87976.8 VA		87976.8 VA		87976.8 VA					
		Total Amps:		318 A		318 A		318 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
HVAC	91625.5 VA	80.00%	73300.4 VA		
				TOTAL CONN LOAD:	263930.5 VA
				TOTAL EST DEMAND:	245605.4 VA
				TOTAL CONN CURRENT:	317 A
				TOTAL EST DEMAND CURRENT:	295 A

NOTES:

BRANCH PANEL: PP-4F

LOCATION: BOILER ROOM
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 480/277 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL IS SQUARE-D NF PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	EXG. HOW WTR CIRC PMP-BOILER F015	15 A	3	945	945					3	15 A	EXISTING	2
3	--	--	--			945	945			--	--	--	4
5	--	--	--					945	945	--	--	--	6
7	P-7 BOILER F015	40 A	3	3880	2105					3	20 A	EXISTING	8
9	--	--	--			3880	2105			--	--	--	10
11	--	--	--					3880	2105	--	--	--	12
13	P-8 BOILER F015	40 A	3	3880	3718					**3**	**40 A**	**P-6 BOILER F015**	**14**
15	--	--	--			3880	3718			**--**	**--**	**--**	**16**
17	--	--	--					3880	3718	**--**	**--**	**--**	**18**
19	EXISTING	20 A	3	2105	3718					**3**	**40 A**	**P-5 BOILER F015**	**20**
21	--	--	--			2105	3718			**--**	**--**	**--**	**22**
23	--	--	--					2105	3718	**--**	**--**	**--**	**24**
25	EXISTING	20 A	3	2105	2000					1	30 A	PARKING LOT LIGHTS	26
27	--	--	--			2105	2000			1	30 A	PARKING LOT LIGHTS	28
29	--	--	--					2105	2000	1	30 A	PARKING LOT LIGHTS	30
31	AHU-1 STUD ACT. CTR H001	20 A	3	2105	12456					3	60 A	DUG OUT	32
33	--	--	--			2105	12456			--	--	--	34
35	--	--	--					2105	12456	--	--	--	36
37	EXISTING	20 A	3	2105	2105					3	20 A	KITCHEN FAN	38
39	--	--	--			2105	2105			--	--	--	40
41	--	--	--					2105	2105	--	--	--	42
43	EXISTING	15 A	3	945	2000					2	30 A	EXISTING	44
45	--	--	--			945	2000			--	--	--	46
47	--	--	--					945	--	1	--	SPACE	48
49	EXISTING	15 A	3	945	945					3	15 A	EXISTING	50
51	--	--	--			945	945			--	--	--	52
53	--	--	--					945	945	--	--	--	54
		Total Load:		49007.3 VA		49007.3 VA		47007.3 VA					
		Total Amps:		178 A		178 A		170 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	22308.8 VA	112.50%	25097.4 VA		
				TOTAL CONN LOAD:	145021.8 VA
				TOTAL EST DEMAND:	147810.4 VA
				TOTAL CONN CURRENT:	174 A
				TOTAL EST DEMAND CURRENT:	178 A

NOTES:

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
JOHN GLENN HIGH SCHOOL
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

PANEL SCHEDULES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: B. KUSHION
PROJ #: 21-1719-0435

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BANGOR TOWNSHIP SCHOOLS

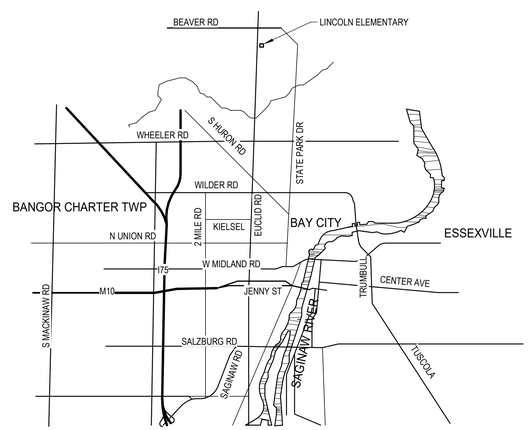
LINCOLN ELEMENTARY
MECHANICAL UPGRADES

2771 NORTH EUCLID AVE
BAY CITY, MICHIGAN

SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
L-M1.0	UNIT 'A' MECHANICAL PLAN - DEMO	X
L-M1.1	UNIT 'B' MECHANICAL PLAN - DEMO	X
L-M3.0	UNIT 'A' MECHANICAL PLAN	X
L-M3.1	UNIT 'B' MECHANICAL PLAN	X
L-M3.2	BOILER ROOM MECHANICAL PLAN	X
L-M8.0	SCHEDULES AND NOTES	X
ELECTRICAL		
L-E0.0	GENERAL NOTES	X
L-E1.0	UNIT 'A' DEMOLITION PLAN	X
L-E1.1	UNIT 'B' DEMOLITION PLAN	X
L-E4.0	UNIT 'A' POWER PLAN	X
L-E4.1	UNIT 'B' POWER PLAN	X
L-E4.2	BOILER ROOM POWER & DEMOLITION PLAN	X
L-E6.0	ONE-LINE DIAGRAM	X

LOCATION MAP



CONTACT INFORMATION

OWNER / CLIENT:
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3359 E. MIDLAND RD
BAY CITY, MI 48706
(989) 684-8121

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(517) 241-9328

MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF FIRE SERVICES/PLAN REVIEW DIVISION
PO BOX 30700
LANSING, MI 48909
(517) 241-8847

811 Know what's below. Call before you dig.

PROJECT INFORMATION

BUILDING CODE COMPLIANCE
- 2015 MICHIGAN BUILDING CODE (MBC)
- 2018 MICHIGAN PLUMBING CODE (MPC)
- 2015 MICHIGAN MECHANICAL CODE (MMC)
- 2017 NATIONAL ELECTRICAL CODE (NEC)
- 2018 INTERNATIONAL FIRE CODE (IFC)
- 2012 NFPA 101 LIFE SAFETY CODE (LSC)

USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP E - EDUCATIONAL GROUP

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- ALLOWED - 2
- ACTUAL - 1

BUILDING AREA [TBL 506.2]
- ALLOWABLE - 14,400 SFT/ FLR
- ACTUAL - 35,242 SFT

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB, II(000)

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- NO SPRINKLER SYSTEM

OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- NO CHANGE

CORRIDORS [SEC 1020, TBL 1020.1]
- 1HR RATING

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ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
LINCOLN ELEMENTARY
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

COVER SHEET

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: T. MIETZ
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

SHEET
CS

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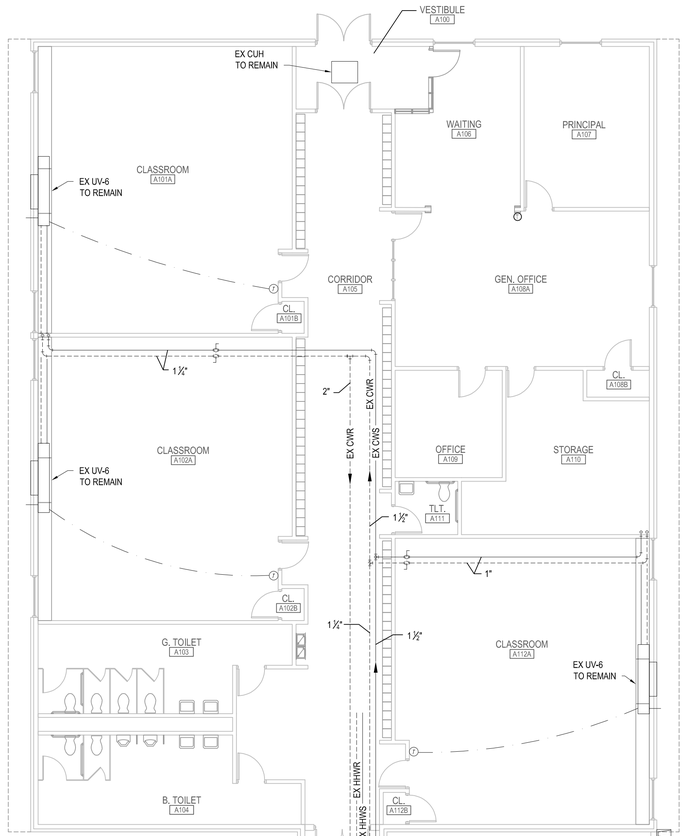
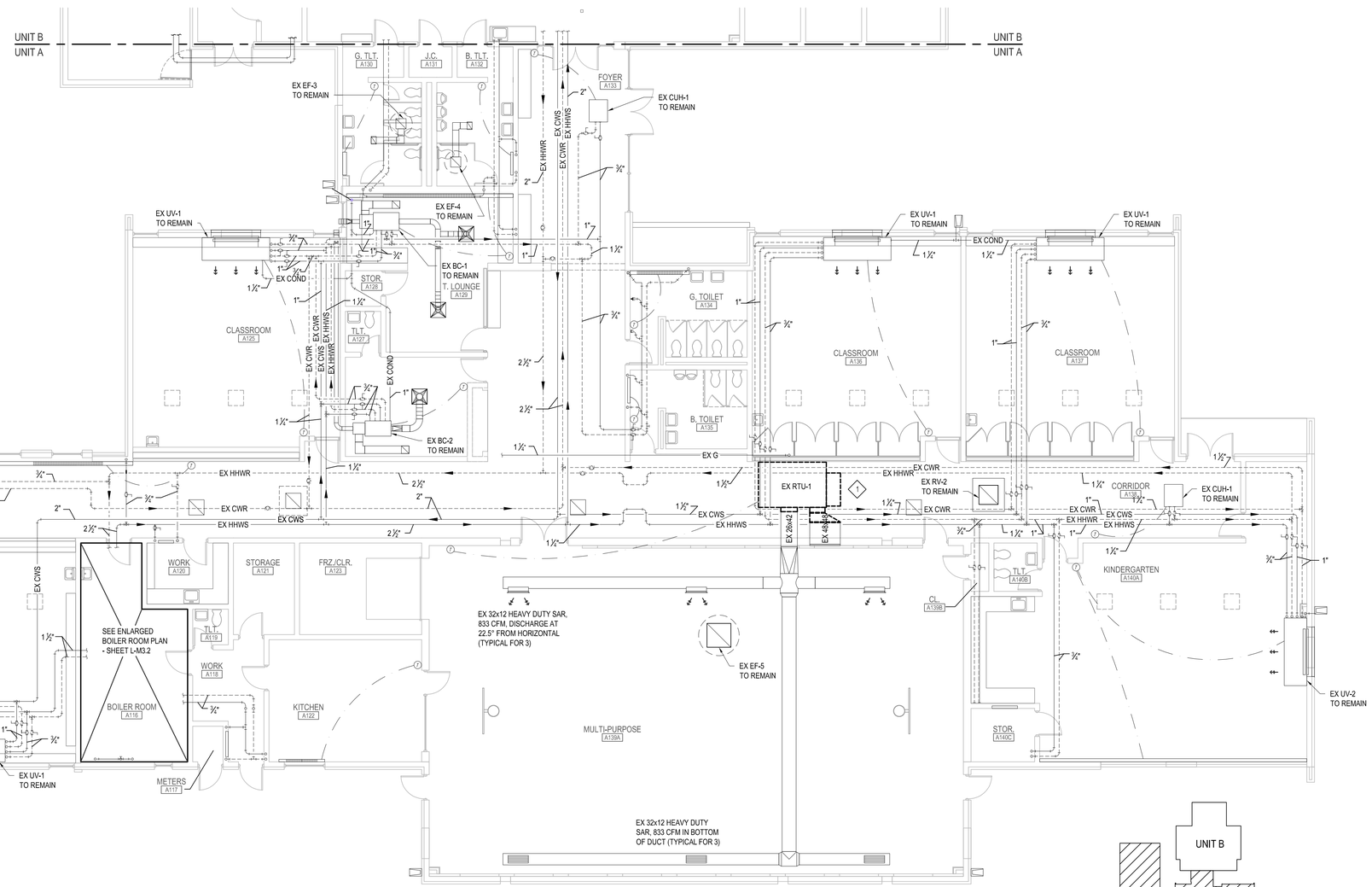
MECHANICAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING RTU. REMOVAL TO INCLUDE PORTION OF SUPPLY AND RETURN DUCT AS NOTED. MAINTAIN EXISTING GAS PIPING FOR CONNECTION TO NEW UNIT.
2. DISCONNECT AND REMOVE EXISTING SS-1. INCLUDING CONDENSING UNIT ON ROOF AND LINE SETS.

GENERAL DEMOLITION NOTES

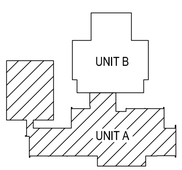
1. ALL SURFACES DISTURBED OR HOLES CREATED DUE TO DEMOLITION TO BE PATCHED TO MATCH SURROUNDING SURFACE.
2. ALL MATERIALS RESULTING FROM DEMOLITION OPERATION SHALL BE PROMPTLY REMOVED FROM PREMISES AND LEGALLY DISPOSED OF.
3. CONTRACTOR TO CONTACT OWNER PRIOR TO REMOVAL AND TURN OVER TO OWNER ANY EQUIPMENT OR MATERIALS REQUESTED.
4. PIPE CAPPING TO BE DONE WITH MATERIALS TO MATCH EXISTING PIPING.
5. ALL ROOF PATCHING TO BE COORDINATED WITH OWNER TO MAINTAIN EXISTING ROOFING WARRANTY.





UNIT 'A' MECHANICAL PLAN - DEMO

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



KEY PLAN

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ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
LINCOLN
BAY CITY, MICHIGAN

UNIT 'A' MECHANICAL PLAN - DEMO

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

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L-M1.0

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MECHANICAL DEMOLITION NOTES

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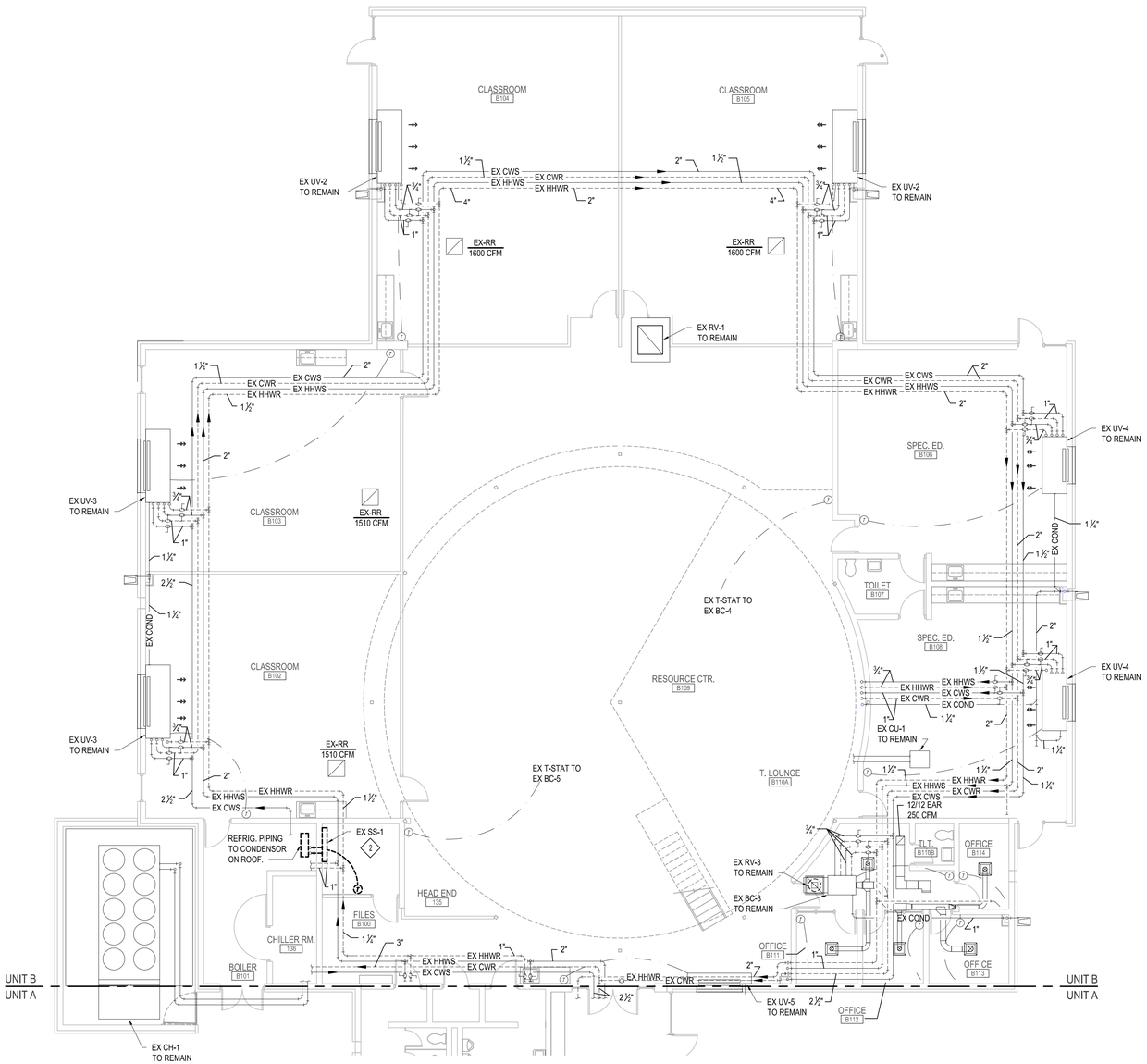
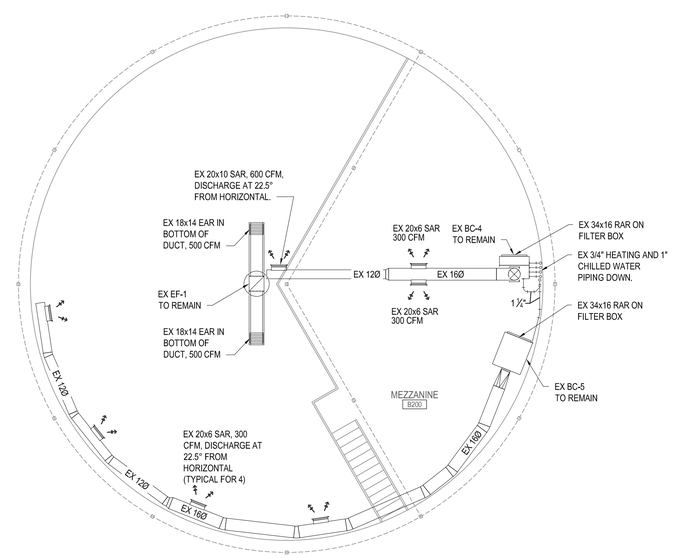


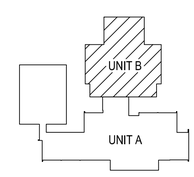
UNIT 'B' MECHANICAL PLAN - DEMO

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



MEZZANINE MECHANICAL PLAN - DEMO

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



KEY PLAN

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BANGOR SCHOOLS MECHANICAL UPGRADES

LINCOLN
BAY CITY, MICHIGAN

UNIT 'B' MECHANICAL PLAN - DEMO

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
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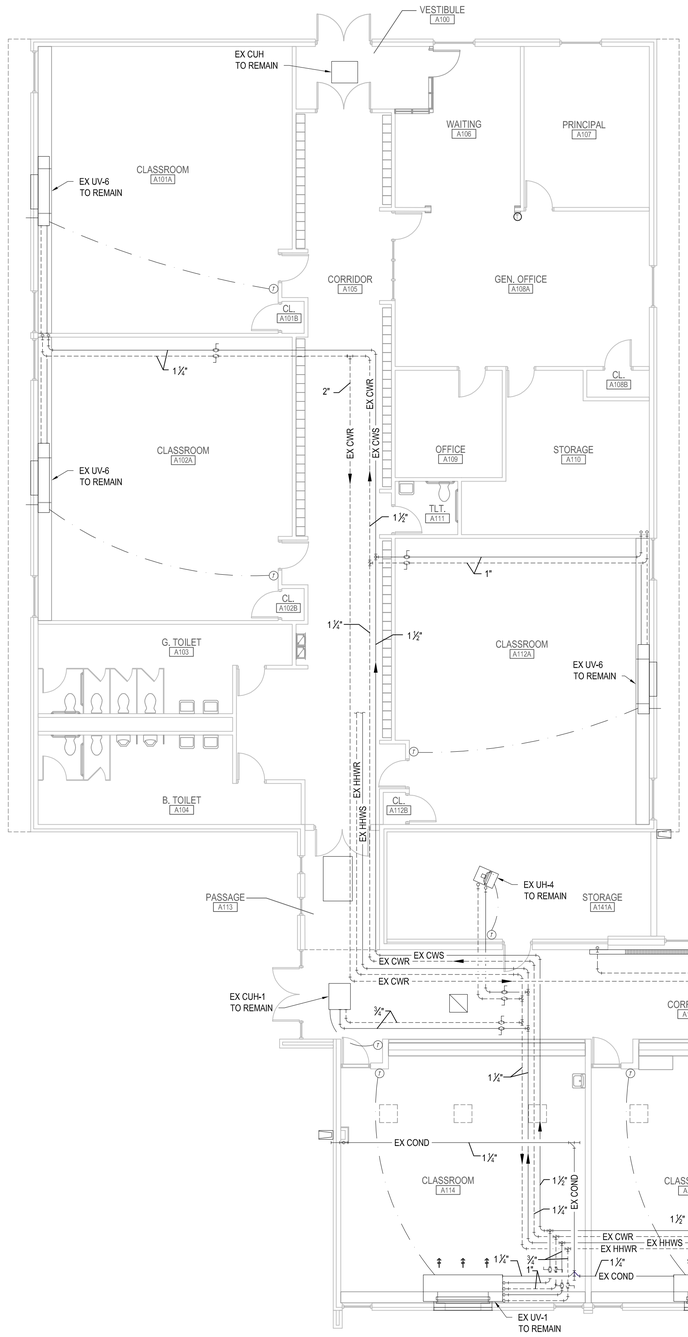
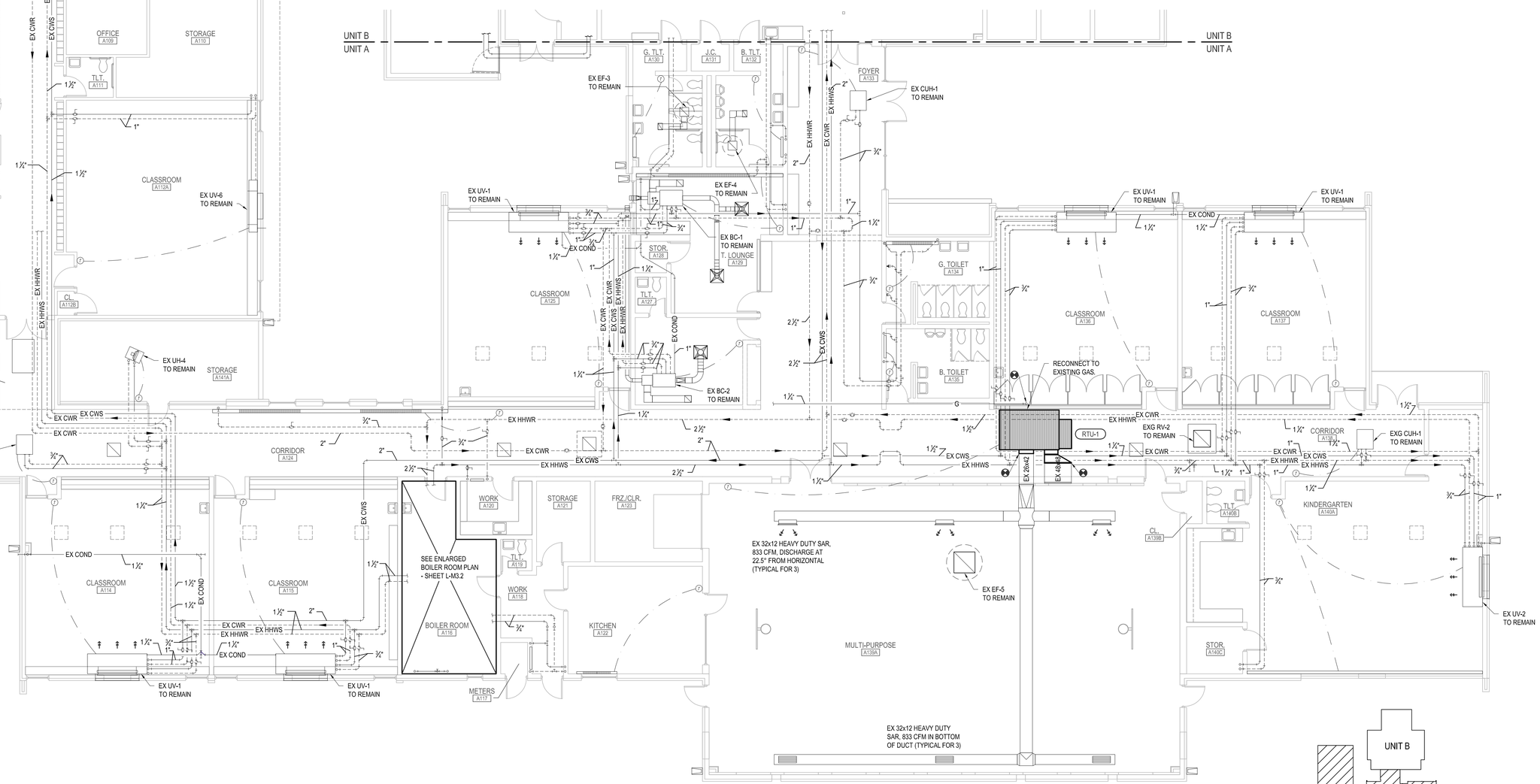
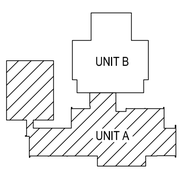




UNIT 'A' MECHANICAL PLAN

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



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BANGOR SCHOOLS MECHANICAL UPGRADES

LINCOLN
BAY CITY, MICHIGAN

UNIT 'A' MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
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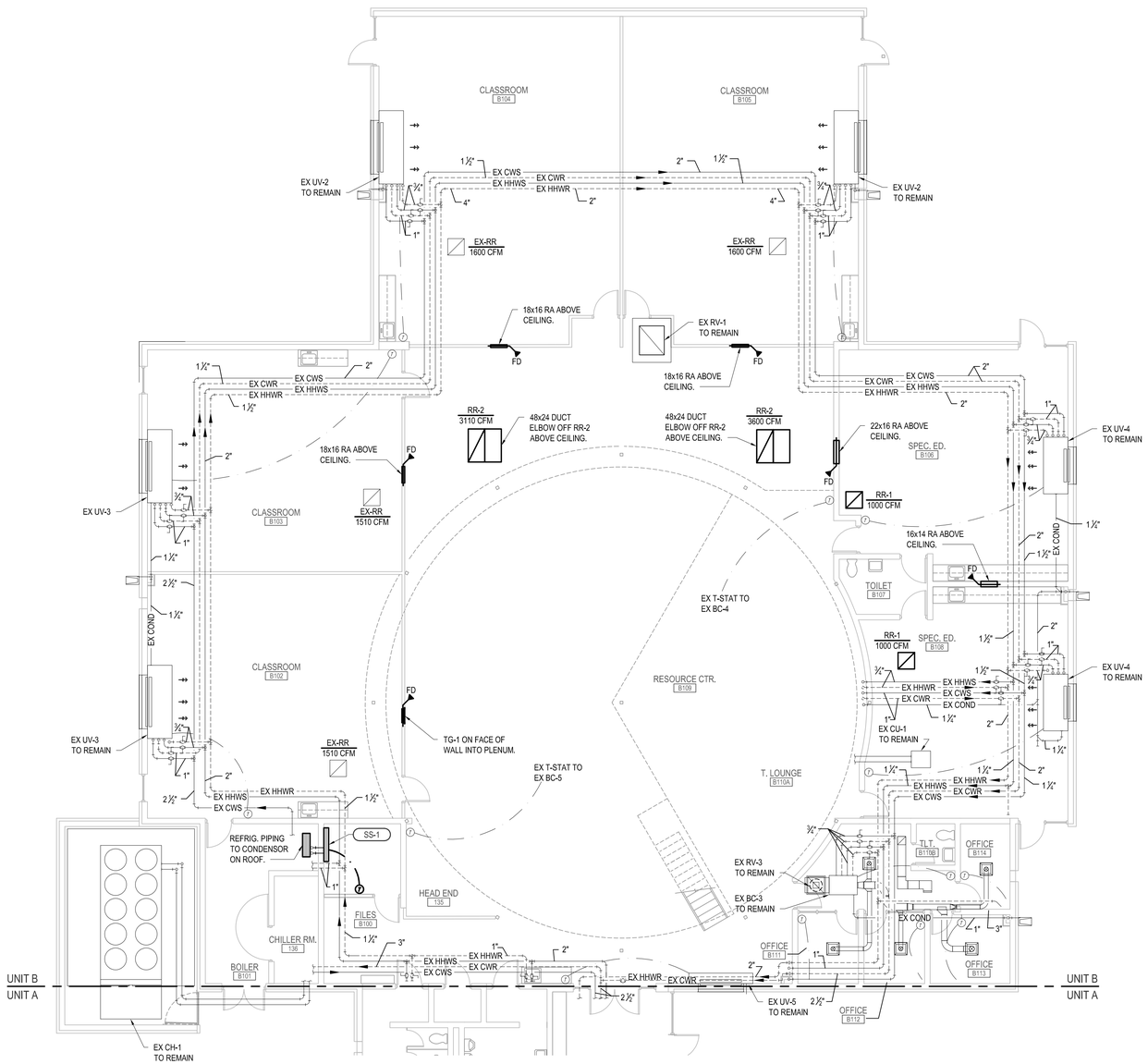
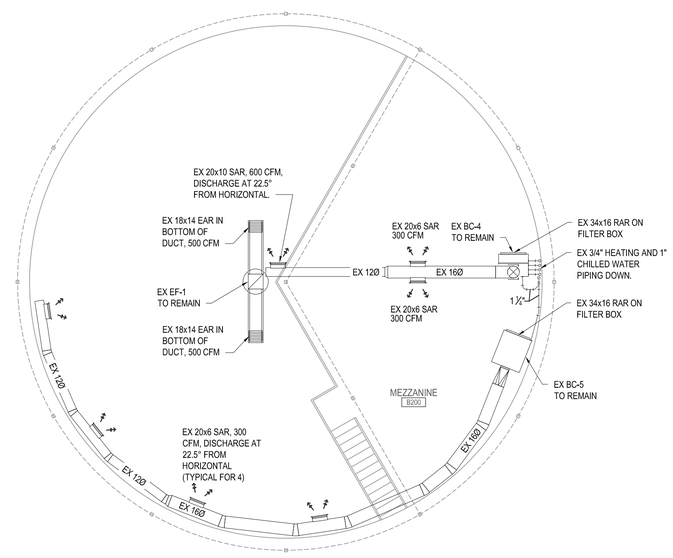
MECHANICAL NEW WORK NOTES

1. INSTALL RETURN AIR REGISTERS IN EXISTING CEILING GRID UNLESS NOTED OTHERWISE.
2. PROVIDE RETURN AIR PATHS ABOVE THE CEILING WHERE SHOWN.
3. ENSURE ALL RETURN REGISTERS/AIR PATHS ARE PRESENT TO ALLOW PROPER AIRFLOW.



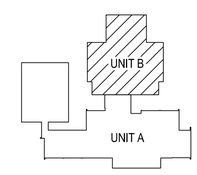
UNIT 'B' MECHANICAL PLAN

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



MEZZANINE MECHANICAL PLAN

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



KEY PLAN

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LINCOLN
BAY CITY, MICHIGAN

UNIT 'B' MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
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	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
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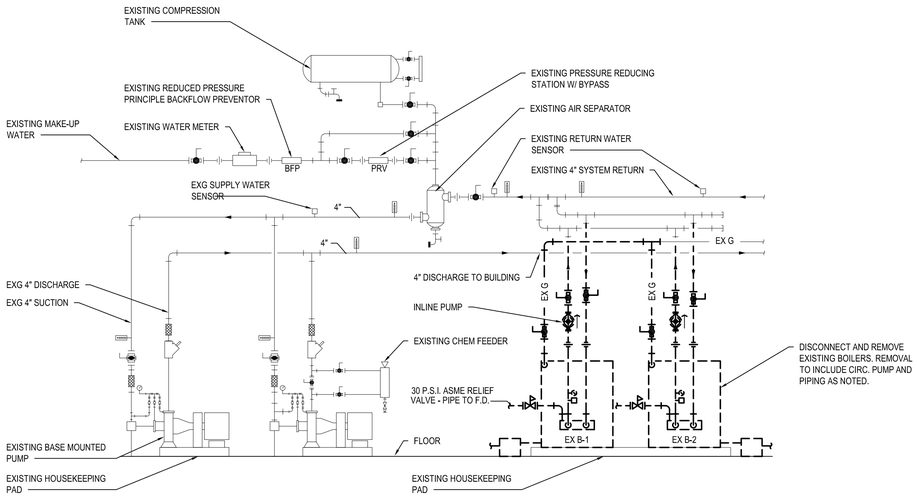
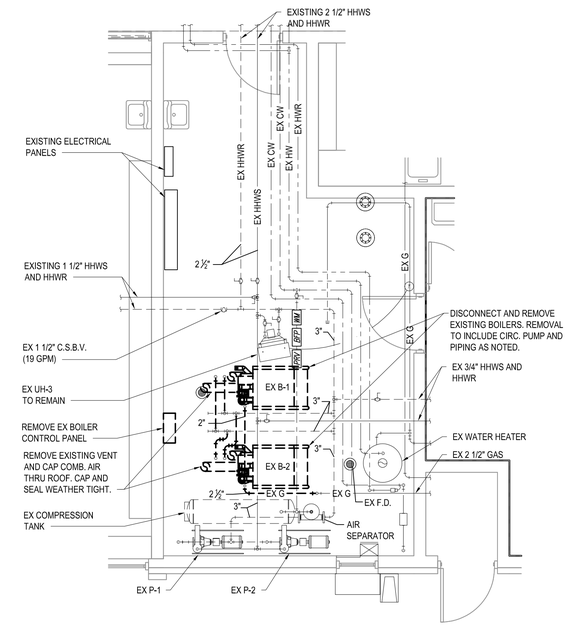


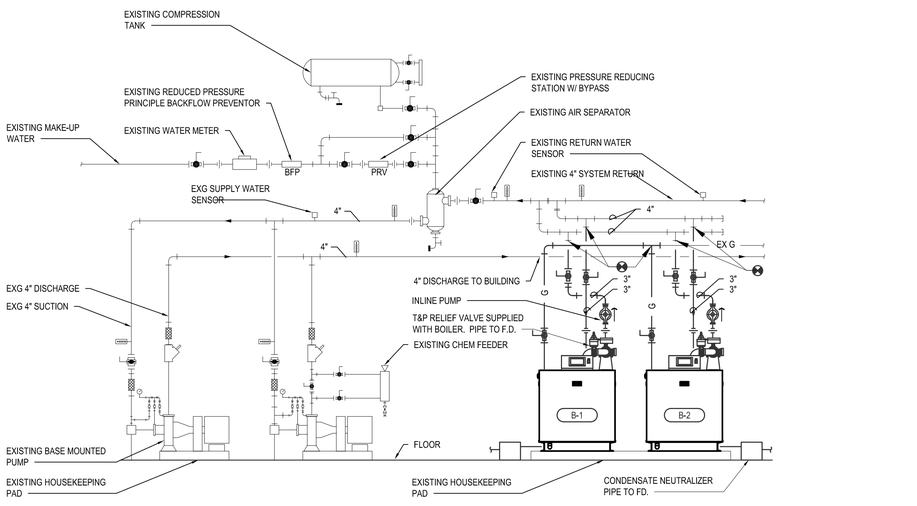
1 L-M3.2 BOILER PIPING SCHEMATIC - DEMOLITION

NO SCALE



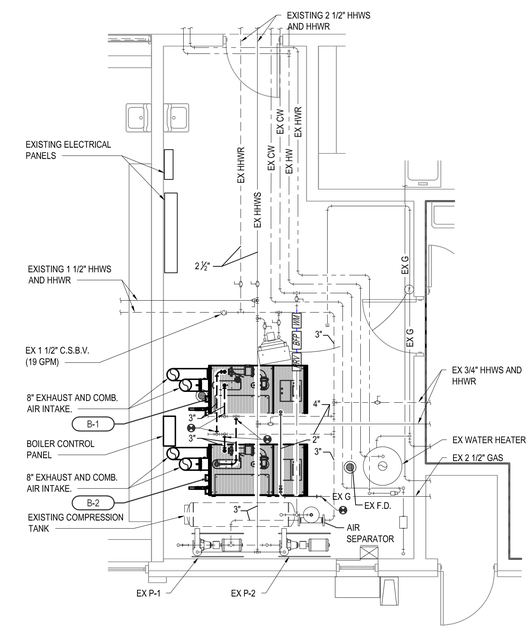
N ENLARGED BOILER ROOM MECHANICAL PLAN - DEMO

SCALE: 1/4" = 1'-0"



2 L-M3.2 BOILER PIPING SCHEMATIC - REVISIONS

NO SCALE



N ENLARGED BOILER ROOM MECHANICAL PLAN

SCALE: 1/4" = 1'-0"

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ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
LINCOLN
BAY CITY, MICHIGAN

BOILER ROOM MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	02/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

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ROOFTOP AIR HANDLING UNIT SCHEDULE (ALT #L1)

SEE

MARK	AREA	SUPPLY FAN			MIN. O.A. CFM	HEATING				COOLING							ELECTRICAL				MODEL
		CFM	E.S.P.	HP		MBH IN	MBH OUT	EAT	LAT	TONS	MBH	AMB. T	EAT D.B.	EAT W.B.	LAT D.B.	LAT W.B.	V/Ø	MCA	FLA	MOP	
RTU-1	MULTI - PURPOSE	5000	0.4	3.0	1500	250	200	62.5	99.3	12.5	148	95°	80°	67°	59°	58°	208/3	60	10.8	80.0	YSH150G3RH

BASED ON TRANE
OPTIONS:
1. NON-FUSED DISCONNECT.
2. BACNET CONTROLS.
3. HINGED ACCESS DOORS WITH LOCKABLE HANDLES.
4. ECONOMIZER.
5. SINGLE POINT POWER CONNECTION.

BOILER SCHEDULE

SEE 1 / L-M3.1

MARK	TYPE	MBH		VENT DIA "	AIR INLET DIA "	GAS TRAIN ASSEMBLY	V/Ø	AMPS	MODEL	REMARKS
		INPUT	OUTPUT							
B-1 & 2	CONDENSING	1500	1420	6"	8"	I.R.I.	115/1	19.3	AMP-1500	

BASED ON THERMAL SOLUTIONS WITH FACTORY MOUNTED AND WIRED CIRC PUMP AND NEUTRALIZATION KIT.

SPLIT-SYSTEM OUTDOOR UNIT SCHEDULE

SEE 1 / L-M3.1

MARK	AREA	MBH	MCA "	V/Ø	WEIGHT (LBS.)	MODEL	DISCONNECT BY	REMARKS
SS-1	I.T. ROOM	12	11	208/1	103	PUY-A12NKA7	EC	LOW AMBIENT OPERATION

BASED ON MITSUBISHI W/ LOW AMBIENT OPERATION, WALL MOUNTED CONTROLS

SPLIT-SYSTEM INDOOR UNIT SCHEDULE

SEE 1 / L-M3.1

MARK	TYPE	AREA	CFM	MBH		INDOOR UNIT		OUTDOOR UNIT			UNIT SIZE		MODEL
				COOLING	HEATING	V/Ø	AMPS	V/Ø	AMPS	MAX FUSE	INDOOR	OUTDOOR	
SS-1	WALL MOUNTED	I.T. ROOM	385	12	N/A	N/A	N/A	208/1	11	15	36" x 9" x 12"	32" x 12" x 25"	PKA-A12LA

BASED ON MITSUBISHI W/ LOW AMBIENT OPERATION, WALL MOUNTED CONTROLS

GRILLES, REGISTERS & DIFFUSERS SCHEDULE

SEE 1 / L-M3.1

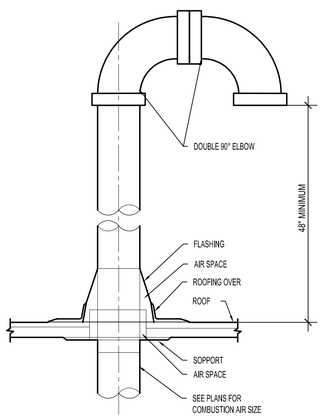
MARK	MANUFACTURER	MODEL	DESCRIPTION	NECK SIZE	FACE SIZE	FRAME	FINISH	MATERIAL	REMARKS
RR-1	PRICE INDUSTRIES	80 SERIES	EGG CRATE FACE	24"x24"	24"x24"	NF	WHITE	ALUMINUM	
RR-2	PRICE INDUSTRIES	80 SERIES	EGG CRATE FACE	48"x24"	48"x24"	NF	WHITE	ALUMINUM	
TG-1	PRICE INDUSTRIES	20 SERIES	AIRFOIL	30"x16"	32"x18"	NF	WHITE	ALUMINUM	

MECHANICAL SYMBOLS LIST

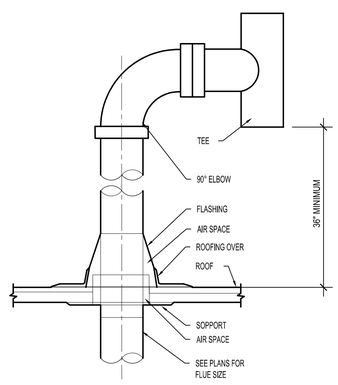
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISH FLOOR	RA	RETURN AIR
AGA	AMERICAN GAS ASSOCIATION	RAR	RETURN AIR REGISTER
AHU	AIR HANDLING UNIT	SA	SUPPLY AIR
ASME	AMERICAN SOCIETY OF MECH. ENGINEERS	SAR	SUPPLY AIR REGISTER
BTUH	BRITISH THERMAL UNITS PER HOUR	S.C.C.V.	SELF CONTAINED CONTROL VALVE
CA	COMBUSTION AIR	S.P.	STATIC PRESSURE
CD	CEILING DIFFUSER	TCC	TEMPERATURE CONTROL CONTRACTOR
CFM	CUBIC FEET PER MINUTE	UH	UNIT HEATER
COND	CONDENSATE	U.L.	UNDERWRITERS LABORATORIES
C.S.B.V.	CIRCUIT SETTER BALANCE VALVE	U.N.O.	UNLESS NOTED OTHERWISE
CUH	CABINET UNIT HEATER	UV	UNIT VENTILATOR
CWS	CHILLED WATER SUPPLY	WH	WATER HEATER
CWR	CHILLED WATER RETURN	WM	WATER METER
EAR	EXHAUST AIR REGISTER	WTD	WATER TEMPERATURE DROP
EAT	ENTERING AIR TEMPERATURE	WTR	WATER TEMPERATURE RISE
EC	ELECTRIC CONTRACTOR		CHECK VALVE
EF	EXHAUST FAN		BALANCE VALVE (CIRCUIT SETTER)
EWT	ENTERING WATER TEMPERATURE		CONTROL VALVE
EX	EXISTING		PRESSURE AND TEMPERATURE RELIEF VALVE
FD	FLOOR DRAIN		THREE-WAY VALVE
FFE	FINISHED FLOOR ELEVATION		HOSE END VALVE
FPF	FINS PER FOOT		BALL VALVE
FT.P.D.	FEET OF PRESSURE DROP		BUTTERFLY VALVE
FTR	FIN-TUBE RADIATION	PRV	PRESSURE REDUCING VALVE
G	GAS	BFP	BACKFLOW PREVENTOR
GC	GENERAL CONTRACTOR		UNION
GPM	GALLONS PER MINUTE		STRAINER
HHWR	HEATING HOT WATER RETURN		MANUAL AIR VENT
HHWS	HEATING HOT WATER SUPPLY	FS	FLOW SWITCH
HP	HORSE POWER		GAUGE
LAT	LEAVING AIR TEMPERATURE		THERMOMETER
LWT	LEAVING WATER TEMPERATURE		CONNECT TO EXISTING
MC	MECHANICAL CONTRACTOR	H	HUMIDISTAT
OA	OUTSIDE AIR	T	THERMOSTAT
			PUMP (INLINE)

MECHANICAL GENERAL NOTES

1. ALL WORK TO COMPLY WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND ORDINANCES
2. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING.
3. SEAL ALL DUCT JOINTS.
4. PROVIDE ACCESS PANELS TO ALL VALVES, DAMPERS, TRAPS, FILTERS, EQUIPMENT, ETC.
5. COORDINATE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND CEILING MOUNTED EQUIPMENT WITH THE REFLECTED CEILING PLAN.
6. DUCT SIZES NOTED REPRESENT NET FREE INTERIOR DIMENSIONS.
7. PROVIDE BALANCE DAMPERS IN EACH SUPPLY AND EXHAUST DUCT BRANCH.
8. ALL ROUND DUCTWORK TO BE SPIRAL TYPE UNLESS NOTED OTHERWISE.
9. HEATING PIPING TO BE MINIMUM 3/4" DIAMETER.
10. VERIFY MOUNTING HEIGHTS OF WALL CAPS AND LOUVERS WITH ARCHITECTURAL DRAWINGS.
11. ALL VALVES SHOWN ON FLOOR PLANS ARE IN ADDITION TO ALL VALVES SHOWN ON PIPING SCHEMATICS.
12. REFER TO PIPING SCHEMATIC DETAILS FOR UNIONS, VALVES, AIR VENTS, THERMOMETERS, ETC. REQUIRED AT SPECIFIC PIECES OF EQUIPMENT.
13. ALL ROOF CURBS FOR MECHANICAL EQUIPMENT TO BE MINIMUM 16" ABOVE FINISHED ROOF SURFACE.
14. EQUIPMENT, DUCTS, PIPING, ETC. TO BE SUPPORTED FROM PANEL POINTS OF STRUCTURAL MEMBERS. NO MECHANICAL ITEMS TO BE SUPPORTED FROM DECKING. CONCENTRATED MECHANICAL LOADS TO BE DISTRIBUTED OVER TWO OR MORE JOISTS. CONCENTRATED LOADING ON A SINGLE STRUCTURAL MEMBER IS TO BE AVOIDED.
15. SUPPLY AIR DIFFUSERS MAY BE CONNECTED WITH A MAXIMUM 5 FEET OF INSULATED FLEXIBLE DUCT WHEN DUCT IS CONCEALED. ALL RETURN AIR REGISTERS AND EXHAUST AIR REGISTERS TO BE DUCTED WITH SHEET METAL.
16. NEW THERMOSTATS TO BE LOCATED AT OLD THERMOSTATS' LOCATIONS WHERE POSSIBLE. IF NEW T'STATS ARE NOT IN OLD LOCATIONS, THEN OLD LOCATION IS TO BE REMOVED AND WALL PATCHED TO MATCH EXISTING.
17. MECHANICAL CONTRACTOR TO COORDINATE WITH GENERAL ON REMOVAL, REINSTALLATION, AND PATCHING OF EXISTING CEILINGS WHERE ACCESS IS NEEDED FOR INSTALLATION OF NEW EQUIPMENT, PIPING, ETC.
18. MECHANICAL CONTRACTOR TO COORDINATE WITH OWNER FOR ALL NEW ROOFING WORK TO MAINTAIN EXISTING ROOFING WARRANTY.



1 / L-M8.0 COMBUSTION AIR INTAKE TERMINATION
NO SCALE



2 / L-M8.0 FLUE VENT TERMINATION
NO SCALE

NOTE: EQUIPMENT LISTED IN SCHEDULES IS NOT TO BE USED FOR THE SOLE PURPOSE OF OBTAINING QUANTITIES. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES UTILIZING THESE SCHEDULES AND CAREFUL REVIEW OF LAYOUT DRAWINGS.

WILLIAM A. KIBBE & ASSOCIATES, INC.
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BANGOR SCHOOLS
MECHANICAL UPGRADES
LINCOLN
BAY CITY, MICHIGAN

SCHEDULES AND NOTES

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: R. MEYER
PROJ #: 21-1719-0435

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L-M8.0

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CIRCUIT CONDUIT & CONDUCTOR SCHEDULE

FUSE/CIRCUIT BREAKER - AMP/POLE	PHASE/NEUTRAL (NOTE 3)	GROUND	CONDUIT
15A/1P & 20A/1P	2 - 12 AWG	1 - 12 AWG	3/4"
15A/2P & 20A/2P	2 OR 3 - 12 AWG	1 - 12 AWG	3/4"
15A/3P & 20A/3P	3 OR 4 - 12 AWG	1 - 12 AWG	3/4"
25A/1P & 30A/1P	2 - 10 AWG	1 - 10 AWG	3/4"
25A/2P & 30A/2P	2 OR 3 - 10 AWG	1 - 10 AWG	3/4"
25A/3P & 30A/3P	3 OR 4 - 10 AWG	1 - 10 AWG	3/4"
35A/1P & 40A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
35A/2P & 40A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
35A/3P & 40A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
40A/1P & 45A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
40A/2P & 45A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
40A/3P & 45A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
60A/1P	2 - 6 AWG	1 - 10 AWG	3/4"
60A/2P	2 OR 3 - 6 AWG	1 - 10 AWG	3/4"
60A/3P	3 OR 4 - 6 AWG	1 - 10 AWG	1"
70A/1P	2 - 4 AWG	1 - 8 AWG	1"
70A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
70A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
80A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
80A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
90A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
90A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
100A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
100A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
110A/2P	2 OR 3 - 2 AWG	1 - 6 AWG	1 1/4"
110A/3P	3 OR 4 - 2 AWG	1 - 6 AWG	1 1/4"
125A/2P	2 OR 3 - 1 AWG	1 - 6 AWG	1 1/4"
125A/3P	3 OR 4 - 1 AWG	1 - 6 AWG	1 1/2"
150A/2P	2 OR 3 - 1/0 AWG	1 - 6 AWG	1 1/2"
150A/3P	3 OR 4 - 1/0 AWG	1 - 6 AWG	2"
175A/2P	2 OR 3 - 2/0 AWG	1 - 6 AWG	2"
175A/3P	3 OR 4 - 2/0 AWG	1 - 6 AWG	2"
200A/2P	2 OR 3 - 3/0 AWG	1 - 6 AWG	2"
200A/3P	3 OR 4 - 3/0 AWG	1 - 6 AWG	2"
225A/2P	2 OR 3 - 4/0 AWG	1 - 4 AWG	2"
225A/3P	3 OR 4 - 4/0 AWG	1 - 4 AWG	2 1/2"
250A/2P	2 OR 3 - 250 MCM	1 - 4 AWG	2 1/2"
250A/3P	3 OR 4 - 250 MCM	1 - 4 AWG	3"
300A/2P	2 OR 3 - 350 MCM	1 - 4 AWG	3"
300A/3P	3 OR 4 - 350 MCM	1 - 3 AWG	3"
350A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
350A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"
400A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
400A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"

NOTES:
1. PROVIDE CIRCUIT CONDUCTOR AND CONDUIT SIZES INDICATED ABOVE UNLESS OTHERWISE NOTED.
2. CONDUCTOR SIZING BASED UPON 75C THWN INSULATED COPPER CONDUCTORS.
3. FOR TWO AND THREE POLE CIRCUITS PROVIDE NEUTRAL CONDUCTOR IF REQUIRED BY EQUIPMENT SERVED.

SYMBOL LEGEND

SYMBOL DESCRIPTION

- DUPLEX RECEPTACLE, 18" A.F.F. TO TOP
- DUPLEX RECEPTACLE GFI, 18" A.F.F. TO TOP
- DUPLEX RECEPTACLE, CEILING MOUNTED
- DUPLEX RECEPTACLE GFI, CEILING MOUNTED
- DUPLEX RECEPTACLE USB, 18" A.F.F. TO TOP
- DUPLEX RECEPTACLE, 6" ABOVE COUNTER
- DUPLEX RECEPTACLE GFI, 6" ABOVE COUNTER
- DUPLEX RECEPTACLE, FLOOR MOUNTED
- DUPLEX RECEPTACLE GFI , FLOOR MOUNTED
- SPECIALTY OUTLET, SEE DRAWINGS W/ MTG HT
- QUAD RECEPTACLE, 18" A.F.F. TO TOP
- QUAD RECEPTACLE GFI, 18" A.F.F. TO TOP
- QUAD RECEPTACLE, CEILING MOUNTED
- QUAD RECEPTACLE GFI, CEILING MOUNTED
- MOTOR SWITCH
- OVERHEAD DOOR 3-BUTTON SWITCH, OPEN-CLOSE-STOP
- POWER POLE
- JUNCTION BOX
- FURNITURE FEED
- MOTOR
- NON-FUSED DISCONNECT
- COMBINATION MOTOR STARTER/ DISCONNECT
- FUSED DISCONNECT
- MANUAL MOTOR STARTER
- MOTOR STARTER
- SURFACE MOUNTED PANEL BOARD
- RECESSED PANEL BOARD
- SWITCH, SINGLE POLE, 48" A.F.F. TO TOP UNO
- SWITCH, 3-POLE, 48" A.F.F. TO TOP UNO
- SWITCH, 4-POLE, 48" A.F.F. TO TOP UNO
- SWITCH, WALL BOX DIMMER, 48" A.F.F. TO TOP UNO
- SWITCH, LOW VOLTAGE, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
- SWITCH, LOW VOLTAGE DIMMER, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
- SWITCH, FUSED: 125V, SINGLE POLE, DUAL ELEMENT PLUG FUSE
- SWITCH, KEYED, 48" A.F.F. TO TOP UNO
- SWITCH, PILOT LIGHT, 48" A.F.F. TO TOP UNO
- SWITCH, TIMER, 48" A.F.F. TO TOP
- SWITCH, MULTI-TECH OCCUPANCY SENSOR, WALL
- SWITCH, MULTI-TECH OCCUPANCY SENSOR, CEILING
- SWITCH, EXTERIOR PHOTOCELL
- POWER PACK FOR OCCUPANCY SENSORS
- CONTROLS: SPEAKER (SEE SCHEDULE)
- CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH DOOR REQUIREMENTS
- CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH SECURITY, AUTO AND MANUAL CONTROL
- SECURITY: PAN - TILT - ZOOM CAMERA
- SECURITY: PUSH BUTTON
- SECURITY: CARD READER
- SECURITY: DOOR CONTACT
- LUMINAIRE: WALL MOUNTED W/ TYPE
- LUMINAIRE: RECESSED DOWNLIGHT OR PENDANT W/ TYPE, REFER TO SCHEDULE
- LUMINAIRE: SURFACE OR RECESSED W/ TYPE, REFER TO SCHEDULE
- LUMINAIRE: ON EMERGENCY, LIFE SAFETY, OR LOCAL LIGHTING CIRCUIT W/ TYPE, REFER TO SCHEDULE
- EXIT SIGN: CEILING MOUNTED W/ TYPE, SEE SCHEDULE
- EXIT SIGN: WALL MOUNTED W/ TYPE, SEE SCHEDULE
- EM LIGHTS: WALL MOUNTED UNO, REFER TO SCHEDULE
- REMOTE HEADS: WALL MOUNTED, REFER TO SCHEDULE
- TV CONNECTION: 96" TO TOP, COAX CONNECTION, UNO
- VOICE/ DATA OUTLET: 18" TO TOP, UNO
- VOICE/ DATA OUTLET: CEILING MOUNTED, UNO
- VOICE/ DATA/ TV OUTLET: FLOOR MOUNTED, UNO
- TELEPHONE: 18" TO TOP, UNO
- DATA/ TELEPHONE: 18" TO TOP, UNO
- FIRE: MANUAL PULL STATION, WALL MOUNTED, 48" AFF TO TOP UNO
- FIRE: AUDIBLE AND VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
- FIRE: VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
- FIRE: AUDIBLE ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
- FIRE: AUDIBLE AND VISUAL ANNUNCIATION, CEILING MOUNTED
- FIRE: VISUAL ANNUNCIATION, CEILING MOUNTED
- FIRE: AUDIBLE ANNUNCIATION, CEILING MOUNTED
- FIRE: SMOKE DETECTOR, CEILING
- FIRE: HEAT DETECTOR, CEILING
- FIRE: SMOKE AND HEAT DETECTOR
- FIRE: DUCT SMOKE DETECTOR, CEILING, PROVIDED / INSTALLED BY EC, MOUNTED BY MC, UNO
- FIRE ALARM: REMOTE TEST STATION
- FIRE: TAMPER SWITCH
- FIRE: FLOW SWITCH
- FIRE: MAGNETIC DOOR HOLD
- FIRE: DOOR LOCK RELEASE
- FIRE: PRESSURE SWITCH
- HOME RUN W/ DIRECTION
- ELECTRICAL CIRCUIT
- UNDERGROUND ELECTRICAL W/ INCDICATOR
- SITE: LIGHT, POLE, AND BASE
- TRANSFORMER W/ LABEL
- DEVICE OR EQUIPMENT CONNECTION

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
AMP OR A	AMPERES
ATS	AUTOMATIC TRANSFER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
CKT	CIRCUIT
CB	CIRCUIT BREAKER
C	CONDUIT
CLG	CEILING
CP	CONTROL PANEL
CU	COPPER
D	DATA
DS	DISCONNECT SWITCH
DWG	DRAWING(S)
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EX	EXISTING
EXT	EXTERNAL
FIN. FLR.	FINISH FLOOR
FACP	FIRE ALARM CONTROL PANEL
FF	FURNITURE FEED
FT	FOOT, FEET
GRC	GALVANIZED RIGID CONDUIT
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERUPPTER
GFI	GROUND FAULT PROTECTION
HH	HAND HOLE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
IU	INDOOR UNIT
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KVA	KILO VOLT-AMPERES
KVAR	KILO VOLT-AMPERES REACTIVE
LC	LIGHTING CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTOR PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MH	MAN HOLE
MFR	MANUFACTURER'S
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N.L.	NIGHT LIGHT
NC	NORMALLY CLOSED CONTACT
NO	NORMALLY OPEN CONTACT
N.T.S.	NOT TO SCALE
OU	OUTDOOR UNIT
O.D.	OUTSIDE DIAMETER
OL	OVERLOADS-THERMAL
PNL	PANEL W/ INDICATION
Ø	PHASE
PH	PHASE
PC	PHOTO-SWITCH
P	POLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PB	PULL BOX
PTT	PUSH-TO-TEST
RMC	RIGID METAL COUNT
SPEC	SPECIFICATION
SW	SWITCH
SWD	SWITCHING DUTY
TEL	TELEPHONE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
VFC	VARIABLE FREQUENCY CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WATT
WP	WEATHER PROOF
W	WIRE
W/	WITH
XF/ XFMR	TRANSFORMER
XXAF	XX AMPERE FUSE
XXAS	XX AMPERE SWITCH
XP	X POLES

GENERAL NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS WITH ARCHITECTURAL AND MECHANICAL PLANS, SPECIFICATIONS AND EQUIPMENT DRAWINGS. PROVIDE ALL NECESSARY EQUIPMENT POWER AND CONTROL CONNECTIONS NOT PROVIDED BY OTHERS WHETHER INDICATED ON THE DRAWINGS OR NOT.
3. UNLESS OTHERWISE NOTED, WHERE ELECTRICAL DEMOLITION WORK IS SHOWN, REMOVE ALL CONDUCTOR AND EXPOSED CONDUITS FROM EQUIPMENT OR OUTLET LOCATION BACK TO THE POWER SOURCE(S) FOR THE CIRCUIT.
4. SEAL ALL WALL AND FLOOR PENETRATIONS TO MAINTAIN RATING.
5. BACK-TO-BACK OR THROUGH THE WALL BOXES SHALL NOT BE USED.
6. ALL LOW VOLTAGE CONDUCTORS SHALL BE STRANDED COPPER.
7. SPLICE CABLES OR CONDUCTORS IN OUTLET BOXES, DEVICE BOXES, PULL BOXES, JUNCTION BOXES. DO NOT SPLICE CABLES OR CONDUCTORS IN CONDUIT BODIES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER (GFI) TYPE MUST BE GFI RECEPTACLE, NO FEED THROUGH.
9. BRANCH CIRCUITS FROM CIRCUIT BREAKER TYPE DISTRIBUTION EQUIPMENT WHICH SUPPLY MOTOR LOADS THAT ARE LESS THAN 6.0 AMP SHALL BE PROTECTED BY A 15 AMP CIRCUIT BREAKER.
10. FINAL CONNECTIONS TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT . LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE USED AS A GROUNDING CONDUCTOR. PROVIDE A SEPARATE GREEN GROUNDING CONDUCTOR.
11. IN THE EVENT OF CONFLICTS BETWEEN THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS OR WITHIN THE DRAWINGS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL BE ASSUMED TO BE CORRECT. REFER UNCERTAINTIES IN REQUIREMENTS TO THE ENGINEER FOR CLARIFICATION.
12. ALL BELOW GRADE LOCATIONS WITHIN BUILDINGS ARE DAMP LOCATIONS UNLESS OTHERWISE NOTED.
13. 120V AC CONTROL WIRING ASSOCIATED WITH MOTOR CONTROL CIRCUITS MAY BE RUN IN THE SAME RACEWAY WITH MOTOR POWER WIRING FOR CONSTANT SPEED MOTORS LESS THAN 30HP. FOR MOTORS 30HP AND GREATER OR FOR MOTORS POWERED FROM VARIABLE FREQUENCY CONTROLLERS, SEPARATE RACEWAYS SHALL BE USED FOR POWER AND CONTROL CONDUCTORS.
14. 120/240V CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS AS REQUIRED UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
15. CONDUIT PENETRATIONS OF FLOORS, LOWER LEVEL EXTERIOR WALLS OR WETWELL WALLS SHALL BE SLEEVED AND SEALED WITH LINKSEAL. SEE DETAILS ON MECHANICAL DRAWINGS.
16. IF COMPLIANCE WITH TWO OR MORE DIFFERING STANDARDS, REQUIREMENTS, DRAWINGS OR SPECIFICATIONS, OR ANY COMBINATION THEREOF, IS SPECIFIED AND THESE ESTABLISH DIFFERENT OR CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT. THE MOST STRINGENT REQUIREMENT WILL BE THE BETTER QUALITY OR GREATER QUANTITY OF WORK, AND WILL TYPICALLY BE THE MORE EXPENSIVE OPTION. REFER UNCERTAINTIES AND REQUIREMENTS THAT ARE DIFFERENT, BUT APPARENTLY EQUAL, TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
17. THE QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE THE MINIMUM PROVIDED OR PERFORMED. THE ACTUAL INSTALLATION MAY COMPLY EXACTLY WITH THE MINIMUM QUANTITY OR QUALITY SPECIFIED, OR IT MAY EXCEED THE MINIMUM WITHIN REASONABLE LIMITS. TO COMPLY WITH THESE REQUIREMENTS, INDICATED NUMERIC VALUES ARE MINIMUM OR MAXIMUM, AS APPROPRIATE, FOR THE CONTEXT OF REQUIREMENTS. REFER UNCERTAINTIES TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
18. DESIGN DOCUMENTS MUST BE REPRODUCED IN THEIR ENTIRETY, INCLUDING ALL PLANS, SPECIFICATIONS, AND FRONT END DOCUMENTS.
19. ONLY COMPLETE DOCUMENT SETS ARE TO BE DISTRIBUTED TO SUBCONTRACTORS AND SUPPLIERS OF THE CONTRACTOR DURING BIDDING OR CONSTRUCTION.
20. FAILURE TO REVIEW AND COMPLY WITH A FULL SET OF CONTRACT DOCUMENTS WILL NOT BE ACCEPTED AS A VALID REASON FOR FAILURE TO MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
21. ALL ABOVE CEILING SYSTEMS AND COMPONENTS (INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) SHALL BE COORDINATED SUCH THAT THE SYSTEMS ARE PROPERLY INTEGRATED IN THE SPACE PROVIDED ABOVE CEILING AT THE CEILING HEIGHTS NOTED. IT IS THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE PATHWAYS WITHIN THE SPACE PROVIDED. CEILING HEIGHTS WILL NOT BE MODIFIED.
22. EQUIPMENT WHICH SHALL BE MOUNTED 6'-0" AWAY FROM HEAT PRODUCING EQUIPMENT. U.N.O.

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BANGOR SCHOOLS
MECHANICAL UPGRADES
LINCOLN
BAY CITY, MICHIGAN

GENERAL NOTES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

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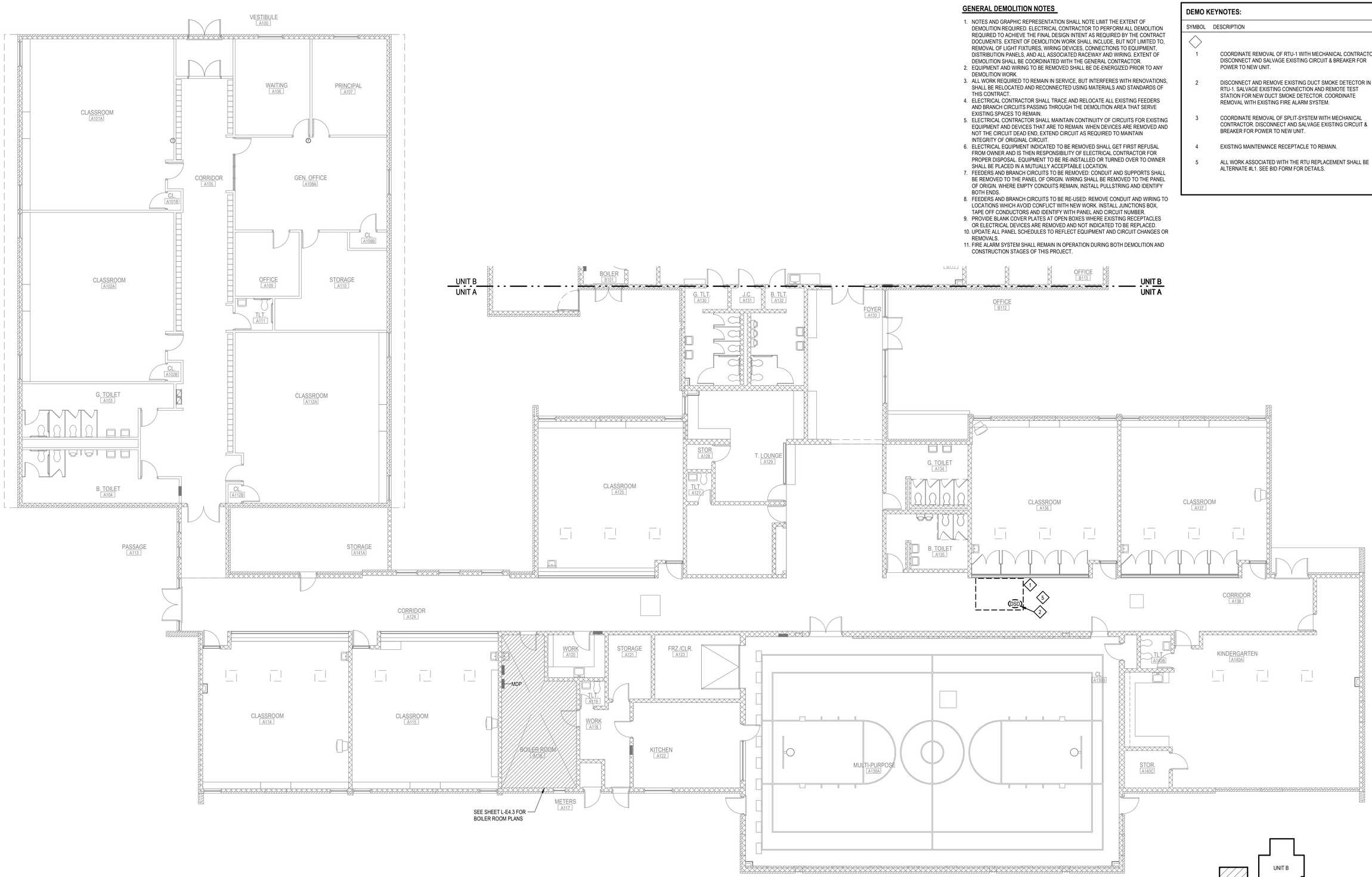
GENERAL DEMOLITION NOTES

1. NOTES AND GRAPHIC REPRESENTATION SHALL NOTE LIMIT THE EXTENT OF DEMOLITION REQUIRED. ELECTRICAL CONTRACTOR TO PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF DEMOLITION WORK SHALL INCLUDE, BUT NOT LIMITED TO, REMOVAL OF LIGHT FIXTURES, WIRING DEVICES, CONNECTIONS TO EQUIPMENT, DISTRIBUTION PANELS, AND ALL ASSOCIATED RACEWAY AND WIRING. EXTENT OF DEMOLITION SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
2. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE, BUT INTERFERES WITH RENOVATIONS, SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. ELECTRICAL CONTRACTOR SHALL TRACE AND RELOCATE ALL EXISTING FEEDERS AND BRANCH CIRCUITS PASSING THROUGH THE DEMOLITION AREA THAT SERVE EXISTING SPACES TO REMAIN.
5. ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS FOR EXISTING EQUIPMENT AND DEVICES THAT ARE TO REMAIN. WHEN DEVICES ARE REMOVED AND NOT THE CIRCUIT DEAD END, EXTEND CIRCUIT AS REQUIRED TO MAINTAIN INTEGRITY OF ORIGINAL CIRCUIT.
6. ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED SHALL GET FIRST REFUSAL FROM OWNER AND IS THEN RESPONSIBILITY OF ELECTRICAL CONTRACTOR FOR PROPER DISPOSAL. EQUIPMENT TO BE RE-INSTALLED OR TURNED OVER TO OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION.
7. FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN. WHERE EMPTY CONDUITS REMAIN, INSTALL PULLSTRING AND IDENTIFY BOTH ENDS.
8. FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICT WITH NEW WORK. INSTALL JUNCTIONS BOX, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED AND NOT INDICATED TO BE REPLACED.
10. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT CHANGES OR REMOVALS.
11. FIRE ALARM SYSTEM SHALL REMAIN IN OPERATION DURING BOTH DEMOLITION AND CONSTRUCTION STAGES OF THIS PROJECT.

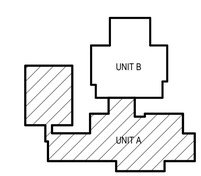
DEMO KEYNOTES:

SYMBOL	DESCRIPTION
1	COORDINATE REMOVAL OF RTU-1 WITH MECHANICAL CONTRACTOR. DISCONNECT AND SALVAGE EXISTING CIRCUIT & BREAKER FOR POWER TO NEW UNIT.
2	DISCONNECT AND REMOVE EXISTING DUCT SMOKE DETECTOR IN RTU-1. SALVAGE EXISTING CONNECTION AND REMOTE TEST STATION FOR NEW DUCT SMOKE DETECTOR. COORDINATE REMOVAL WITH EXISTING FIRE ALARM SYSTEM.
3	COORDINATE REMOVAL OF SPLIT-SYSTEM WITH MECHANICAL CONTRACTOR. DISCONNECT AND SALVAGE EXISTING CIRCUIT & BREAKER FOR POWER TO NEW UNIT.
4	EXISTING MAINTENANCE RECEPTACLE TO REMAIN.
5	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #L1. SEE BID FORM FOR DETAILS.



UNIT 'A' DEMOLITION PLAN

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



KEY PLAN

NOT TO SCALE

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UNIT 'A' DEMOLITION PLAN

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CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
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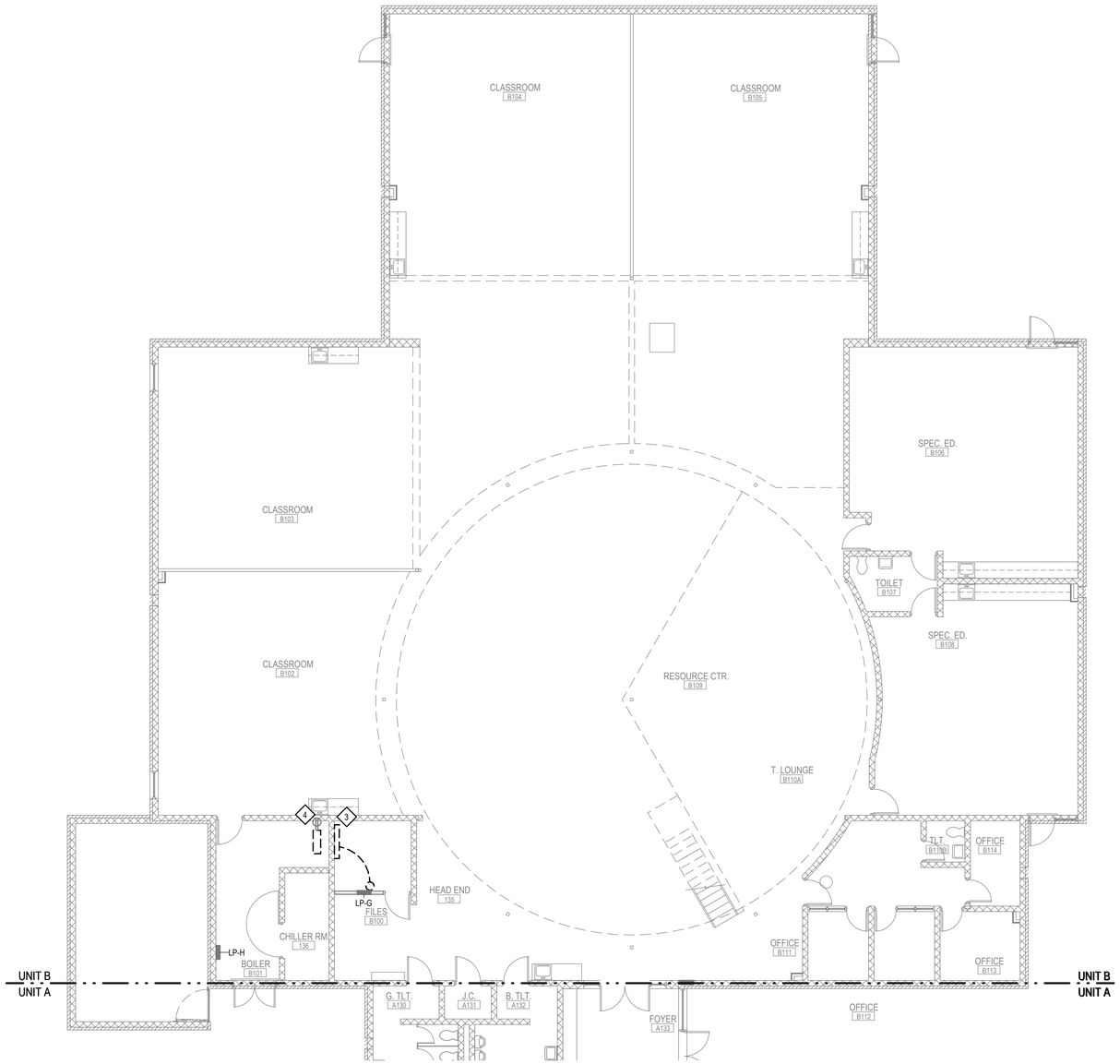
GENERAL DEMOLITION NOTES

1. NOTES AND GRAPHIC REPRESENTATION SHALL NOTE LIMIT THE EXTENT OF DEMOLITION REQUIRED. ELECTRICAL CONTRACTOR TO PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF DEMOLITION WORK SHALL INCLUDE, BUT NOT LIMITED TO, REMOVAL OF LIGHT FIXTURES, WIRING DEVICES, CONNECTIONS TO EQUIPMENT, DISTRIBUTION PANELS, AND ALL ASSOCIATED RACEWAY AND WIRING. EXTENT OF DEMOLITION SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
2. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE, BUT INTERFERES WITH RENOVATIONS, SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. ELECTRICAL CONTRACTOR SHALL TRACE AND RELOCATE ALL EXISTING FEEDERS AND BRANCH CIRCUITS PASSING THROUGH THE DEMOLITION AREA THAT SERVE EXISTING SPACES TO REMAIN.
5. ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS FOR EXISTING EQUIPMENT AND DEVICES THAT ARE TO REMAIN. WHEN DEVICES ARE REMOVED AND NOT THE CIRCUIT DEAD END, EXTEND CIRCUIT AS REQUIRED TO MAINTAIN INTEGRITY OF ORIGINAL CIRCUIT.
6. ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED SHALL GET FIRST REFUSAL FROM OWNER AND IS THEN RESPONSIBILITY OF ELECTRICAL CONTRACTOR FOR PROPER DISPOSAL. EQUIPMENT TO BE RE-INSTALLED OR TURNED OVER TO OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION.
7. FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN. WHERE EMPTY CONDUITS REMAIN, INSTALL PULLSTRING AND IDENTIFY BOTH ENDS.
8. FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICT WITH NEW WORK. INSTALL JUNCTIONS BOX, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED AND NOT INDICATED TO BE REPLACED.
10. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT CHANGES OR REMOVALS.
11. FIRE ALARM SYSTEM SHALL REMAIN IN OPERATION DURING BOTH DEMOLITION AND CONSTRUCTION STAGES OF THIS PROJECT.

DEMO KEYNOTES:

SYMBOL	DESCRIPTION
1	COORDINATE REMOVAL OF RTU-1 WITH MECHANICAL CONTRACTOR. DISCONNECT AND SALVAGE EXISTING CIRCUIT & BREAKER FOR POWER TO NEW UNIT.
2	DISCONNECT AND REMOVE EXISTING DUCT SMOKE DETECTOR IN RTU-1. SALVAGE EXISTING CONNECTION AND REMOTE TEST STATION FOR NEW DUCT SMOKE DETECTOR. COORDINATE REMOVAL WITH EXISTING FIRE ALARM SYSTEM.
3	COORDINATE REMOVAL OF SPLIT-SYSTEM WITH MECHANICAL CONTRACTOR. DISCONNECT AND SALVAGE EXISTING CIRCUIT & BREAKER FOR POWER TO NEW UNIT.
4	EXISTING MAINTENANCE RECEPTACLE TO REMAIN.
5	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #L1. SEE BID FORM FOR DETAILS.



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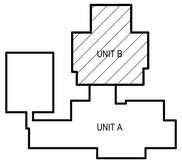
UNIT 'B' DEMOLITION PLAN

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

N

MEZZANINE DEMOLITION PLAN

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



KEY PLAN

NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
LINCOLN
BAY CITY, MICHIGAN

UNIT 'B' DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

SHEET
L-E1.1

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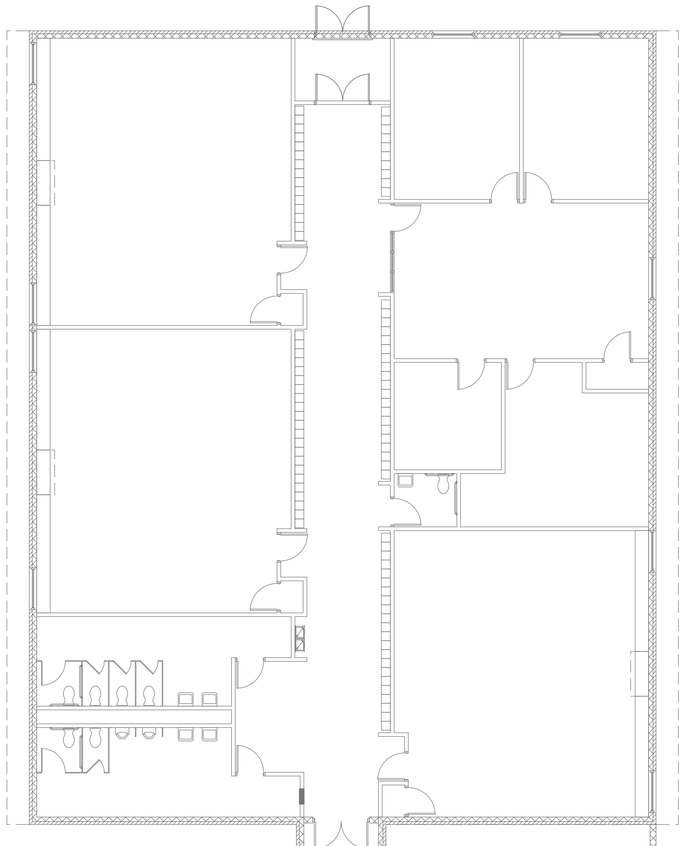
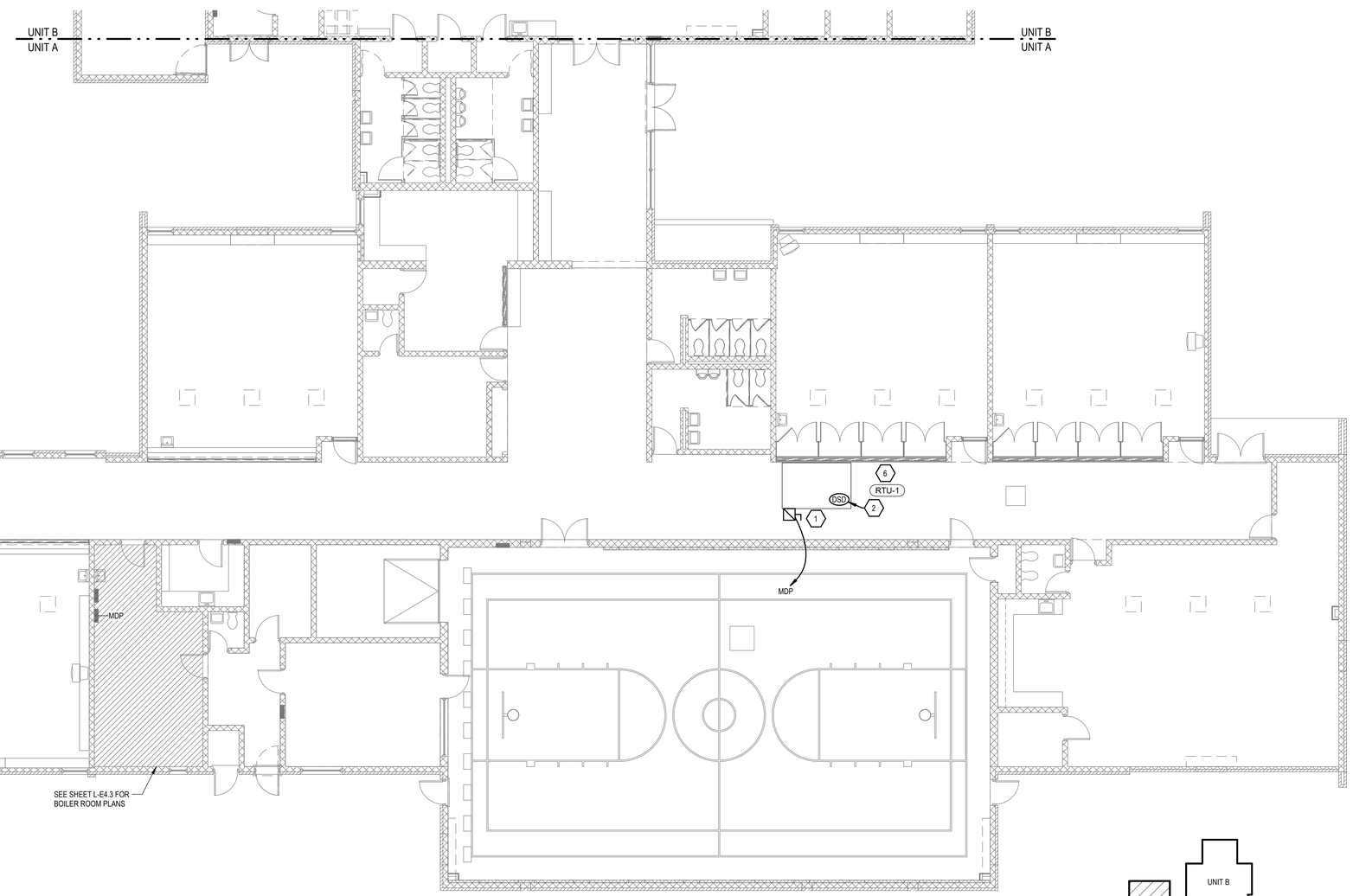


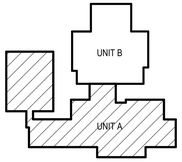


UNIT 'A' POWER PLAN

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

CONTRUCTION KEYNOTES:

SYMBOL	DESCRIPTION
1	PROVIDE 100A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 80A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU-1. UTILIZE EXISTING CIRCUIT FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. UTILIZE EXISTING REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORINATE INSTALLATION WITH OTHER TRADES.
3	INDOOR UNIT POWERED FROM OUTDOOR UNIT.
4	PROVIDE NEMA 3R/12 LOCAL DISCONNECT FOR NEW OUTDOOR UNIT. UTILIZE EXISTING CIRCUIT FOR POWER CONNECTION. COORDINATE INSTALLATION WITH OTHER TRADES.
5	SALVAGE AND RE-INSTALL EXISTING MAINTENANCE RECEPTACLE AT NEW SPLIT SYSTEM UNIT.
6	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #L1. SEE BID FORM FOR DETAILS.



KEY PLAN

NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
LINCOLN
BAY CITY, MICHIGAN

UNIT 'A' POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

SHEET
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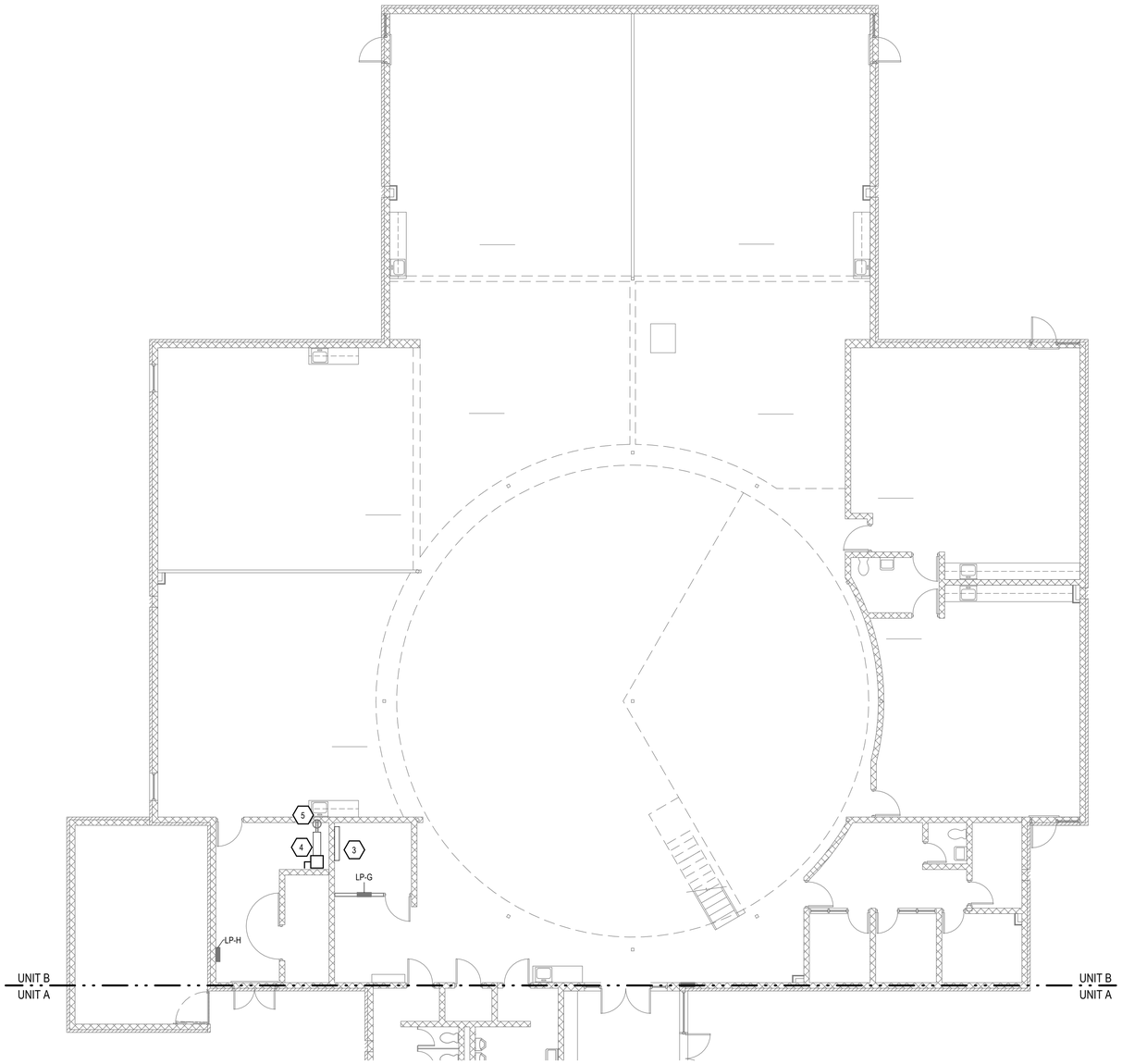
CONTRUCTION KEYNOTES:

SYMBOL	DESCRIPTION
1	PROVIDE 100A NEMA 3R/12 FUSIBLE DISCONNECT SWITCH WITH 80A FUSES FOR LOCAL DISCONNECTING MEANS TO NEW RTU-1. UTILIZE EXISTING CIRCUIT FOR NEW UNIT. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
2	DUCT SMOKE DETECTOR FURNISHED WITH UNIT AND INSTALLED IN DUCT BY MECHANICAL CONTRACTOR. ELECTRICAL CONTRACTOR TO WIRE DETECTOR TO SHUT DOWN ASSOCIATED UNIT UPON ACTIVATION. UTILIZE EXISTING REMOTE TEST SWITCH AND FA CIRCUIT FOR NEW DUCT SMOKE DETECTOR. COORINATE INSTALLATION WITH OTHER TRADES.
3	INDOOR UNIT POWERED FROM OUTDOOR UNIT.
4	PROVIDE NEMA 3R/12 LOCAL DISCONNECT FOR NEW OUTDOOR UNIT. UTILIZE EXISTING CIRCUIT FOR POWER CONNECTION. COORDINATE INSTALLATION WITH OTHER TRADES.
5	SALVAGE AND RE-INSTALL EXISTING MAINTENANCE RECEPTACLE AT NEW SPLIT SYSTEM UNIT.
6	ALL WORK ASSOCIATED WITH THE RTU REPLACEMENT SHALL BE ALTERNATE #L1. SEE BID FORM FOR DETAILS.



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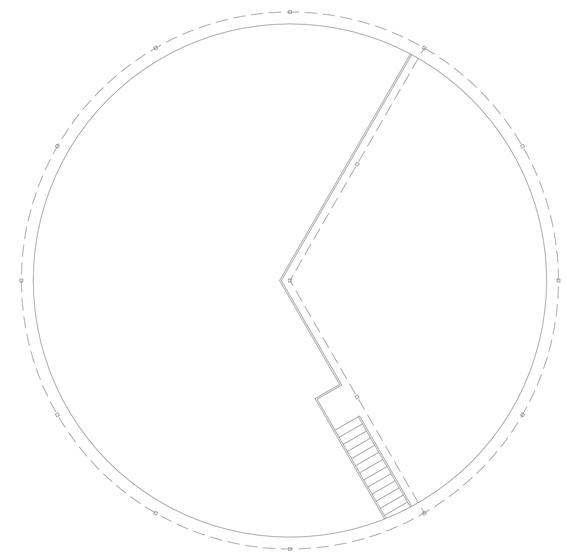
UNIT 'B' POWER PLAN

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



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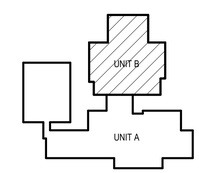
MEZZANINE POWER PLAN

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



KEY PLAN

NOT TO SCALE

WILLIAM A. KRIBBS & ASSOCIATES, INC.
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BANGOR SCHOOLS MECHANICAL UPGRADES

LINCOLN
BAY CITY, MICHIGAN

UNIT 'B' POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

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BRANCH PANEL: LP-E

LOCATION: BOILER ROOM
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 100 A

NOTES:
EXISTING PANEL IS SQUARE-D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	COMP, MOTOR & TIME CLOCK	15 A	1	1080	0					1	20 A	Spare	2
3	Spare	20 A	1			0	0			1	20 A	Spare	4
5	Spare	20 A	1					0	0	1	20 A	Spare	6
7	Spare	20 A	1	0	0					1	20 A	Spare	8
9	Spare	20 A	1			0	0			1	20 A	Spare	10
11	HORNS STOP	20 A	1					1080	1340	1	20 A	(2) UV-1 CLRMS 114,115	12
13	Spare	20 A	1	0	540					1	20 A	REC - CLRM 115	14
15	Spare	20 A	1			0	540			1	20 A	REC - CLRM 114	16
17	Spare	20 A	1					0	360	1	20 A	REC - BOILER A116	18
19	Spare	20 A	1	0	180					1	20 A	BOILER CONTROL PANEL	20
21	Spare	20 A	1			0	--			1	--	Space	22
23	TIMECLOCK / PARKING LOT LIGHTS	20 A	2					0	--	1	--	Space	24
25	--	--	--	0	0					1	20 A	Spare	26
27	Space	--	1			--	0			1	20 A	PHONES	28
29	Space	--	1					--	0	1	20 A	F.A. - NAC PANEL	30
31	Space	--	1	--	115					1	20 A	UH - 3 BOILER RM A116	32
33	Space	--	1			--	2316			**1**	**30 A**	**B-1 BOILER RM A116**	**34**
35	Space	--	1					--	2316	**1**	**30 A**	**B-2 BOILER RM A116**	**36**
37	P-2 BOILER RM A116 2HP	20 A	3	900	900					3	20 A	P-1 BOILER RM A116	38
39	--	--	--			900	900			--	--	--	40
41	--	--	--					900	900	--	--	--	42
		Total Load:		3715.0 VA		4656.0 VA		6896.0 VA					
		Total Amps:		31 A		40 A		59 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Motor	0.0 VA	0.00%	0.0 VA		
Power	4632.0 VA	100.00%	4632.0 VA	**TOTAL CONN LOAD:**	15267.0 VA
				TOTAL EST DEMAND:	15267.0 VA
				TOTAL CONN CURRENT:	42 A
				TOTAL EST DEMAND CURRENT:	42 A

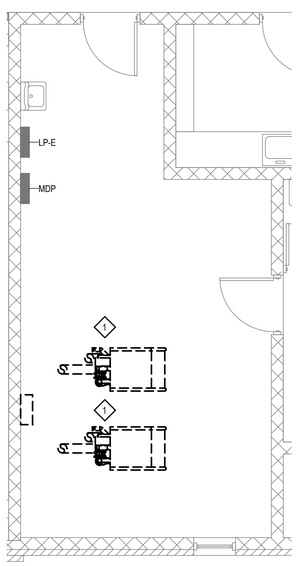
NOTES:

DEMO KEYNOTES:

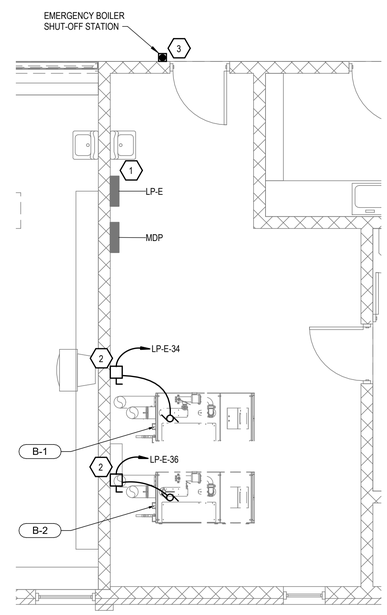
SYMBOL	DESCRIPTION
1	DISCONNECT POWER FROM EXISTING BOILERS. REMOVE ALL CONDUITS AND CONDUCTORS BACK TO SOURCE. COORDINATE DEMOLITION WORK WITH MECHANICAL CONTRACTOR.

CONSTRUCTION KEYNOTES:

SYMBOL	DESCRIPTION
1	PROVIDE 30A/1P BREAKERS FOR POWER TO NEW BOILERS B-1 & B-2. EXISTING PANEL LP-B IS SQUARE-D NQOD PANELBOARD. UTILIZE SPACES IN PANEL FROM EXISTING BOILERS BEING REMOVED.
2	PROVIDE 30A LOCAL DISCONNECT FOR NEW BOILERS B-1 & B-2. PROVIDE #10 AWG CONDUCTORS & #10G FOR CIRCUITING. FIELD VERIFY LOCATION AND COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	PROVIDE 30A/1P BREAKERS FOR POWER TO NEW BOILERS B-1 & B-2. EXISTING PANEL LP-B IS SQUARE-D NQOD PANELBOARD. UTILIZE SPACES IN PANEL FROM EXISTING BOILERS BEING REMOVED.



N
BOILER ROOM DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



N
BOILER ROOM POWER PLAN
SCALE: 1/4" = 1'-0"

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BANGOR SCHOOLS
MECHANICAL UPGRADES
LINCOLN
BAY CITY, MICHIGAN

BOILER ROOM POWER & DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

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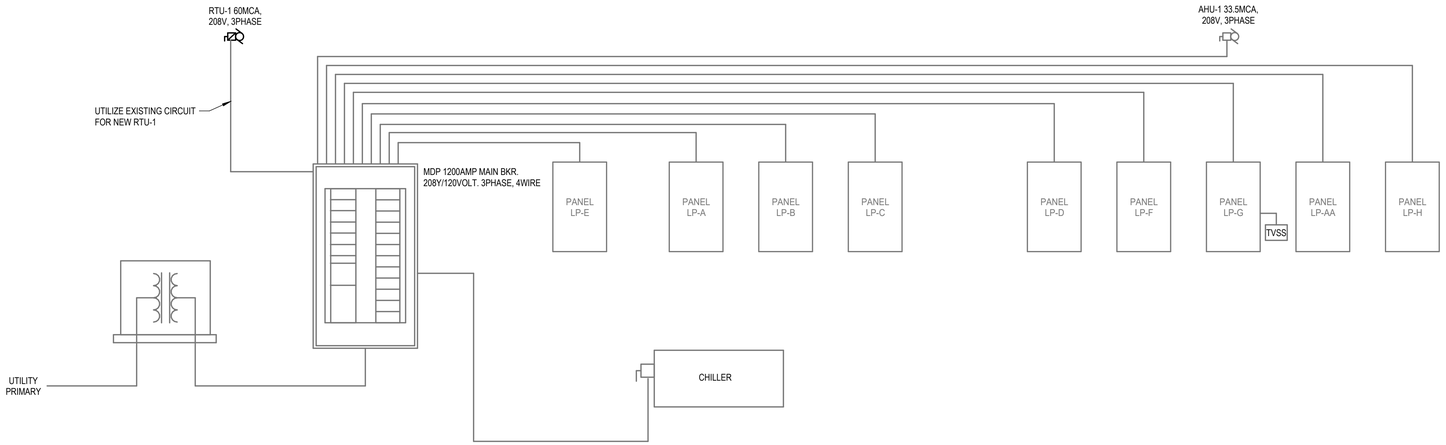

1
L-E6.0
ONE-LINE DIAGRAM

WILLIAM A. KRIBBS & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
LINCOLN
BAY CITY, MICHIGAN

ONE-LINE DIAGRAM

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY:
E. MARTER
DES'D BY:
B. KUSHION
DRAWN BY:
A. FISCHHABER
PROJ #: 21-1719-0435

SHEET
L-E6.0

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BANGOR TOWNSHIP SCHOOLS

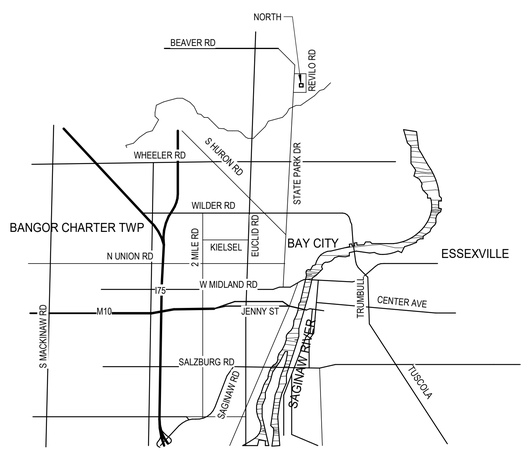
NORTH
MECHANICAL UPGRADES

504 REVILO ROAD
BAY CITY, MICHIGAN

SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
N-M1.0	OVERHEAD MECHANICAL DEMOLITION PLAN	X
N-M3.0	OVERHEAD MECHANICAL PLAN	X
N-M8.0	SCHEDULES & DETAILS	X
ELECTRICAL		
N-E0.0	GENERAL NOTES	X
N-E1.0	DEMOLITION DRAWINGS	X
N-E4.0	OVERALL POWER PLAN	X
N-E6.0	ONE-LINE DIAGRAM	X

LOCATION MAP



CONTACT INFORMATION

OWNER / CLIENT:
BANGOR TOWNSHIP SCHOOLS
3359 E. MIDLAND RD
BAY CITY, MI 48706
(989) 684-8121

KURTIS PAKE
FINANCE DIRECTOR
PHONE: (989) 684-8121
EMAIL: pakek@bangorschools.org

ARCHITECT / ENGINEER:
TYLER MIETZ, P.E.
PROJECT ENGINEER

PHONE: (989) 863-4034
EMAIL: tyler@trm-engineering.com
WEB: www.kibbe.com

CODE AUTHORITY:
MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF CONSTRUCTION CODES/PLAN REVIEW DIVISION
PO BOX 30255
LANSING, MI 48909
(517) 241-9328

MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF FIRE SERVICES/PLAN REVIEW DIVISION
PO BOX 30700
LANSING, MI 48909
(517) 241-8847

Know what's **below.**
Call before you dig.

PROJECT INFORMATION

BUILDING CODE COMPLIANCE
- 2015 MICHIGAN BUILDING CODE (MBC)
- 2018 MICHIGAN PLUMBING CODE (MPC)
- 2015 MICHIGAN MECHANICAL CODE (MMC)
- 2017 NATIONAL ELECTRICAL CODE (NEC)
- 2018 INTERNATIONAL FIRE CODE (IFC)
- 2012 NFPA 101 LIFE SAFETY CODE (LSC)

USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP E - EDUCATIONAL GROUP

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- ALLOWED - 2
- ACTUAL - 1

BUILDING AREA [TBL 506.2]
- ALLOWABLE - 14,400 SFT/ FLR
- ACTUAL - 12,165 SFT

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB, II(000)

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- NO SPRINKLER SYSTEM

OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- NO CHANGE

CORRIDORS [SEC 1020, TBL 1020.1]
- 1HR RATING

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ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR TOWNSHIP SCHOOLS
NORTH
MECHANICAL UPGRADES
BAY CITY, MICHIGAN

COVER SHEET

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: T. MIETZ
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

SHEET
CS

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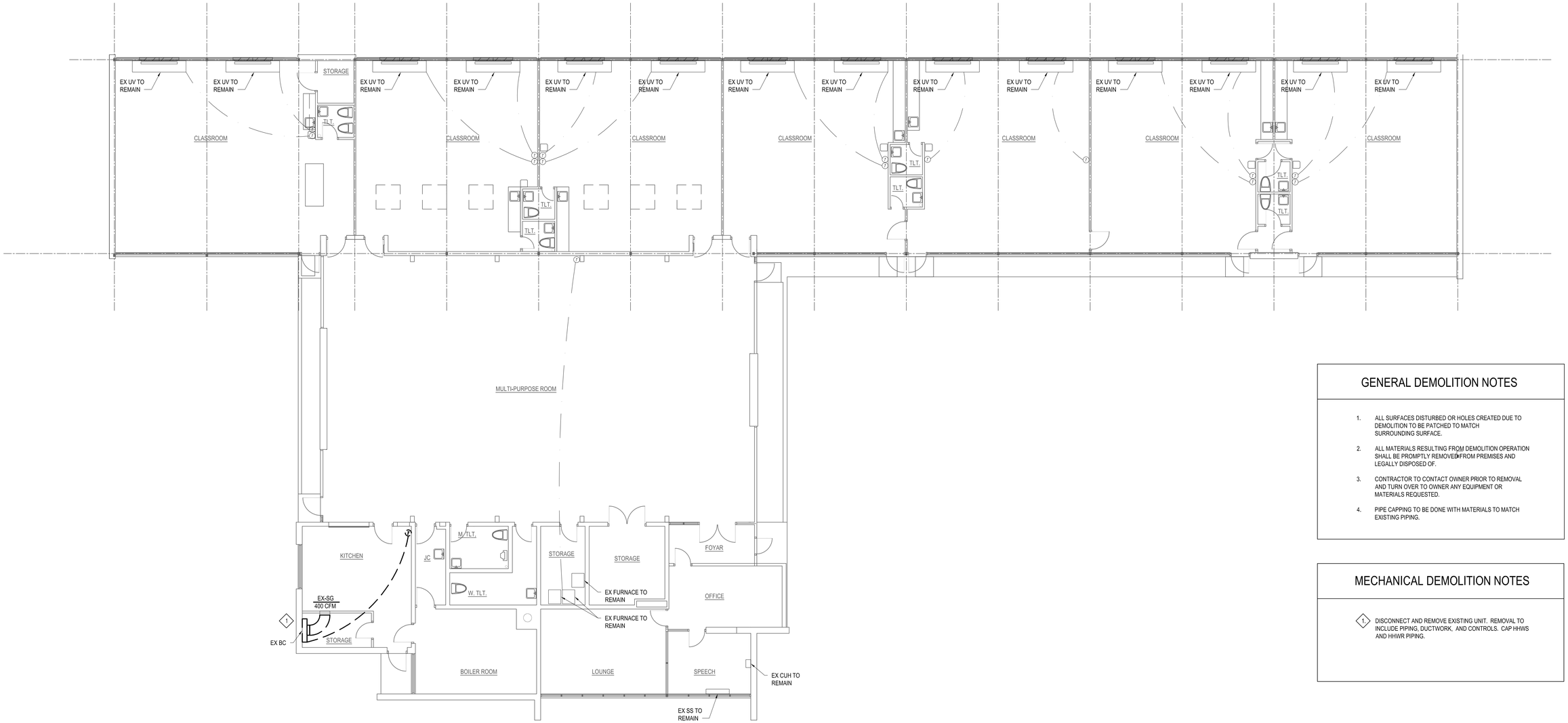

N

OVERHEAD MECHANICAL DEMOLITION PLAN

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

GENERAL DEMOLITION NOTES

1. ALL SURFACES DISTURBED OR HOLES CREATED DUE TO DEMOLITION TO BE PATCHED TO MATCH SURROUNDING SURFACE.
2. ALL MATERIALS RESULTING FROM DEMOLITION OPERATION SHALL BE PROMPTLY REMOVED FROM PREMISES AND LEGALLY DISPOSED OF.
3. CONTRACTOR TO CONTACT OWNER PRIOR TO REMOVAL AND TURN OVER TO OWNER ANY EQUIPMENT OR MATERIALS REQUESTED.
4. PIPE CAPPING TO BE DONE WITH MATERIALS TO MATCH EXISTING PIPING.

MECHANICAL DEMOLITION NOTES

1. DISCONNECT AND REMOVE EXISTING UNIT. REMOVAL TO INCLUDE PIPING, DUCTWORK, AND CONTROLS. CAP HHWS AND HHWR PIPING.

WILLIAM A. KERBER & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
NORTH
BAY CITY, MICHIGAN

OVERHEAD MECHANICAL DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

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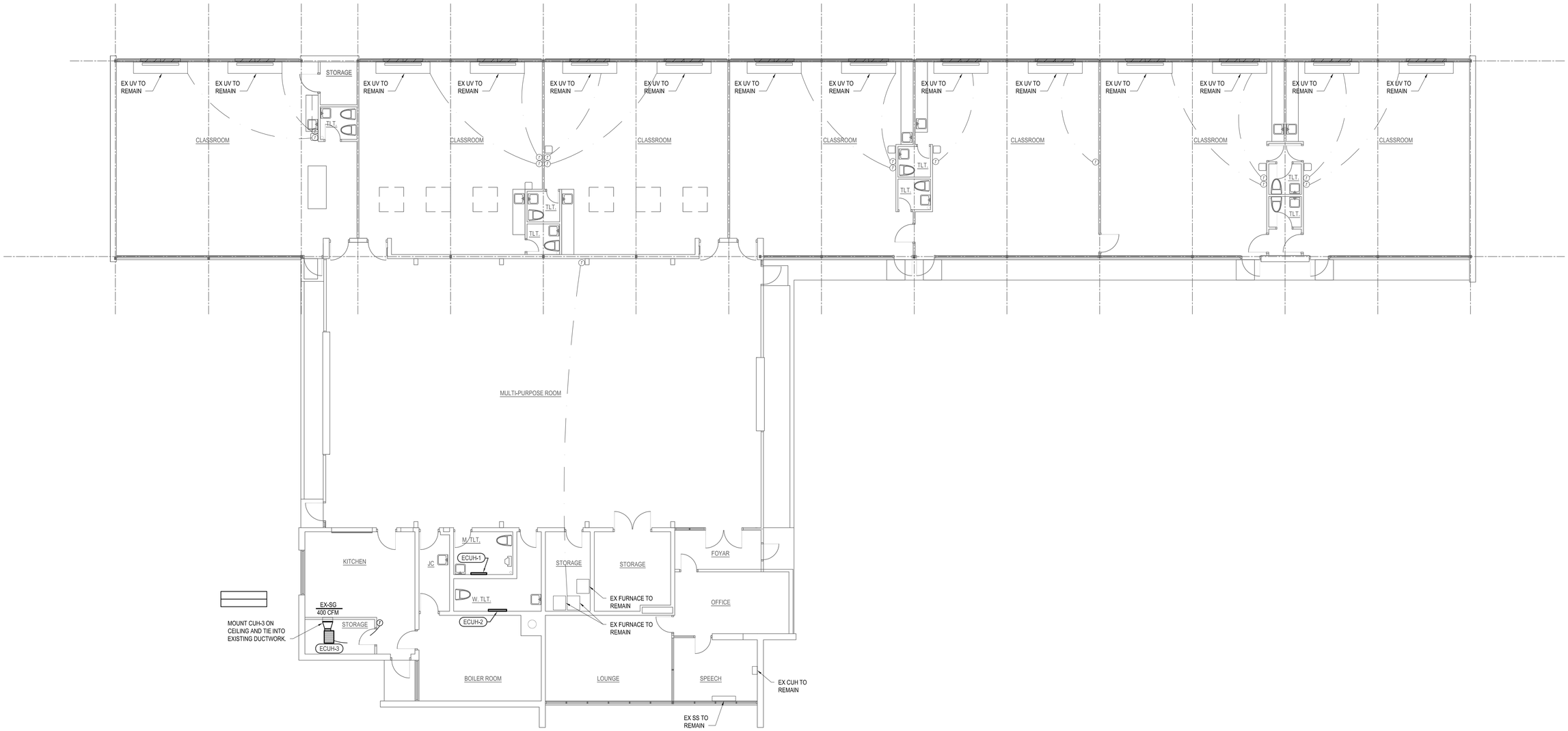

OVERHEAD MECHANICAL PLAN

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

WILLIAM A. KERBER & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
NORTH
BAY CITY, MICHIGAN

OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

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ELECTRIC HEATER SCHEDULE

60° E.A.T.

MARK	TYPE	AREA	CFM	MBH	H.P.	V/Ø	MANUFACTURER	MODEL	REMARKS
ECUH-1	WALL MOUNT	MENS RR	-	1.7	-	208/1	QMARK	QMKC25026W	2.5 LF
ECUH-2	WALL MOUNT	WOMENS RR	-	2.5	-	208/1	QMARK	QMKC2503W	3.0 LF
ECUH-3	CEILING MOUNT	KITCHEN	400	10.2		208/1	QMARK	PRH138124	

MECHANICAL SYMBOLS LIST

SYMBOL	DESCRIPTION
AFF	ABOVE FINISH FLOOR
AGA	AMERICAN GAS ASSOCIATION
AHU	AIR HANDLING UNIT
ASME	AMERICAN SOCIETY OF MECH. ENGINEERS
BTUH	BRITISH THERMAL UNITS PER HOUR
CA	COMBUSTION AIR
CD	CEILING DIFFUSER
CFM	CUBIC FEET PER MINUTE
COND	CONDENSATE
C.S.B.V.	CIRCUIT SETTER BALANCE VALVE
CUH	CABINET UNIT HEATER
CWS	CHILLED WATER SUPPLY
CWR	CHILLED WATER RETURN
EAR	EXHAUST AIR REGISTER
EAT	ENTERING AIR TEMPERATURE
EC	ELECTRIC CONTRACTOR
EF	EXHAUST FAN
EWT	ENTERING WATER TEMPERATURE
EX	EXISTING
FD	FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FPF	FINS PER FOOT
FT.P.D.	FEET OF PRESSURE DROP
FTR	FIN-TUBE RADIATION
G	GAS
GC	GENERAL CONTRACTOR
GPM	GALLONS PER MINUTE
HHWR	HEATING HOT WATER RETURN
HHWS	HEATING HOT WATER SUPPLY
HP	HORSE POWER
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
MC	MECHANICAL CONTRACTOR
OA	OUTSIDE AIR

SYMBOL	DESCRIPTION
RA	RETURN AIR
RAR	RETURN AIR REGISTER
SA	SUPPLY AIR
SAR	SUPPLY AIR REGISTER
S.C.C.V.	SELF CONTAINED CONTROL VALVE
S.P.	STATIC PRESSURE
TCC	TEMPERATURE CONTROL CONTRACTOR
UH	UNIT HEATER
U.L.	UNDERWRITERS LABORATORIES
U.N.O.	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR
WH	WATER HEATER
WM	WATER METER
WTD	WATER TEMPERATURE DROP
WTR	WATER TEMPERATURE RISE
	CHECK VALVE
	BALANCE VALVE (CIRCUIT SETTER)
	CONTROL VALVE
	PRESSURE AND TEMPERATURE RELIEF VALVE
	THREE-WAY VALVE
	HOSE END VALVE
	BALL VALVE
	BUTTERFLY VALVE
PRV	PRESSURE REDUCING VALVE
BFP	BACKFLOW PREVENTOR
	UNION
	STRAINER
	MANUAL AIR VENT
FS	FLOW SWITCH
	GAUGE
	THERMOMETER
	CONNECT TO EXISTING
H	HUMIDISTAT
T	THERMOSTAT
	PUMP (INLINE)

MECHANICAL GENERAL NOTES

1. ALL WORK TO COMPLY WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND ORDINANCES
2. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING.
3. SEAL ALL DUCT JOINTS.
4. PROVIDE ACCESS PANELS TO ALL VALVES, DAMPERS, TRAPS, FILTERS, EQUIPMENT, ETC.
5. COORDINATE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND CEILING MOUNTED EQUIPMENT WITH THE REFLECTED CEILING PLAN.
6. DUCT SIZES NOTED REPRESENT NET FREE INTERIOR DIMENSIONS.
7. PROVIDE BALANCE DAMPERS IN EACH SUPPLY AND EXHAUST DUCT BRANCH.
8. ALL ROUND DUCTWORK TO BE SPIRAL TYPE UNLESS NOTED OTHERWISE.
9. HEATING PIPING TO BE MINIMUM 3/4" DIAMETER.
10. VERIFY MOUNTING HEIGHTS OF WALL CAPS AND LOUVERS WITH ARCHITECTURAL DRAWINGS.
11. ALL VALVES SHOWN ON FLOOR PLANS ARE IN ADDITION TO ALL VALVES SHOWN ON PIPING SCHEMATICS.
12. REFER TO PIPING SCHEMATIC DETAILS FOR UNIONS, VALVES, AIR VENTS, THERMOMETERS, ETC. REQUIRED AT SPECIFIC PIECES OF EQUIPMENT.
13. ALL ROOF CURBS FOR MECHANICAL EQUIPMENT TO BE MINIMUM 16" ABOVE FINISHED ROOF SURFACE.
14. EQUIPMENT, DUCTS, PIPING, ETC. TO BE SUPPORTED FROM PANEL POINTS OF STRUCTURAL MEMBERS. NO MECHANICAL ITEMS TO BE SUPPORTED FROM DECKING. CONCENTRATED MECHANICAL LOADS TO BE DISTRIBUTED OVER TWO OR MORE JOISTS. CONCENTRATED LOADING ON A SINGLE STRUCTURAL MEMBER IS TO BE AVOIDED.
15. SUPPLY AIR DIFFUSERS MAY BE CONNECTED WITH A MAXIMUM 5 FEET OF INSULATED FLEXIBLE DUCT WHEN DUCT IS CONCEALED. ALL RETURN AIR REGISTERS AND EXHAUST AIR REGISTERS TO BE DUCTED WITH SHEET METAL.
16. NEW THERMOSTATS TO BE LOCATED AT OLD THERMOSTATS' LOCATIONS WHERE POSSIBLE. IF NEW T'STATS ARE NOT IN OLD LOCATIONS, THEN OLD LOCATION IS TO BE REMOVED AND WALL PATCHED TO MATCH EXISTING.
17. MECHANICAL CONTRACTOR TO COORDINATE WITH GENERAL ON REMOVAL, REINSTALLATION, AND PATCHING OF EXISTING CEILINGS WHERE ACCESS IS NEEDED FOR INSTALLATION OF NEW EQUIPMENT, PIPING, ETC.

NOTE: EQUIPMENT LISTED IN SCHEDULES IS NOT TO BE USED FOR THE SOLE PURPOSE OF OBTAINING QUANTITIES. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES UTILIZING THESE SCHEDULES AND CAREFUL REVIEW OF LAYOUT DRAWINGS.

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

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MECHANICAL UPGRADES
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SCHEDULES & DETAILS

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CIRCUIT CONDUIT & CONDUCTOR SCHEDULE

FUSE/CIRCUIT BREAKER - AMP/POLE	PHASE/NEUTRAL (NOTE 3)	GROUND	CONDUIT
15A/1P & 20A/1P	2 - 12 AWG	1 - 12 AWG	3/4"
15A/2P & 20A/2P	2 OR 3 - 12 AWG	1 - 12 AWG	3/4"
15A/3P & 20A/3P	3 OR 4 - 12 AWG	1 - 12 AWG	3/4"
25A/1P & 30A/1P	2 - 10 AWG	1 - 10 AWG	3/4"
25A/2P & 30A/2P	2 OR 3 - 10 AWG	1 - 10 AWG	3/4"
25A/3P & 30A/3P	3 OR 4 - 10 AWG	1 - 10 AWG	3/4"
35A/1P & 40A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
35A/2P & 40A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
35A/3P & 40A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
40A/1P & 45A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
40A/2P & 45A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
40A/3P & 45A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
60A/1P	2 - 6 AWG	1 - 10 AWG	3/4"
60A/2P	2 OR 3 - 6 AWG	1 - 10 AWG	3/4"
60A/3P	3 OR 4 - 6 AWG	1 - 10 AWG	1"
70A/1P	2 - 4 AWG	1 - 8 AWG	1"
70A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
70A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
80A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
80A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
90A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
90A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
100A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
100A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
110A/2P	2 OR 3 - 2 AWG	1 - 6 AWG	1 1/4"
110A/3P	3 OR 4 - 2 AWG	1 - 6 AWG	1 1/4"
125A/2P	2 OR 3 - 1 AWG	1 - 6 AWG	1 1/4"
125A/3P	3 OR 4 - 1 AWG	1 - 6 AWG	1 1/2"
150A/2P	2 OR 3 - 1/0 AWG	1 - 6 AWG	1 1/2"
150A/3P	3 OR 4 - 1/0 AWG	1 - 6 AWG	2"
175A/2P	2 OR 3 - 2/0 AWG	1 - 6 AWG	2"
175A/3P	3 OR 4 - 2/0 AWG	1 - 6 AWG	2"
200A/2P	2 OR 3 - 3/0 AWG	1 - 6 AWG	2"
200A/3P	3 OR 4 - 3/0 AWG	1 - 6 AWG	2"
225A/2P	2 OR 3 - 4/0 AWG	1 - 4 AWG	2"
225A/3P	3 OR 4 - 4/0 AWG	1 - 4 AWG	2 1/2"
250A/2P	2 OR 3 - 250 MCM	1 - 4 AWG	2 1/2"
250A/3P	3 OR 4 - 250 MCM	1 - 4 AWG	3"
300A/2P	2 OR 3 - 350 MCM	1 - 4 AWG	3"
300A/3P	3 OR 4 - 350 MCM	1 - 3 AWG	3"
350A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
350A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"
400A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
400A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"

NOTES:
1. PROVIDE CIRCUIT CONDUCTOR AND CONDUIT SIZES INDICATED ABOVE UNLESS OTHERWISE NOTED.
2. CONDUCTOR SIZING BASED UPON 75C THWN INSULATED COPPER CONDUCTORS.
3. FOR TWO AND THREE POLE CIRCUITS PROVIDE NEUTRAL CONDUCTOR IF REQUIRED BY EQUIPMENT SERVED.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, 18" A.F.F. TO TOP
GFCI	DUPLEX RECEPTACLE GFI, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, CEILING MOUNTED
GFCI	DUPLEX RECEPTACLE GFI, CEILING MOUNTED
USB	DUPLEX RECEPTACLE USB, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, 6" ABOVE COUNTER
GFCI	DUPLEX RECEPTACLE GFI, 6" ABOVE COUNTER
	DUPLEX RECEPTACLE, FLOOR MOUNTED
GFCI	DUPLEX RECEPTACLE GFI , FLOOR MOUNTED
	SPECIALTY OUTLET, SEE DRAWINGS W/ MTG HT
	QUAD RECEPTACLE, 18" A.F.F. TO TOP
GFCI	QUAD RECEPTACLE GFI, 18" A.F.F. TO TOP
	QUAD RECEPTACLE, CEILING MOUNTED
GFCI	QUAD RECEPTACLE GFI, CEILING MOUNTED
M	MOTOR SWITCH
	OVERHEAD DOOR 3-BUTTON SWITCH, OPEN-CLOSE-STOP
PP	POWER POLE
JB	JUNCTION BOX
FF	FURNITURE FEED
	MOTOR
	NON-FUSED DISCONNECT
	COMBINATION MOTOR STARTER/ DISCONNECT
	FUSED DISCONNECT
	MANUAL MOTOR STARTER
	MOTOR STARTER
	SURFACE MOUNTED PANEL BOARD
	RECESSED PANEL BOARD
	SWITCH, SINGLE POLE, 48" A.F.F. TO TOP UNO
3	SWITCH, 3-POLE, 48" A.F.F. TO TOP UNO
4	SWITCH, 4-POLE, 48" A.F.F. TO TOP UNO
D	SWITCH, WALL BOX DIMMER, 48" A.F.F. TO TOP UNO
LV	SWITCH, LOW VOLTAGE, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
LVD	SWITCH, LOW VOLTAGE DIMMER, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
F	SWITCH, FUSED: 125V, SINGLE POLE, DUAL ELEMENT PLUG FUSE
K	SWITCH, KEYED, 48" A.F.F. TO TOP UNO
P	SWITCH, PILOT LIGHT, 48" A.F.F. TO TOP UNO
T	SWITCH, TIMER, 48" A.F.F. TO TOP
OS	SWITCH, MULTI-TECH OCCUPANCY SENSOR, WALL
	SWITCH, MULTI-TECH OCCUPANCY SENSOR, CEILING
	SWITCH, EXTERIOR PHOTOCELL
OPP	POWER PACK FOR OCCUPANCY SENSORS
SP	CONTROLS: SPEAKER (SEE SCHEDULE)
DO	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH DOOR REQUIREMENTS
ADA	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH SECURITY, AUTO AND MANUAL CONTROL
	SECURITY: PAN - TILT - ZOOM CAMERA
	SECURITY: PUSH BUTTON
CR	SECURITY: CARD READER
DC	SECURITY: DOOR CONTACT
	LUMINAIRE: WALL MOUNTED W/ TYPE
	LUMINAIRE: RECESSED DOWNLIGHT OR PENDANT W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: SURFACE OR RECESSED W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: ON EMERGENCY, LIFE SAFETY, OR LOCAL LIGHTING CIRCUIT W/ TYPE, REFER TO SCHEDULE
	EXIT SIGN: CEILING MOUNTED W/ TYPE, SEE SCHEDULE
	EXIT SIGN: WALL MOUNTED W/ TYPE, SEE SCHEDULE
	EM LIGHTS: WALL MOUNTED UNO, REFER TO SCHEDULE
	REMOTE HEADS: WALL MOUNTED, REFER TO SCHEDULE
TV	TV CONNECTION: 96" TO TOP, COAX CONNECTION, UNO
	VOICE/ DATA OUTLET: 18" TO TOP, UNO
C	VOICE/ DATA OUTLET: CEILING MOUNTED, UNO
	VOICE/ DATA/ TV OUTLET: FLOOR MOUNTED, UNO
	TELEPHONE: 18" TO TOP, UNO
	DATA/ TELEPHONE: 18" TO TOP, UNO
P	FIRE: MANUAL PULL STATION, WALL MOUNTED, 48" AFF TO TOP UNO
#CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: AUDIBLE ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
AV #CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, CEILING MOUNTED
V #CD	FIRE: VISUAL ANNUNCIATION, CEILING MOUNTED
A	FIRE: AUDIBLE ANNUNCIATION, CEILING MOUNTED
SD	FIRE: SMOKE DETECTOR, CEILING
HD	FIRE: HEAT DETECTOR, CEILING
S/H	FIRE: SMOKE AND HEAT DETECTOR
DSD	FIRE: DUCT SMOKE DETECTOR, CEILING, PROVIDED / INSTALLED BY EC, MOUNTED BY MC, UNO
RT	FIRE ALARM: REMOTE TEST STATION
TS	FIRE: TAMPER SWITCH
FS	FIRE: FLOW SWITCH
DH	FIRE: MAGNETIC DOOR HOLD
FR	FIRE: DOOR LOCK RELEASE
PS	FIRE: PRESSURE SWITCH
	HOME RUN W/ DIRECTION
—E—	ELECTRICAL CIRCUIT
—UG—	UNDERGROUND ELECTRICAL W/ INCDICATOR
	SITE: LIGHT, POLE, AND BASE
XF	TRANSFORMER W/ LABEL
	DEVICE OR EQUIPMENT CONNECTION

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
AMP OR A	AMPERES
ATS	AUTOMATIC TRANSFER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
CKT	CIRCUIT
CB	CIRCUIT BREAKER
C	CONDUIT
CLG	CEILING
CP	CONTROL PANEL
CU	COPPER
D	DATA
DS	DISCONNECT SWITCH
DWG	DRAWING(S)
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EX	EXISTING
EXT	EXTERNAL
FIN. FLR.	FINISH FLOOR
FACP	FIRE ALARM CONTROL PANEL
FF	FURNITURE FEED
FT	FOOT, FEET
GRC	GALVANIZED RIGID CONDUIT
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERUPPTER
GFI	GROUND FAULT PROTECTION
HH	HAND HOLE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
IU	INDOOR UNIT
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KVA	KILO VOLT-AMPERES
KVAR	KILO VOLT-AMPERES REACTIVE
LC	LIGHTING CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTOR PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MH	MAN HOLE
MFR	MANUFACTURER'S
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N.L.	NIGHT LIGHT
NC	NORMALLY CLOSED CONTACT
NO	NORMALLY OPEN CONTACT
N.T.S.	NOT TO SCALE
OU	OUTDOOR UNIT
O.D.	OUTSIDE DIAMETER
OL	OVERLOADS-THERMAL
PNL	PANEL W/ INDICATION
Ø	PHASE
PH	PHASE
PC	PHOTO-SWITCH
P	POLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PB	PULL BOX
PTT	PUSH-TO-TEST
RMC	RIGID METAL COUNT
SPEC	SPECIFICATION
SW	SWITCH
SWD	SWITCHING DUTY
TEL	TELEPHONE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
VFC	VARIABLE FREQUENCY CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WATT
WP	WEATHER PROOF
W	WIRE
W/	WITH
XF/ XFMR	TRANSFORMER
XXAF	XX AMPERE FUSE
XXAS	XX AMPERE SWITCH
XP	X POLES

GENERAL NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS WITH ARCHITECTURAL AND MECHANICAL PLANS, SPECIFICATIONS AND EQUIPMENT DRAWINGS. PROVIDE ALL NECESSARY EQUIPMENT POWER AND CONTROL CONNECTIONS NOT PROVIDED BY OTHERS WHETHER INDICATED ON THE DRAWINGS OR NOT.
3. UNLESS OTHERWISE NOTED, WHERE ELECTRICAL DEMOLITION WORK IS SHOWN, REMOVE ALL CONDUCTOR AND EXPOSED CONDUITS FROM EQUIPMENT OR OUTLET LOCATION BACK TO THE POWER SOURCE(S) FOR THE CIRCUIT.
4. SEAL ALL WALL AND FLOOR PENETRATIONS TO MAINTAIN RATING.
5. BACK-TO-BACK OR THROUGH THE WALL BOXES SHALL NOT BE USED.
6. ALL LOW VOLTAGE CONDUCTORS SHALL BE STRANDED COPPER.
7. SPLICE CABLES OR CONDUCTORS IN OUTLET BOXES, DEVICE BOXES, PULL BOXES, JUNCTION BOXES. DO NOT SPLICE CABLES OR CONDUCTORS IN CONDUIT BODIES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER (GFI) TYPE MUST BE GFI RECEPTACLE, NO FEED THROUGH.
9. BRANCH CIRCUITS FROM CIRCUIT BREAKER TYPE DISTRIBUTION EQUIPMENT WHICH SUPPLY MOTOR LOADS THAT ARE LESS THAN 6.0 AMP SHALL BE PROTECTED BY A 15 AMP CIRCUIT BREAKER.
10. FINAL CONNECTIONS TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT . LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE USED AS A GROUNDING CONDUCTOR. PROVIDE A SEPARATE GREEN GROUNDING CONDUCTOR.
11. IN THE EVENT OF CONFLICTS BETWEEN THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS OR WITHIN THE DRAWINGS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL BE ASSUMED TO BE CORRECT. REFER UNCERTAINTIES IN REQUIREMENTS TO THE ENGINEER FOR CLARIFICATION.
12. ALL BELOW GRADE LOCATIONS WITHIN BUILDINGS ARE DAMP LOCATIONS UNLESS OTHERWISE NOTED.
13. 120V AC CONTROL WIRING ASSOCIATED WITH MOTOR CONTROL CIRCUITS MAY BE RUN IN THE SAME RACEWAY WITH MOTOR POWER WIRING FOR CONSTANT SPEED MOTORS LESS THAN 30HP. FOR MOTORS 30HP AND GREATER OR FOR MOTORS POWERED FROM VARIABLE FREQUENCY CONTROLLERS, SEPARATE RACEWAYS SHALL BE USED FOR POWER AND CONTROL CONDUCTORS.
14. 120/240V CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS AS REQUIRED UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
15. CONDUIT PENETRATIONS OF FLOORS, LOWER LEVEL EXTERIOR WALLS OR WETWELL WALLS SHALL BE SLEEVED AND SEALED WITH LINKSEAL. SEE DETAILS ON MECHANICAL DRAWINGS.
16. IF COMPLIANCE WITH TWO OR MORE DIFFERING STANDARDS, REQUIREMENTS, DRAWINGS OR SPECIFICATIONS, OR ANY COMBINATION THEREOF, IS SPECIFIED AND THESE ESTABLISH DIFFERENT OR CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT. THE MOST STRINGENT REQUIREMENT WILL BE THE BETTER QUALITY OR GREATER QUANTITY OF WORK, AND WILL TYPICALLY BE THE MORE EXPENSIVE OPTION. REFER UNCERTAINTIES AND REQUIREMENTS THAT ARE DIFFERENT, BUT APPARENTLY EQUAL, TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
17. THE QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE THE MINIMUM PROVIDED OR PERFORMED. THE ACTUAL INSTALLATION MAY COMPLY EXACTLY WITH THE MINIMUM QUANTITY OR QUALITY SPECIFIED, OR IT MAY EXCEED THE MINIMUM WITHIN REASONABLE LIMITS. TO COMPLY WITH THESE REQUIREMENTS, INDICATED NUMERIC VALUES ARE MINIMUM OR MAXIMUM, AS APPROPRIATE, FOR THE CONTEXT OF REQUIREMENTS. REFER UNCERTAINTIES TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
18. DESIGN DOCUMENTS MUST BE REPRODUCED IN THEIR ENTIRETY, INCLUDING ALL PLANS, SPECIFICATIONS, AND FRONT END DOCUMENTS.
19. ONLY COMPLETE DOCUMENT SETS ARE TO BE DISTRIBUTED TO SUBCONTRACTORS AND SUPPLIERS OF THE CONTRACTOR DURING BIDDING OR CONSTRUCTION.
20. FAILURE TO REVIEW AND COMPLY WITH A FULL SET OF CONTRACT DOCUMENTS WILL NOT BE ACCEPTED AS A VALID REASON FOR FAILURE TO MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
21. ALL ABOVE CEILING SYSTEMS AND COMPONENTS (INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) SHALL BE COORDINATED SUCH THAT THE SYSTEMS ARE PROPERLY INTEGRATED IN THE SPACE PROVIDED ABOVE CEILING AT THE CEILING HEIGHTS NOTED. IT IS THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE PATHWAYS WITHIN THE SPACE PROVIDED. CEILING HEIGHTS WILL NOT BE MODIFIED.
22. EQUIPMENT SHALL BE MOUNTED 6'-0" AWAY FROM HEAT PRODUCING EQUIPMENT. U.N.O.

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GENERAL NOTES

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	ISSUED FOR BIDS	03/30/2023

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DES'D BY: E. MARTER
DRAWN BY: E. MARTER
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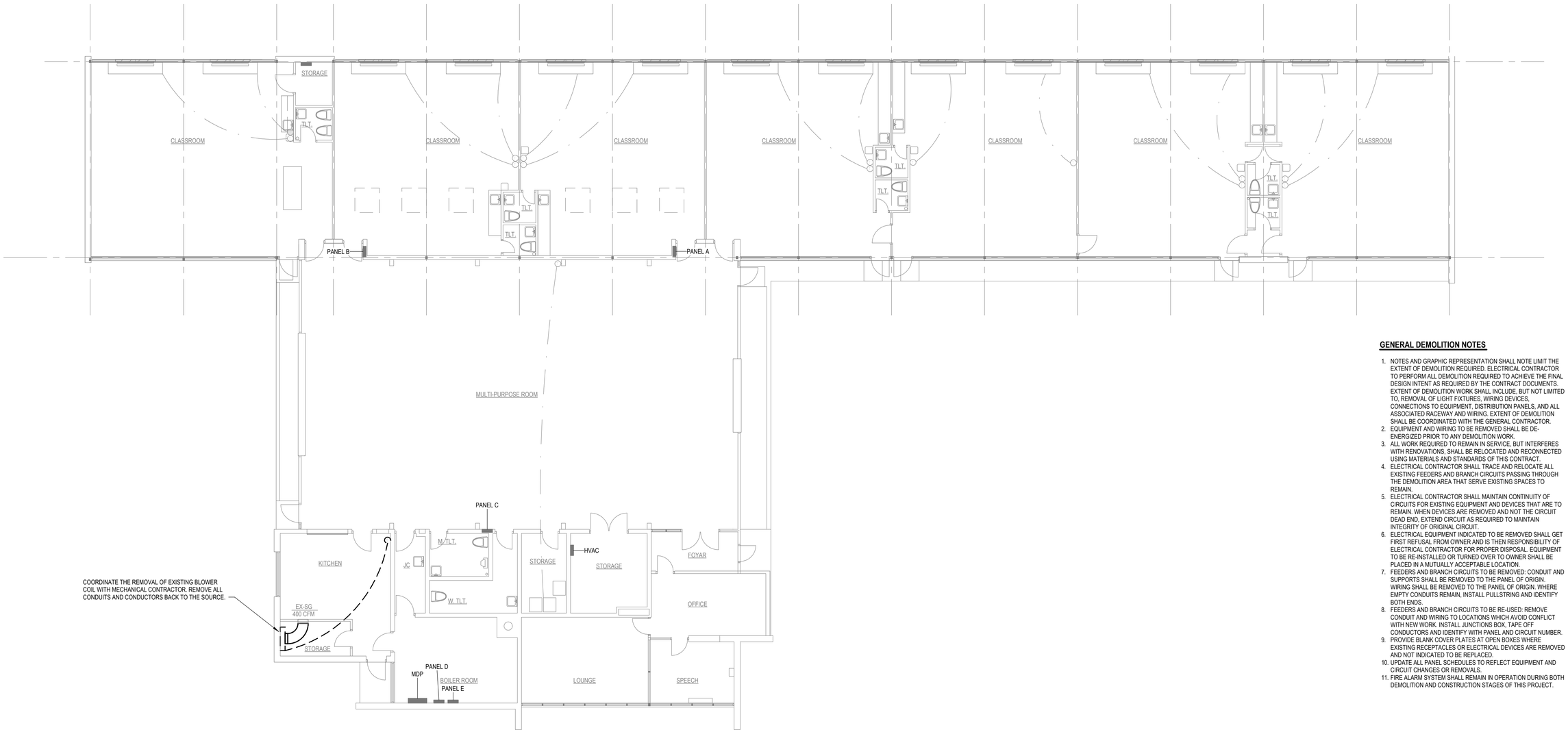

N

ELECTRICAL DEMOLITION PLAN

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

GENERAL DEMOLITION NOTES

1. NOTES AND GRAPHIC REPRESENTATION SHALL NOTE LIMIT THE EXTENT OF DEMOLITION REQUIRED. ELECTRICAL CONTRACTOR TO PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF DEMOLITION WORK SHALL INCLUDE, BUT NOT LIMITED TO, REMOVAL OF LIGHT FIXTURES, WIRING DEVICES, CONNECTIONS TO EQUIPMENT, DISTRIBUTION PANELS, AND ALL ASSOCIATED RACEWAY AND WIRING. EXTENT OF DEMOLITION SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
2. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE, BUT INTERFERES WITH RENOVATIONS, SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. ELECTRICAL CONTRACTOR SHALL TRACE AND RELOCATE ALL EXISTING FEEDERS AND BRANCH CIRCUITS PASSING THROUGH THE DEMOLITION AREA THAT SERVE EXISTING SPACES TO REMAIN.
5. ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS FOR EXISTING EQUIPMENT AND DEVICES THAT ARE TO REMAIN. WHEN DEVICES ARE REMOVED AND NOT THE CIRCUIT DEAD END, EXTEND CIRCUIT AS REQUIRED TO MAINTAIN INTEGRITY OF ORIGINAL CIRCUIT.
6. ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED SHALL GET FIRST REFUSAL FROM OWNER AND IS THEN RESPONSIBILITY OF ELECTRICAL CONTRACTOR FOR PROPER DISPOSAL. EQUIPMENT TO BE RE-INSTALLED OR TURNED OVER TO OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION.
7. FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN. WHERE EMPTY CONDUITS REMAIN, INSTALL PULLSTRING AND IDENTIFY BOTH ENDS.
8. FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICT WITH NEW WORK. INSTALL JUNCTIONS BOX, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED AND NOT INDICATED TO BE REPLACED.
10. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT CHANGES OR REMOVALS.
11. FIRE ALARM SYSTEM SHALL REMAIN IN OPERATION DURING BOTH DEMOLITION AND CONSTRUCTION STAGES OF THIS PROJECT.

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NORTH
MECHANICAL UPGRADES
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DEMOLITION DRAWINGS

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: B. KUSHION
DES'D BY: E. MARTER
DRAWN BY: E. MARTER
PROJ #: 21-1719-0435

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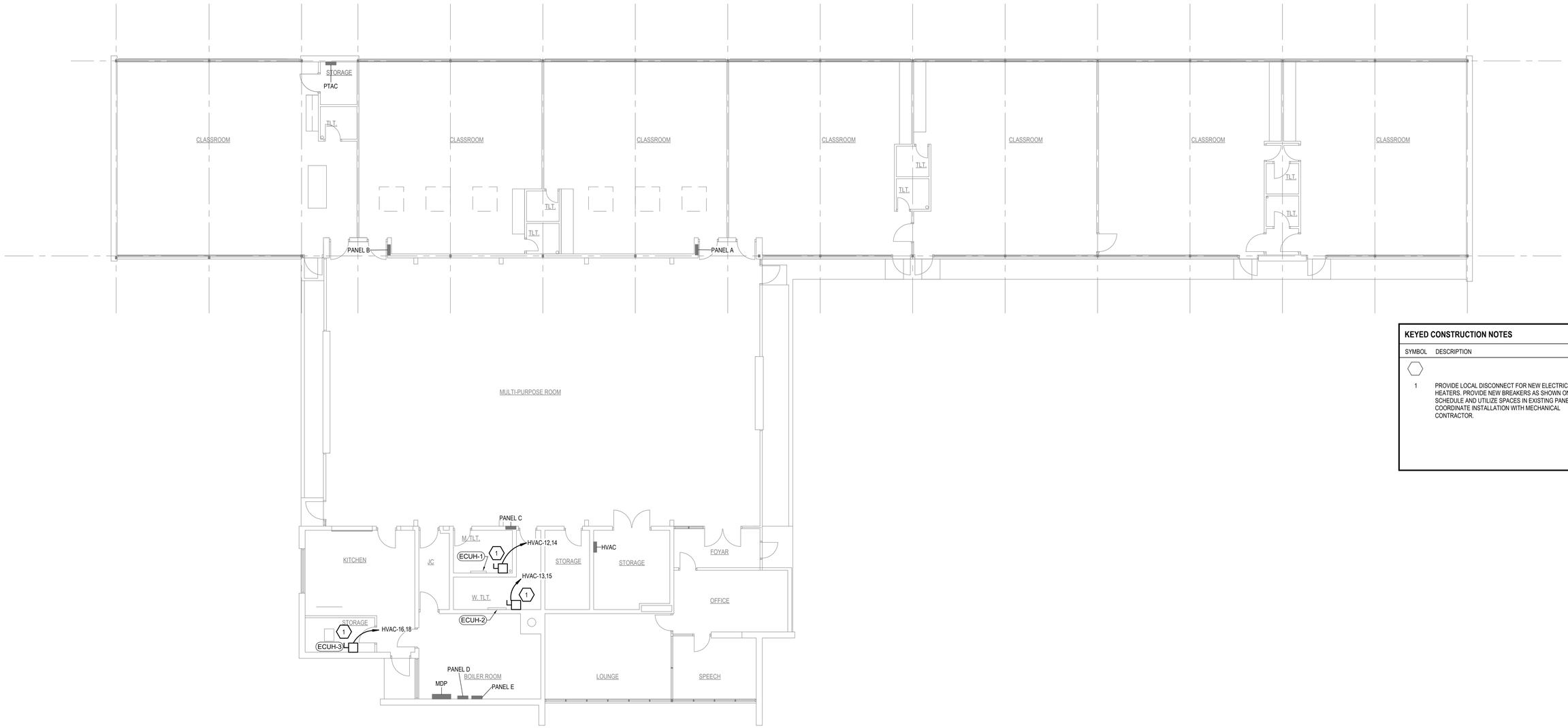

KEYED CONSTRUCTION NOTES

SYMBOL	DESCRIPTION
1	PROVIDE LOCAL DISCONNECT FOR NEW ELECTRIC UNIT HEATERS. PROVIDE NEW BREAKERS AS SHOWN ON SCHEDULE AND UTILIZE SPACES IN EXISTING PANEL. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.

OVERALL POWER PLAN

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

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OVERALL POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: B. KUSHION
DES'D BY: E. MARTER
DRAWN BY: E. MARTER
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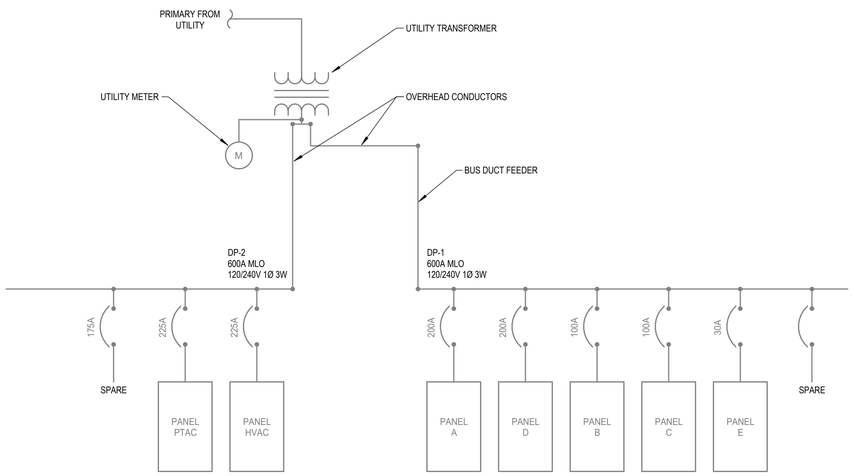

ONE-LINE DIAGRAM

BRANCH PANEL: HVAC

LOCATION:
SUPPLY FROM:
MOUNTING: Recessed
ENCLOSURE:

VOLTS: 120/240 Single
PHASES: 1
WIRES: 3

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A
MCB RATING:

NOTES:
EXISTING PANEL

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	FURNACE	15 A	1	1200	1200			1	15 A	FURNACE	2
3	FURNACE	15 A	1			1200	4500	2	60 A	A/C CONDENSER #2	4
5	SMALL OFFICE CONDENSER	15 A	2	1200	4500			--	--	--	6
7	--	--	--			1200	4500	2	60 A	A/C CONDENSER #1	8
9	A/C CONDENSER #3	30 A	2	2300	4500			--	--	--	10
11	--	--	--			2300	250	**2**	**15 A**	**ECUH-1**	**12**
13	**ECUH-2**	**15 A**	**2**	375	250			--	--	--	**14**
15	--	--	--			375	1608	**2**	**20 A**	**ECUH-3**	**16**
17	Space	--	1	--	1608			--	--	--	**18**
19	Space	--	1			--	--	1	--	Space	20
21	Space	--	1	--	--			1	--	Space	22
23	Space	--	1			--	--	1	--	Space	24
25	Space	--	1	--	--			1	--	Space	26
27	Space	--	1			--	180	1	20 A	RECEP BELOW PANEL	28
29	Space	--	1	--	1500			1	20 A	CONDENSING PUMP	30
		Total Load:		18633.0 VA		16113.0 VA					
		Total Amps:		155 A		134 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
Heating	4466.0 VA	100.00%	4466.0 VA		
				TOTAL CONN LOAD:	34746.0 VA
				TOTAL EST DEMAND:	34746.0 VA
				TOTAL CONN CURRENT:	145 A
				TOTAL EST DEMAND CURRENT:	145 A

NOTES:

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ONE-LINE DIAGRAM

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

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BANGOR TOWNSHIP SCHOOLS

WEST ELEMENTARY
MECHANICAL UPGRADES

3175 E. WILDER ROAD
BAY CITY, MICHIGAN

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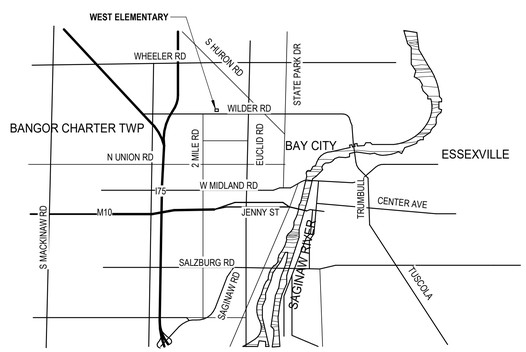
SHEET INDEX

NUMBER	TITLE	03-30-23 ISSUED FOR BIDS
GENERAL		
CS	COVER SHEET	X
MECHANICAL		
W-M3.0	UNIT 'A' OVERHEAD MECHANICAL PLAN	X
W-M3.1	UNIT 'B' OVERHEAD MECHANICAL PLAN	X
W-M3.2	BOILER ROOM MECHANICAL PLAN	X
W-M3.3	SCHEDULES, DETAILS, AND NOTES	X
ELECTRICAL		
W-E0.0	GENERAL NOTES	X
W-E4.0	UNIT 'B' POWER PLAN	X
W-E4.1	BOILER ROOM POWER & DEMOLITION PLAN	X
W-E6.0	ONE-LINE DIAGRAM	X

LOCATION MAP



CONTACT INFORMATION

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BAY CITY, MI 48706
(989) 684-8121

KURTIS PAKE
FINANCE DIRECTOR
PHONE: (989) 684-8121
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TYLER MIETZ, P.E.
PROJECT ENGINEER

PHONE: (989) 863-4034
EMAIL: tyler@trm-engineering.com
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CODE AUTHORITY:
MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF CONSTRUCTION CODES/PLAN REVIEW DIVISION
PO BOX 30255
LANSING, MI 48909
(517) 241-9328

MICHIGAN DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
BUREAU OF FIRE SERVICES/PLAN REVIEW DIVISION
PO BOX 30700
LANSING, MI 48909
(517) 241-8847

811 Know what's **below.** **Call** before you dig.

PROJECT INFORMATION

BUILDING CODE COMPLIANCE
- 2015 MICHIGAN BUILDING CODE (MBC)
- 2018 MICHIGAN PLUMBING CODE (MPC)
- 2015 MICHIGAN MECHANICAL CODE (MMC)
- 2017 NATIONAL ELECTRICAL CODE (NEC)
- 2018 INTERNATIONAL FIRE CODE (IFC)
- 2012 NFPA 101 LIFE SAFETY CODE (LSC)

USE AND OCCUPANCY CLASSIFICATION [CHAPTER 3]
- GROUP E - EDUCATIONAL GROUP

BUILDING HEIGHT AND NUMBER OF STORIES [TBL 504.3, 504.4]
- ALLOWED - 2
- ACTUAL - 1

BUILDING AREA [TBL 506.2]
- ALLOWABLE - 14,400 SFT/ FLR
- ACTUAL - 32,371 SFT

CONSTRUCTION CLASSIFICATION [SEC 602, TBL 601]
- TYPE IIB, II(000)

FIRE RESISTANCE RATING [TBL 601]
- 0 - PRIMARY STRUCTURAL FRAME
- 0 - BEARING WALLS
- 0 - NON BEARING WALLS & PARTITIONS (INTERIOR)
- 0 - NON BEARING WALLS & PARTITIONS (EXTERIOR)
- 0 - FLOOR CONSTRUCTION
- 0 - ROOF CONSTRUCTION

FIRE PROTECTION SYSTEMS [CHAPTER 9]
- NO SPRINKLER SYSTEM

OCCUPANT LOAD [SEC 1004, TBL 1004.1.2]
- NO CHANGE

CORRIDORS [SEC 1020, TBL 1020.1]
- 1HR RATING

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COVER SHEET

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

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DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

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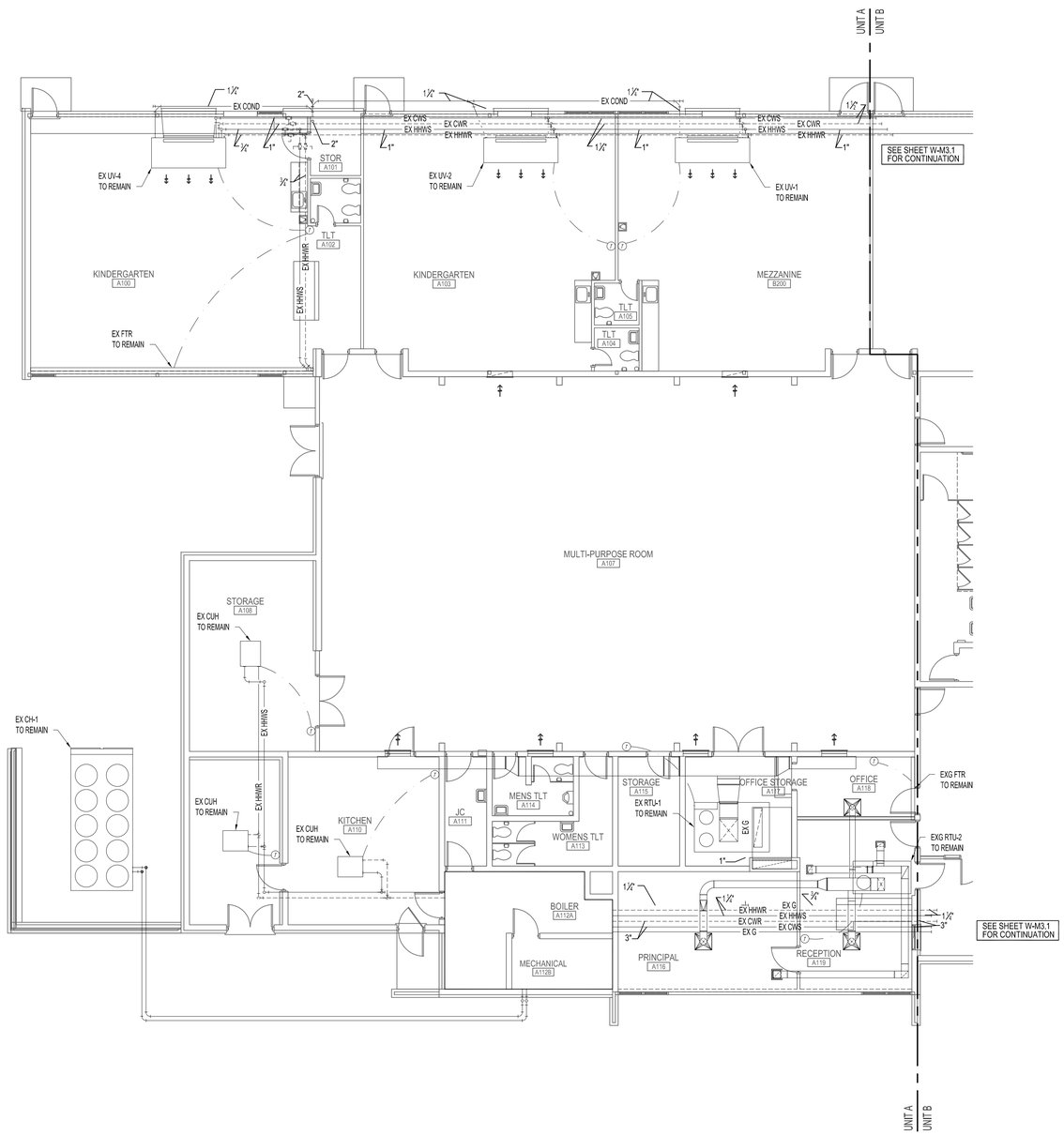
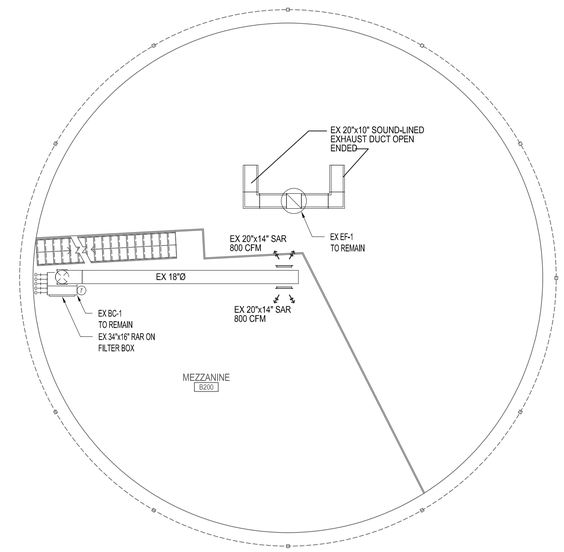


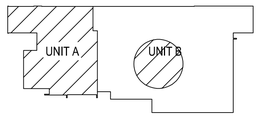
UNIT 'A' OVERHEAD MECHANICAL PLAN

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



UNIT 'B' MEZZANINE OVERHEAD MECHANICAL PLAN

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



KEY PLAN

NOT TO SCALE

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UNIT 'A' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
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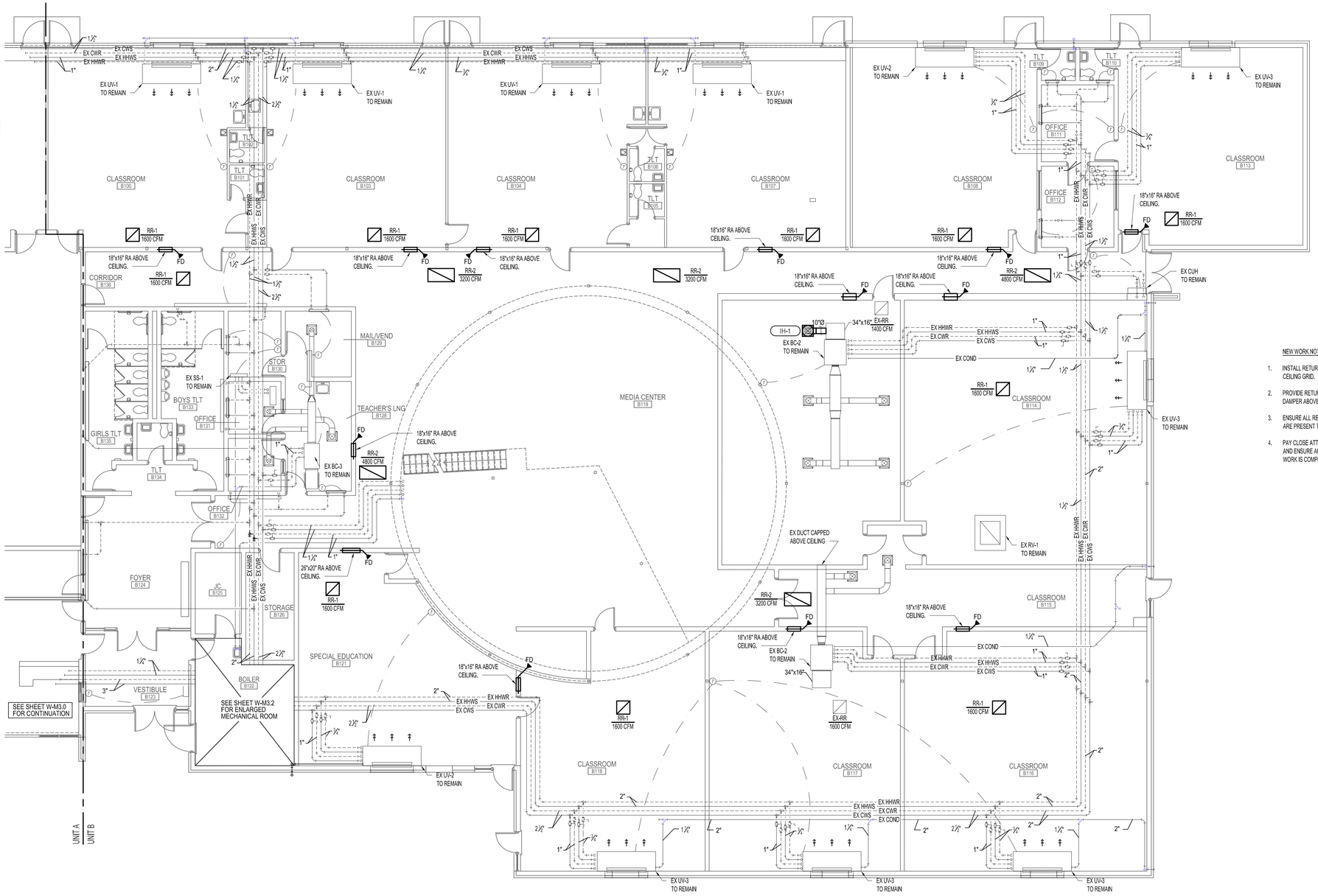
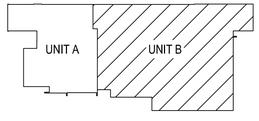


NEW WORK NOTES

1. INSTALL RETURN AIR REGISTERS IN EXISTING CEILING GRID.
2. PROVIDE RETURN AIR PATHS WITH FIRE DAMPER ABOVE CEILING WHERE SHOWN.
3. ENSURE ALL RETURN REGISTERS/AIR PATHS ARE PRESENT TO ALLOW PROPER AIRFLOW.
4. PAY CLOSE ATTENTION TO FIRE RATED WALLS AND ENSURE AREA RATINGS ARE VALID AFTER WORK IS COMPLETE.

UNIT 'B' OVERHEAD MECHANICAL PLAN

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



KEY PLAN
NOT TO SCALE

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UNIT 'B' OVERHEAD MECHANICAL PLAN

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
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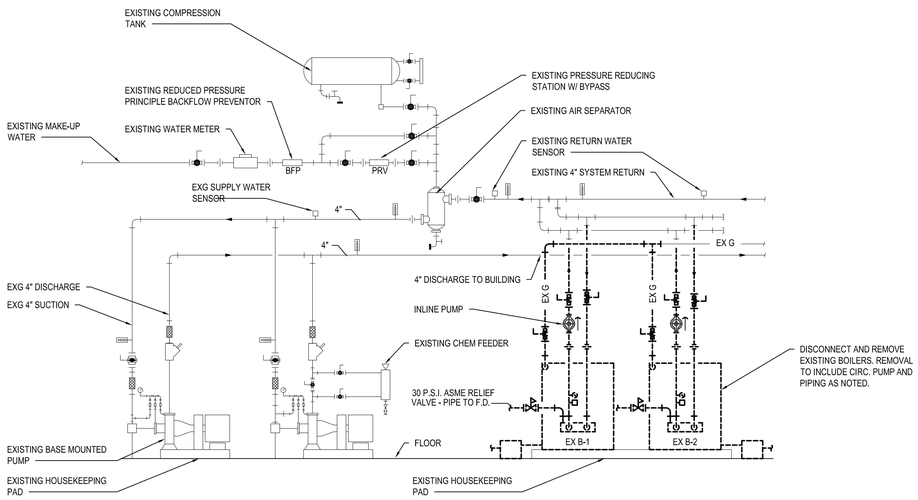
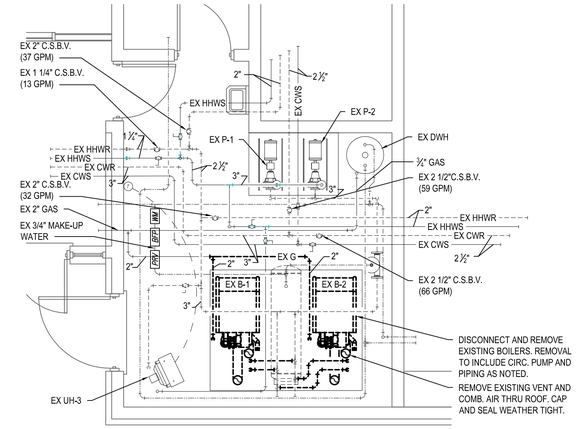


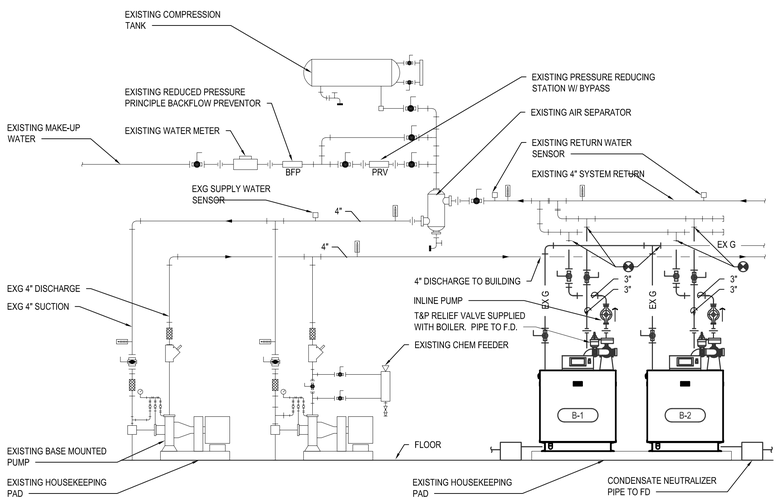
1 W-M3.2 BOILER PIPING SCHEMATIC - DEMOLITION

NO SCALE



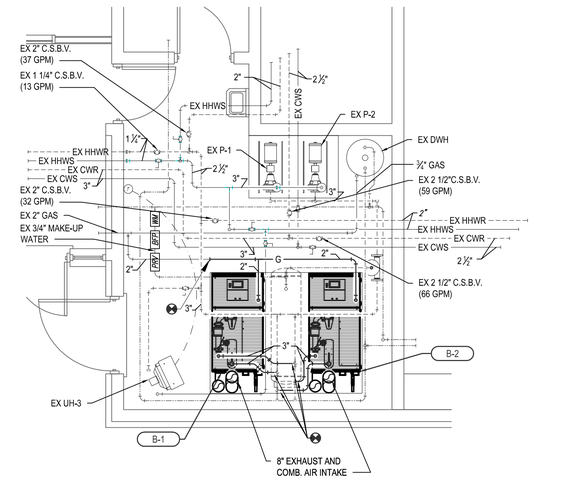
N EXISTING BOILER ROOM B122 MECHANICAL DEMOLITION PLAN

SCALE: 1/4" = 1'-0"



2 W-M3.2 BOILER PIPING SCHEMATIC - REVISIONS

NO SCALE



N EXISTING BOILER ROOM B122 MECHANICAL RENOVATION PLAN

SCALE: 1/4" = 1'-0"

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BOILER ROOM PLAN - ENLARGED

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
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BOILER SCHEDULE

SEE 1 / 0.M3.3

MARK	TYPE	MBH INPUT	MBH OUTPUT	VENT DIA "	AIR INLET DIA "	GAS TRAIN ASSEMBLY	V/Ø	AMPS	MODEL	REMARKS
B-1 & 2	CONDENSING	1500	1420	6"	8"	I.R.I.	115/1	19.3	AMP 1500	

BASED ON THERMAL SOLUTIONS WITH FACTORY MOUNTED AND WIRED CIRC PUMP AND NEUTRALIZATION KIT.

GRILLES, REGISTERS & DIFFUSERS SCHEDULE

SEE 1 / 0.M3.1

MARK	MANUFACTURER	MODEL	DESCRIPTION	NECK SIZE	FACE SIZE	FRAME	FINISH	MATERIAL	REMARKS
RR-1	PRICE INDUSTRIES	80 SERIES	EGG CRATE FACE	24"x24"	24"x24"	NF	WHITE	ALUMINUM	
RR-2	PRICE INDUSTRIES	80 SERIES	EGG CRATE FACE	48"x24"	48"x24"	NF	WHITE	ALUMINUM	

INTAKE HOOD SCHEDULE

SEE 1 / 0.M3.1

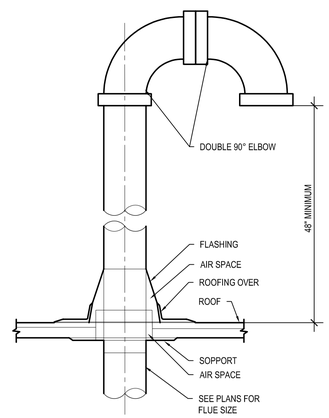
MARK	MANUFACTURER	MODEL	SERVING	OA CFM	ESP	THROAT VELOCITY	CURB	REMARKS
IH-1	GREENHECK	GRSI-10	LAB	400	0.05	702 FPM	14"	

MECHANICAL SYMBOLS LIST

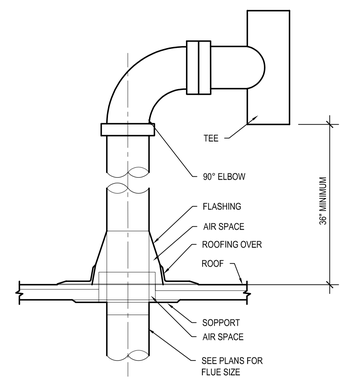
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AFF	ABOVE FINISH FLOOR	RA	RETURN AIR
AGA	AMERICAN GAS ASSOCIATION	RAR	RETURN AIR REGISTER
AHU	AIR HANDLING UNIT	SA	SUPPLY AIR
ASME	AMERICAN SOCIETY OF MECH. ENGINEERS	SAR	SUPPLY AIR REGISTER
BTUH	BRITISH THERMAL UNITS PER HOUR	S.C.C.V.	SELF CONTAINED CONTROL VALVE
CA	COMBUSTION AIR	S.P.	STATIC PRESSURE
CD	CEILING DIFFUSER	TCC	TEMPERATURE CONTROL CONTRACTOR
CFM	CUBIC FEET PER MINUTE	UH	UNIT HEATER
COND	CONDENSATE	U.L.	UNDERWRITERS LABORATORIES
C.S.B.V.	CIRCUIT SETTER BALANCE VALVE	U.N.O.	UNLESS NOTED OTHERWISE
CUH	CABINET UNIT HEATER	UV	UNIT VENTILATOR
CWS	CHILLED WATER SUPPLY	WH	WATER HEATER
CWR	CHILLED WATER RETURN	WM	WATER METER
EAR	EXHAUST AIR REGISTER	WTD	WATER TEMPERATURE DROP
EAT	ENTERING AIR TEMPERATURE	WTR	WATER TEMPERATURE RISE
EC	ELECTRIC CONTRACTOR		CHECK VALVE
EF	EXHAUST FAN		BALANCE VALVE (CIRCUIT SETTER)
EWT	ENTERING WATER TEMPERATURE		CONTROL VALVE
EX	EXISTING		PRESSURE AND TEMPERATURE RELIEF VALVE
FD	FLOOR DRAIN		THREE-WAY VALVE
FFE	FINISHED FLOOR ELEVATION		HOSE END VALVE
FPF	FINS PER FOOT		BALL VALVE
FT.P.D.	FEET OF PRESSURE DROP		BUTTERFLY VALVE
FTR	FIN-TUBE RADIATION	PR	PRESSURE REDUCING VALVE
G	GAS	BP	BACKFLOW PREVENTOR
GC	GENERAL CONTRACTOR		UNION
GPM	GALLONS PER MINUTE		STRAINER
HHWR	HEATING HOT WATER RETURN		MANUAL AIR VENT
HHWS	HEATING HOT WATER SUPPLY	FS	FLOW SWITCH
HP	HORSE POWER		GAUGE
LAT	LEAVING AIR TEMPERATURE		THERMOMETER
LWT	LEAVING WATER TEMPERATURE		CONNECT TO EXISTING
MC	MECHANICAL CONTRACTOR	H	HUMIDISTAT
OA	OUTSIDE AIR	T	THERMOSTAT
			PUMP (INLINE)

MECHANICAL GENERAL NOTES

1. ALL WORK TO COMPLY WITH ALL APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND ORDINANCES
2. FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING.
3. SEAL ALL DUCT JOINTS.
4. PROVIDE ACCESS PANELS TO ALL VALVES, DAMPERS, TRAPS, FILTERS, EQUIPMENT, ETC.
5. COORDINATE LOCATION OF ALL CEILING DIFFUSERS, REGISTERS, AND CEILING MOUNTED EQUIPMENT WITH THE REFLECTED CEILING PLAN.
6. DUCT SIZES NOTED REPRESENT NET FREE INTERIOR DIMENSIONS.
7. PROVIDE BALANCE DAMPERS IN EACH SUPPLY AND EXHAUST DUCT BRANCH.
8. ALL ROUND DUCTWORK TO BE SPIRAL TYPE UNLESS NOTED OTHERWISE.
9. HEATING PIPING TO BE MINIMUM 3/4" DIAMETER.
10. VERIFY MOUNTING HEIGHTS OF WALL CAPS AND LOUVERS WITH ARCHITECTURAL DRAWINGS.
11. ALL VALVES SHOWN ON FLOOR PLANS ARE IN ADDITION TO ALL VALVES SHOWN ON PIPING SCHEMATICS.
12. REFER TO PIPING SCHEMATIC DETAILS FOR UNIONS, VALVES, AIR VENTS, THERMOMETERS, ETC. REQUIRED AT SPECIFIC PIECES OF EQUIPMENT.
13. ALL ROOF CURBS FOR MECHANICAL EQUIPMENT TO BE MINIMUM 16" ABOVE FINISHED ROOF SURFACE.
14. EQUIPMENT, DUCTS, PIPING, ETC. TO BE SUPPORTED FROM PANEL POINTS OF STRUCTURAL MEMBERS. NO MECHANICAL ITEMS TO BE SUPPORTED FROM DECKING. CONCENTRATED MECHANICAL LOADS TO BE DISTRIBUTED OVER TWO OR MORE JOISTS. CONCENTRATED LOADING ON A SINGLE STRUCTURAL MEMBER IS TO BE AVOIDED.
15. SUPPLY AIR DIFFUSERS MAY BE CONNECTED WITH A MAXIMUM 5 FEET OF INSULATED FLEXIBLE DUCT WHEN DUCT IS CONCEALED. ALL RETURN AIR REGISTERS AND EXHAUST AIR REGISTERS TO BE DUCTED WITH SHEET METAL.
16. NEW THERMOSTATS TO BE LOCATED AT OLD THERMOSTATS' LOCATIONS WHERE POSSIBLE. IF NEW T'STATS ARE NOT IN OLD LOCATIONS, THEN OLD LOCATION IS TO BE REMOVED AND WALL PATCHED TO MATCH EXISTING.
17. MECHANICAL CONTRACTOR TO COORDINATE WITH GENERAL ON REMOVAL, REINSTALLATION, AND PATCHING OF EXISTING CEILINGS WHERE ACCESS IS NEEDED FOR INSTALLATION OF NEW EQUIPMENT, PIPING, ETC.



1 / W-M8.0 COMBUSTION AIR INTAKE TERMINATION
NO SCALE



2 / W-M8.0 FLUE VENT TERMINATION
NO SCALE

NOTE: EQUIPMENT LISTED IN SCHEDULES IS NOT TO BE USED FOR THE SOLE PURPOSE OF OBTAINING QUANTITIES. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES UTILIZING THESE SCHEDULES AND CAREFUL REVIEW OF LAYOUT DRAWINGS.

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
WEST
BAY CITY, MICHIGAN

SCHEDULES, DETAILS, AND NOTES

NO.	STATUS / REVISIONS	DATE
	50% OWNER REVIEW	01/31/2023
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: J. WHEELER
DES'D BY: R. MEYER
DRAWN BY: A. BERZLEY
PROJ #: 21-1719-0435

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W-M8.0

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CIRCUIT CONDUIT & CONDUCTOR SCHEDULE

FUSE/CIRCUIT BREAKER - AMP/POLE	PHASE/NEUTRAL (NOTE 3)	GROUND	CONDUIT
15A/1P & 20A/1P	2 - 12 AWG	1 - 12 AWG	3/4"
15A/2P & 20A/2P	2 OR 3 - 12 AWG	1 - 12 AWG	3/4"
15A/3P & 20A/3P	3 OR 4 - 12 AWG	1 - 12 AWG	3/4"
25A/1P & 30A/1P	2 - 10 AWG	1 - 10 AWG	3/4"
25A/2P & 30A/2P	2 OR 3 - 10 AWG	1 - 10 AWG	3/4"
25A/3P & 30A/3P	3 OR 4 - 10 AWG	1 - 10 AWG	3/4"
35A/1P & 40A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
35A/2P & 40A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
35A/3P & 40A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
40A/1P & 45A/1P	2 - 8 AWG	1 - 10 AWG	3/4"
40A/2P & 45A/2P	2 OR 3 - 8 AWG	1 - 10 AWG	3/4"
40A/3P & 45A/3P	3 OR 4 - 8 AWG	1 - 10 AWG	3/4"
60A/1P	2 - 6 AWG	1 - 10 AWG	3/4"
60A/2P	2 OR 3 - 6 AWG	1 - 10 AWG	3/4"
60A/3P	3 OR 4 - 6 AWG	1 - 10 AWG	1"
70A/1P	2 - 4 AWG	1 - 8 AWG	1"
70A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
70A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
80A/2P	2 OR 3 - 4 AWG	1 - 8 AWG	1"
80A/3P	3 OR 4 - 4 AWG	1 - 8 AWG	1 1/4"
90A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
90A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
100A/2P	2 OR 3 - 3 AWG	1 - 8 AWG	1 1/4"
100A/3P	3 OR 4 - 3 AWG	1 - 8 AWG	1 1/4"
110A/2P	2 OR 3 - 2 AWG	1 - 6 AWG	1 1/4"
110A/3P	3 OR 4 - 2 AWG	1 - 6 AWG	1 1/4"
125A/2P	2 OR 3 - 1 AWG	1 - 6 AWG	1 1/4"
125A/3P	3 OR 4 - 1 AWG	1 - 6 AWG	1 1/2"
150A/2P	2 OR 3 - 1/0 AWG	1 - 6 AWG	1 1/2"
150A/3P	3 OR 4 - 1/0 AWG	1 - 6 AWG	2"
175A/2P	2 OR 3 - 2/0 AWG	1 - 6 AWG	2"
175A/3P	3 OR 4 - 2/0 AWG	1 - 6 AWG	2"
200A/2P	2 OR 3 - 3/0 AWG	1 - 6 AWG	2"
200A/3P	3 OR 4 - 3/0 AWG	1 - 6 AWG	2"
225A/2P	2 OR 3 - 4/0 AWG	1 - 4 AWG	2"
225A/3P	3 OR 4 - 4/0 AWG	1 - 4 AWG	2 1/2"
250A/2P	2 OR 3 - 250 MCM	1 - 4 AWG	2 1/2"
250A/3P	3 OR 4 - 250 MCM	1 - 4 AWG	3"
300A/2P	2 OR 3 - 350 MCM	1 - 4 AWG	3"
300A/3P	3 OR 4 - 350 MCM	1 - 3 AWG	3"
350A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
350A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"
400A/2P	2 OR 3 - 500 MCM	1 - 3 AWG	3 1/2"
400A/3P	3 OR 4 - 500 MCM	1 - 3 AWG	3 1/2"

NOTES:
1. PROVIDE CIRCUIT CONDUCTOR AND CONDUIT SIZES INDICATED ABOVE UNLESS OTHERWISE NOTED.
2. CONDUCTOR SIZING BASED UPON 75C THWN INSULATED COPPER CONDUCTORS.
3. FOR TWO AND THREE POLE CIRCUITS PROVIDE NEUTRAL CONDUCTOR IF REQUIRED BY EQUIPMENT SERVED.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE, 18" A.F.F. TO TOP
GFCI	DUPLEX RECEPTACLE GFI, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, CEILING MOUNTED
GFCI	DUPLEX RECEPTACLE GFI, CEILING MOUNTED
USB	DUPLEX RECEPTACLE USB, 18" A.F.F. TO TOP
	DUPLEX RECEPTACLE, 6" ABOVE COUNTER
GFCI	DUPLEX RECEPTACLE GFI, 6" ABOVE COUNTER
	DUPLEX RECEPTACLE, FLOOR MOUNTED
GFCI	DUPLEX RECEPTACLE GFI , FLOOR MOUNTED
	SPECIALTY OUTLET, SEE DRAWINGS W/ MTG HT
	QUAD RECEPTACLE, 18" A.F.F. TO TOP
GFCI	QUAD RECEPTACLE GFI, 18" A.F.F. TO TOP
	QUAD RECEPTACLE, CEILING MOUNTED
GFCI	QUAD RECEPTACLE GFI, CEILING MOUNTED
M	MOTOR SWITCH
	OVERHEAD DOOR 3-BUTTON SWITCH, OPEN-CLOSE-STOP
PP	POWER POLE
JB	JUNCTION BOX
FF	FURNITURE FEED
	MOTOR
	NON-FUSED DISCONNECT
	COMBINATION MOTOR STARTER/ DISCONNECT
	FUSED DISCONNECT
	MANUAL MOTOR STARTER
	MOTOR STARTER
	SURFACE MOUNTED PANEL BOARD
	RECESSED PANEL BOARD
$	SWITCH, SINGLE POLE, 48" A.F.F. TO TOP UNO
$3	SWITCH, 3-POLE, 48" A.F.F. TO TOP UNO
$4	SWITCH, 4-POLE, 48" A.F.F. TO TOP UNO
$D	SWITCH, WALL BOX DIMMER, 48" A.F.F. TO TOP UNO
$LV	SWITCH, LOW VOLTAGE, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
$LVD	SWITCH, LOW VOLTAGE DIMMER, 48" A.F.F. TO TOP UNO (VERIFY W/ FIXTURE)
$F	SWITCH, FUSED: 125V, SINGLE POLE, DUAL ELEMENT PLUG FUSE
$K	SWITCH, KEYED, 48" A.F.F. TO TOP UNO
$P	SWITCH, PILOT LIGHT, 48" A.F.F. TO TOP UNO
$T	SWITCH, TIMER, 48" A.F.F. TO TOP
$OS	SWITCH, MULTI-TECH OCCUPANCY SENSOR, WALL
	SWITCH, MULTI-TECH OCCUPANCY SENSOR, CEILING
	SWITCH, EXTERIOR PHOTOCELL
	POWER PACK FOR OCCUPANCY SENSORS
S	CONTROLS: SPEAKER (SEE SCHEDULE)
DO	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH DOOR REQUIREMENTS
ADA	CONTROLS: ADA DOOR CONTROL OPENER, COORDINATE WITH SECURITY, AUTO AND MANUAL CONTROL
	SECURITY: PAN - TILT - ZOOM CAMERA
	SECURITY: PUSH BUTTON
CR	SECURITY: CARD READER
DC	SECURITY: DOOR CONTACT
	LUMINAIRE: WALL MOUNTED W/ TYPE
	LUMINAIRE: RECESSED DOWNLIGHT OR PENDANT W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: SURFACE OR RECESSED W/ TYPE, REFER TO SCHEDULE
A	LUMINAIRE: ON EMERGENCY, LIFE SAFETY, OR LOCAL LIGHTING CIRCUIT W/ TYPE, REFER TO SCHEDULE
	EXIT SIGN: CEILING MOUNTED W/ TYPE, SEE SCHEDULE
	EXIT SIGN: WALL MOUNTED W/ TYPE, SEE SCHEDULE
	EM LIGHTS: WALL MOUNTED UNO, REFER TO SCHEDULE
	REMOTE HEADS: WALL MOUNTED, REFER TO SCHEDULE
TV	TV CONNECTION: 96" TO TOP, COAX CONNECTION, UNO
	VOICE/ DATA OUTLET: 18" TO TOP, UNO
C	VOICE/ DATA OUTLET: CEILING MOUNTED, UNO
	VOICE/ DATA/ TV OUTLET: FLOOR MOUNTED, UNO
	TELEPHONE: 18" TO TOP, UNO
	DATA/ TELEPHONE: 18" TO TOP, UNO
P	FIRE: MANUAL PULL STATION, WALL MOUNTED, 48" AFF TO TOP UNO
#CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: VISUAL ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
#CD	FIRE: AUDIBLE ANNUNCIATION, WALL MOUNTED, 8'-0" AFF TO TOP UNO
AV #CD	FIRE: AUDIBLE AND VISUAL ANNUNCIATION, CEILING MOUNTED
V #CD	FIRE: VISUAL ANNUNCIATION, CEILING MOUNTED
A	FIRE: AUDIBLE ANNUNCIATION, CEILING MOUNTED
SD	FIRE: SMOKE DETECTOR, CEILING
HD	FIRE: HEAT DETECTOR, CEILING
S/H	FIRE: SMOKE AND HEAT DETECTOR
DSD	FIRE: DUCT SMOKE DETECTOR, CEILING, PROVIDED / INSTALLED BY EC, MOUNTED BY MC, UNO
RT	FIRE ALARM: REMOTE TEST STATION
TS	FIRE: TAMPER SWITCH
FS	FIRE: FLOW SWITCH
DH	FIRE: MAGNETIC DOOR HOLD
FR	FIRE: DOOR LOCK RELEASE
PS	FIRE: PRESSURE SWITCH
	HOME RUN W/ DIRECTION
—E—	ELECTRICAL CIRCUIT
—UG—	UNDERGROUND ELECTRICAL W/ INCDICATOR
	SITE: LIGHT, POLE, AND BASE
XF	TRANSFORMER W/ LABEL
	DEVICE OR EQUIPMENT CONNECTION

ABBREVIATIONS

A.F.F.	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
AMP OR A	AMPERES
ATS	AUTOMATIC TRANSFER
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
CKT	CIRCUIT
CB	CIRCUIT BREAKER
C	CONDUIT
CLG	CEILING
CP	CONTROL PANEL
CU	COPPER
D	DATA
DS	DISCONNECT SWITCH
DWG	DRAWING(S)
EA	EACH
EMT	ELECTRICAL METALLIC TUBING
EX	EXISTING
EXT	EXTERNAL
FIN. FLR.	FINISH FLOOR
FACP	FIRE ALARM CONTROL PANEL
FF	FURNITURE FEED
FT	FOOT, FEET
GRC	GALVANIZED RIGID CONDUIT
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERUPPTER
GFI	GROUND FAULT PROTECTION
HH	HAND HOLE
HOA	HAND-OFF-AUTO SELECTOR SWITCH
IU	INDOOR UNIT
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KVA	KILO VOLT-AMPERES
KVAR	KILO VOLT-AMPERES REACTIVE
LC	LIGHTING CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTOR PANEL
MLO	MAIN LUGS ONLY
MSB	MAIN SWITCH BOARD
MH	MAN HOLE
MFR	MANUFACTURER'S
MCC	MOTOR CONTROL CENTER
MTD	MOUNTED
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
N.L.	NIGHT LIGHT
NC	NORMALLY CLOSED CONTACT
NO	NORMALLY OPEN CONTACT
N.T.S.	NOT TO SCALE
OU	OUTDOOR UNIT
O.D.	OUTSIDE DIAMETER
OL	OVERLOADS-THERMAL
PNL	PANEL W/ INDICATION
Ø	PHASE
PH	PHASE
PC	PHOTO-SWITCH
P	POLE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PB	PULL BOX
PTT	PUSH-TO-TEST
RMC	RIGID METAL COUNT
SPEC	SPECIFICATION
SW	SWITCH
SWD	SWITCHING DUTY
TEL	TELEPHONE
TYP	TYPICAL
UL	UNDERWRITERS LABORATORY
U.N.O.	UNLESS NOTED OTHERWISE
VFC	VARIABLE FREQUENCY CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE
V	VOLT
W	WATT
WP	WEATHER PROOF
W	WIRE
W/	WITH
XF/ XFMR	TRANSFORMER
XXAF	XX AMPERE FUSE
XXAS	XX AMPERE SWITCH
XP	X POLES

GENERAL NOTES

1. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ALL STATE AND LOCAL CODES.
2. COORDINATE THE INSTALLATION OF ALL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS WITH ARCHITECTURAL AND MECHANICAL PLANS, SPECIFICATIONS AND EQUIPMENT DRAWINGS. PROVIDE ALL NECESSARY EQUIPMENT POWER AND CONTROL CONNECTIONS NOT PROVIDED BY OTHERS WHETHER INDICATED ON THE DRAWINGS OR NOT.
3. UNLESS OTHERWISE NOTED, WHERE ELECTRICAL DEMOLITION WORK IS SHOWN, REMOVE ALL CONDUCTOR AND EXPOSED CONDUITS FROM EQUIPMENT OR OUTLET LOCATION BACK TO THE POWER SOURCE(S) FOR THE CIRCUIT.
4. SEAL ALL WALL AND FLOOR PENETRATIONS TO MAINTAIN RATING.
5. BACK-TO-BACK OR THROUGH THE WALL BOXES SHALL NOT BE USED.
6. ALL LOW VOLTAGE CONDUCTORS SHALL BE STRANDED COPPER.
7. SPLICE CABLES OR CONDUCTORS IN OUTLET BOXES, DEVICE BOXES, PULL BOXES, JUNCTION BOXES. DO NOT SPLICE CABLES OR CONDUCTORS IN CONDUIT BODIES.
8. RECEPTACLES INDICATED AS GROUND FAULT CIRCUIT INTERRUPTER (GFI) TYPE MUST BE GFI RECEPTACLE, NO FEED THROUGH.
9. BRANCH CIRCUITS FROM CIRCUIT BREAKER TYPE DISTRIBUTION EQUIPMENT WHICH SUPPLY MOTOR LOADS THAT ARE LESS THAN 6.0 AMP SHALL BE PROTECTED BY A 15 AMP CIRCUIT BREAKER.
10. FINAL CONNECTIONS TO ITEMS SUBJECT TO VIBRATION SHALL BE MADE WITH LIQUID TIGHT FLEXIBLE METAL CONDUIT . LIQUID TIGHT FLEXIBLE METAL CONDUIT SHALL NOT BE USED AS A GROUNDING CONDUCTOR. PROVIDE A SEPARATE GREEN GROUNDING CONDUCTOR.
11. IN THE EVENT OF CONFLICTS BETWEEN THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS OR WITHIN THE DRAWINGS OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL BE ASSUMED TO BE CORRECT. REFER UNCERTAINTIES IN REQUIREMENTS TO THE ENGINEER FOR CLARIFICATION.
12. ALL BELOW GRADE LOCATIONS WITHIN BUILDINGS ARE DAMP LOCATIONS UNLESS OTHERWISE NOTED.
13. 120V AC CONTROL WIRING ASSOCIATED WITH MOTOR CONTROL CIRCUITS MAY BE RUN IN THE SAME RACEWAY WITH MOTOR POWER WIRING FOR CONSTANT SPEED MOTORS LESS THAN 30HP. FOR MOTORS 30HP AND GREATER OR FOR MOTORS POWERED FROM VARIABLE FREQUENCY CONTROLLERS, SEPARATE RACEWAYS SHALL BE USED FOR POWER AND CONTROL CONDUCTORS.
14. 120/240V CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS AS REQUIRED UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
15. CONDUIT PENETRATIONS OF FLOORS, LOWER LEVEL EXTERIOR WALLS OR WETWELL WALLS SHALL BE SLEEVED AND SEALED WITH LINKSEAL. SEE DETAILS ON MECHANICAL DRAWINGS.
16. IF COMPLIANCE WITH TWO OR MORE DIFFERING STANDARDS, REQUIREMENTS, DRAWINGS OR SPECIFICATIONS, OR ANY COMBINATION THEREOF, IS SPECIFIED AND THESE ESTABLISH DIFFERENT OR CONFLICTING REQUIREMENTS FOR MINIMUM QUANTITIES OR QUALITY LEVELS, COMPLY WITH THE MOST STRINGENT REQUIREMENT. THE MOST STRINGENT REQUIREMENT WILL BE THE BETTER QUALITY OR GREATER QUANTITY OF WORK, AND WILL TYPICALLY BE THE MORE EXPENSIVE OPTION. REFER UNCERTAINTIES AND REQUIREMENTS THAT ARE DIFFERENT, BUT APPARENTLY EQUAL, TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
17. THE QUANTITY OR QUALITY LEVEL SHOWN OR SPECIFIED SHALL BE THE MINIMUM PROVIDED OR PERFORMED. THE ACTUAL INSTALLATION MAY COMPLY EXACTLY WITH THE MINIMUM QUANTITY OR QUALITY SPECIFIED, OR IT MAY EXCEED THE MINIMUM WITHIN REASONABLE LIMITS. TO COMPLY WITH THESE REQUIREMENTS, INDICATED NUMERIC VALUES ARE MINIMUM OR MAXIMUM, AS APPROPRIATE, FOR THE CONTEXT OF REQUIREMENTS. REFER UNCERTAINTIES TO ENGINEER FOR A DECISION BEFORE PROCEEDING.
18. DESIGN DOCUMENTS MUST BE REPRODUCED IN THEIR ENTIRETY, INCLUDING ALL PLANS, SPECIFICATIONS, AND FRONT END DOCUMENTS.
19. ONLY COMPLETE DOCUMENT SETS ARE TO BE DISTRIBUTED TO SUBCONTRACTORS AND SUPPLIERS OF THE CONTRACTOR DURING BIDDING OR CONSTRUCTION.
20. FAILURE TO REVIEW AND COMPLY WITH A FULL SET OF CONTRACT DOCUMENTS WILL NOT BE ACCEPTED AS A VALID REASON FOR FAILURE TO MEET THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
21. ALL ABOVE CEILING SYSTEMS AND COMPONENTS (INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, ETC.) SHALL BE COORDINATED SUCH THAT THE SYSTEMS ARE PROPERLY INTEGRATED IN THE SPACE PROVIDED ABOVE CEILING AT THE CEILING HEIGHTS NOTED. IT IS THE RESPONSIBILITY OF EACH CONTRACTOR TO COORDINATE PATHWAYS WITHIN THE SPACE PROVIDED. CEILING HEIGHTS WILL NOT BE MODIFIED.
22. EQUIPMENT WHICH SHALL BE MOUNTED 6'-0" AWAY FROM HEAT PRODUCING EQUIPMENT. U.N.O.

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
WEST
BAY CITY, MICHIGAN

GENERAL NOTES

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

SHEET
W-E0.0

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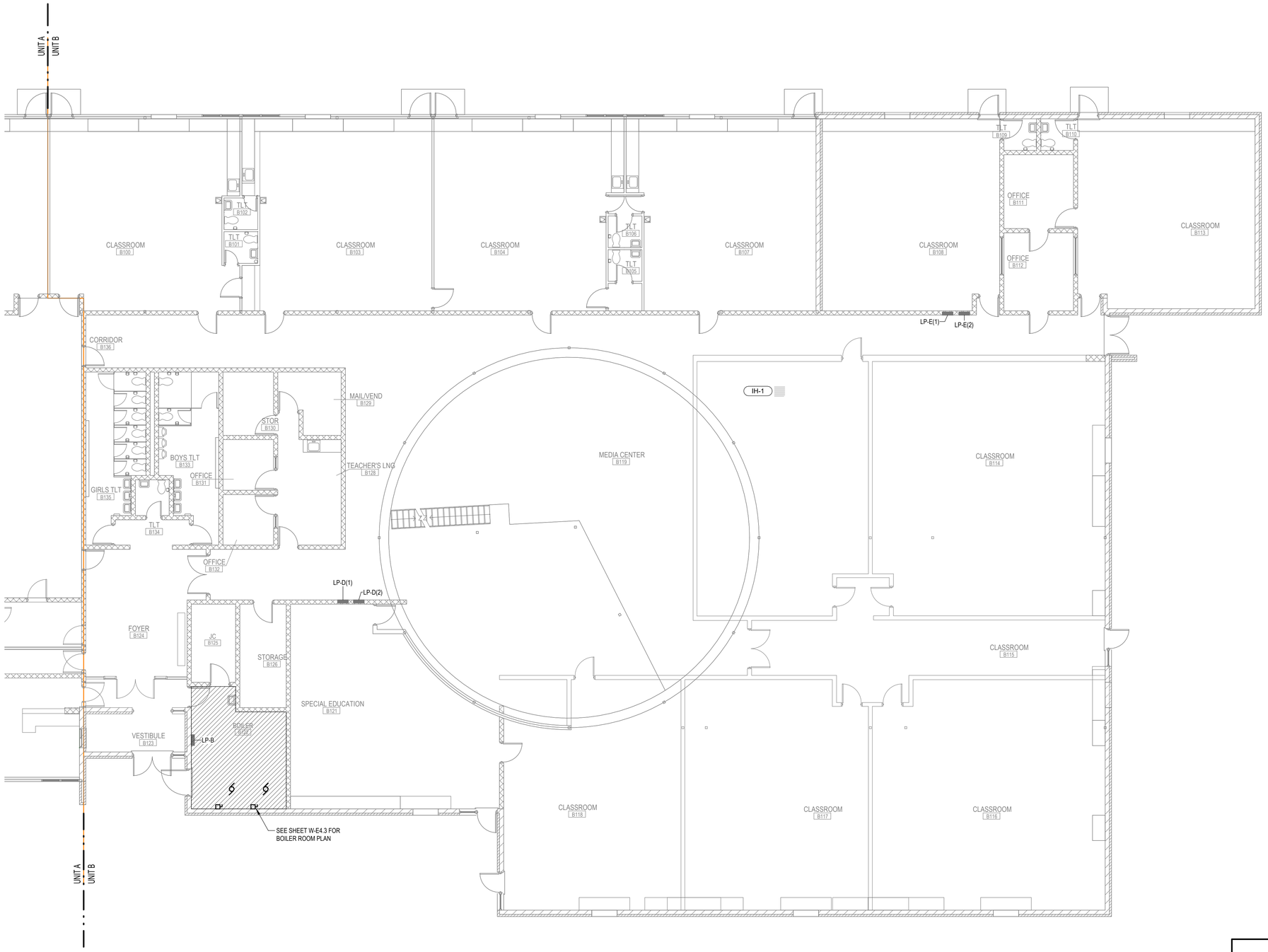

UNIT 'B' POWER PLAN

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

KEY PLAN

NOT TO SCALE

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BANGOR SCHOOLS
MECHANICAL UPGRADES
WEST
BAY CITY, MICHIGAN

UNIT 'B' POWER PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

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BRANCH PANEL: LP-B

LOCATION: BOILER ROOM
SUPPLY FROM: MDP
MOUNTING: Recessed
ENCLOSURE: Type 1

VOLTS: 120/208 Wye
PHASES: 3
WIRES: 4

A.I.C. RATING:
MAINS TYPE: MLO
MAINS RATING: 225 A

NOTES:
EXISTING PANEL - SQUARE D NQOD PANELBOARD

CKT	CIRCUIT DESCRIPTION	TRIP	POLES	A		B		C		POLES	TRIP	CIRCUIT DESCRIPTION	CKT
1	BOILER ROOF REC	20 A	1	540	0					1	20 A	SPARE	2
3	SPARE	20 A	1			0	2316			**1**	**30 A**	**B-1 BOILER**	**4**
5	UH-3 BOILER ROOM	20 A	1					180	2316	**1**	**30 A**	**B-2 BOILER**	**6**
7	B-3 BLOW COIL TEACH LOUNGE	20 A	1	828	1272					3	20 A	P-1 HOT WTR CIRC PUMP 3.0H.P.	8
9	SS-1 EVAP UNIT STOR / HEAD END	20 A	1			115	1272			--	--	--	10
11	SS-1 COND UNIT STORE / HEAD END	20 A	2					1144	1272	--	--	--	12
13	--	--	--	1144	1272					3	20 A	P-2 HOT WTR CIRC PUMP 3.0H.P	14
15	ROOFTOP REC BY SS-1	20 A	1			180	1272			--	--	--	16
17	UNIT VENT SPEC. ED & CLRM B118	20 A	1					1334	1272	--	--	--	18
19	UNIT VENT CLRM 116 & 117	20 A	1	1334	1300					3	20 A	RTU-2A ADMINISTRATION 13.0MCA	20
21	SPARE	20 A	1			0	1300			--	--	--	22
23	BOILER ROOM REC	20 A	1					180	1300	--	--	--	24
25	SPARE	20 A	1	0	7300					3	80 A	RTU-1 GYM ROOF TOP	26
27	Space	--	1			--	7300			--	--	--	28
29	Space	--	1					--	7300	--	--	--	30
31	Space	--	1	--	--					1	--	Space	32
33	Space	--	1			--	--			1	--	Space	34
35	Space	--	1					--	--	1	--	Space	36
37	Space	--	1	--	--					1	--	Space	38
39	Space	--	1			--	--			1	--	Space	40
41	Space	--	1					--	--	1	--	Space	42
		Total Load:		14990.0 VA		13755.0 VA		16298.0 VA					
		Total Amps:		127 A		115 A		137 A					

LEGEND:

LOAD CLASSIFICATION	CONNECTED LOAD	DEMAND FACTOR	ESTIMATED DEMAND	PANEL TOTALS	
				TOTAL CONN LOAD:	45043.0 VA
				TOTAL EST DEMAND:	45043.0 VA
				TOTAL CONN CURRENT:	125 A
				TOTAL EST DEMAND CURRENT:	125 A

NOTES:

GENERAL DEMOLITION NOTES

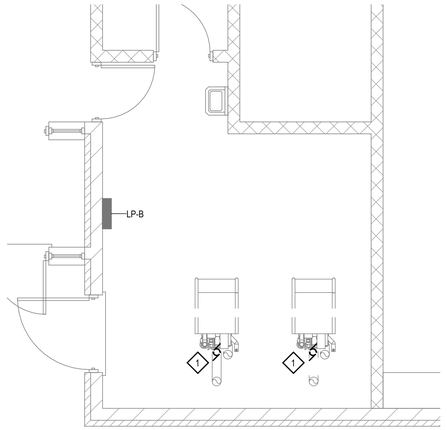
1. NOTES AND GRAPHIC REPRESENTATION SHALL NOTE LIMIT THE EXTENT OF DEMOLITION REQUIRED. ELECTRICAL CONTRACTOR TO PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF DEMOLITION WORK SHALL INCLUDE, BUT NOT LIMITED TO, REMOVAL OF LIGHT FIXTURES, WIRING DEVICES, CONNECTIONS TO EQUIPMENT, DISTRIBUTION PANELS, AND ALL ASSOCIATED RACEWAY AND WIRING. EXTENT OF DEMOLITION SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR.
2. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE, BUT INTERFERES WITH RENOVATIONS, SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. ELECTRICAL CONTRACTOR SHALL TRACE AND RELOCATE ALL EXISTING FEEDERS AND BRANCH CIRCUITS PASSING THROUGH THE DEMOLITION AREA THAT SERVE EXISTING SPACES TO REMAIN.
5. ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS FOR EXISTING EQUIPMENT AND DEVICES THAT ARE TO REMAIN. WHEN DEVICES ARE REMOVED AND NOT THE CIRCUIT DEAD END, EXTEND CIRCUIT AS REQUIRED TO MAINTAIN INTEGRITY OF ORIGINAL CIRCUIT.
6. ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED SHALL GET FIRST REFUSAL FROM OWNER AND IS THEN RESPONSIBILITY OF ELECTRICAL CONTRACTOR FOR PROPER DISPOSAL. EQUIPMENT TO BE RE-INSTALLED OR TURNED OVER TO OWNER SHALL BE PLACED IN A MUTUALLY ACCEPTABLE LOCATION.
7. FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN. WHERE EMPTY CONDUITS REMAIN, INSTALL PULLSTRING AND IDENTIFY BOTH ENDS.
8. FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICT WITH NEW WORK. INSTALL JUNCTIONS BOX, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED AND NOT INDICATED TO BE REPLACED.
10. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT CHANGES OR REMOVALS.
11. FIRE ALARM SYSTEM SHALL REMAIN IN OPERATION DURING BOTH DEMOLITION AND CONSTRUCTION STAGES OF THIS PROJECT.

KEYED DEMOLITION NOTES:

SYMBOL	DESCRIPTION
1	DISCONNET POWER FROM EXISTING BOILERS. REMOVE ALL CONDUITS AND CONDUCTORS BACK TO SOURCE. COORDINATE DEMOLITION WORK WITH MECHANICAL CONTRACTOR.

KEYED CONSTRUCTION NOTES:

SYMBOL	DESCRIPTION
1	PROVIDE 30A/1P BREAKERS FOR POWER TO NEW BOILERS B-1 & B-2. EXISTING PANEL LP-B IS SQUARE-D NQOD PANELBOARD. UTILIZE SPACES IN PANEL FROM EXISTING BOILERS BEING REMOVED.
2	PROVIDE 30A LOCAL DISCONNECT FOR NEW BOILERS B-1 & B-2. PROVIDE #10 AWG CONDUCTORS & #10G FOR CIRCUITING. COORDINATE INSTALLATION WITH MECHANICAL CONTRACTOR.
3	PROVIDE EMERGENCY SHUTDOWN SWITCH FOR NEW BOILERS. E-STOP SHALL BE WIRED TO BOILER CONTROL CIRCUIT TO SHUTDOWN ALL BOILERS UPON ACTIVATION. E-STOPS SHALL BE PILLA PART NO. BSD120 WITH PILCLHCOV1 COVER OR EQUAL. COORDINATE FINAL LOCATION WITH AHJ PRIOR TO INSTALLATION.



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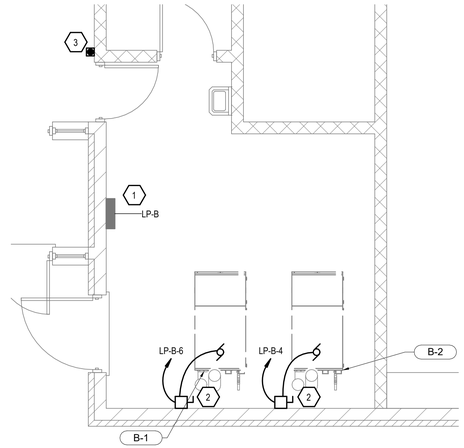
BOILER ROOM DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



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BOILER ROOM POWER PLAN
SCALE: 1/4" = 1'-0"

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

BANGOR SCHOOLS
MECHANICAL UPGRADES
WEST
BAY CITY, MICHIGAN

BOILER ROOM POWER & DEMOLITION PLAN

NO.	STATUS / REVISIONS	DATE
	ISSUED FOR BIDS	03/30/2023

CHCK'D BY: E. MARTER
DES'D BY: B. KUSHION
DRAWN BY: A. FISCHHABER
PROJ #: 21-1719-0435

SHEET
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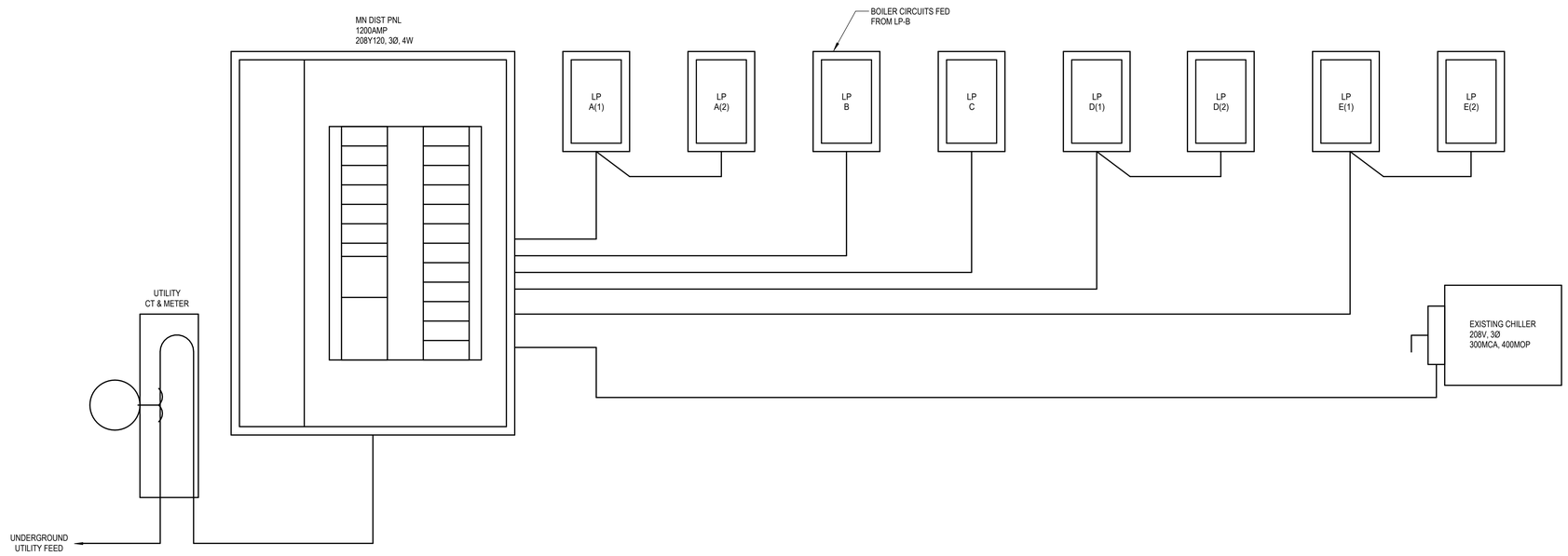

ONE-LINE DIAGRAM

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