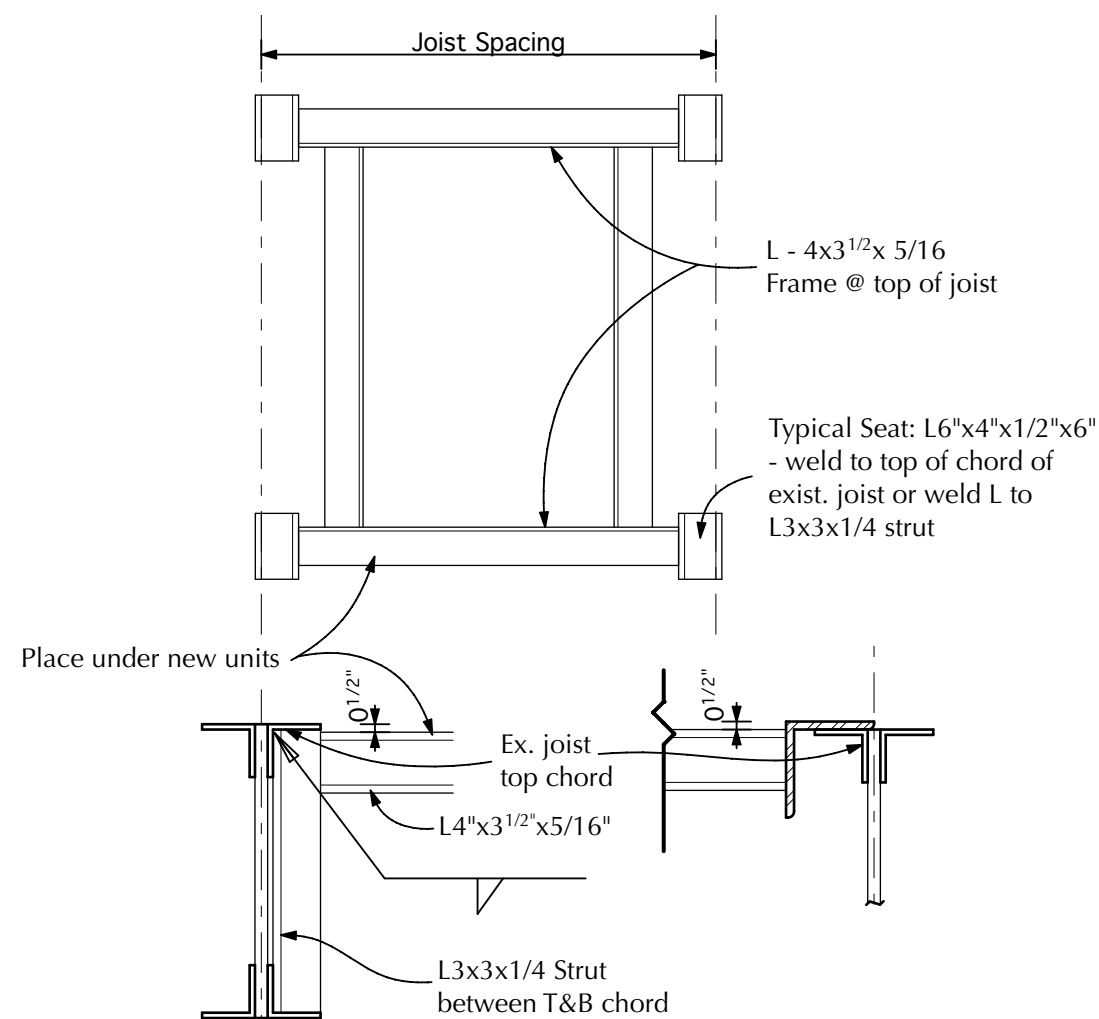
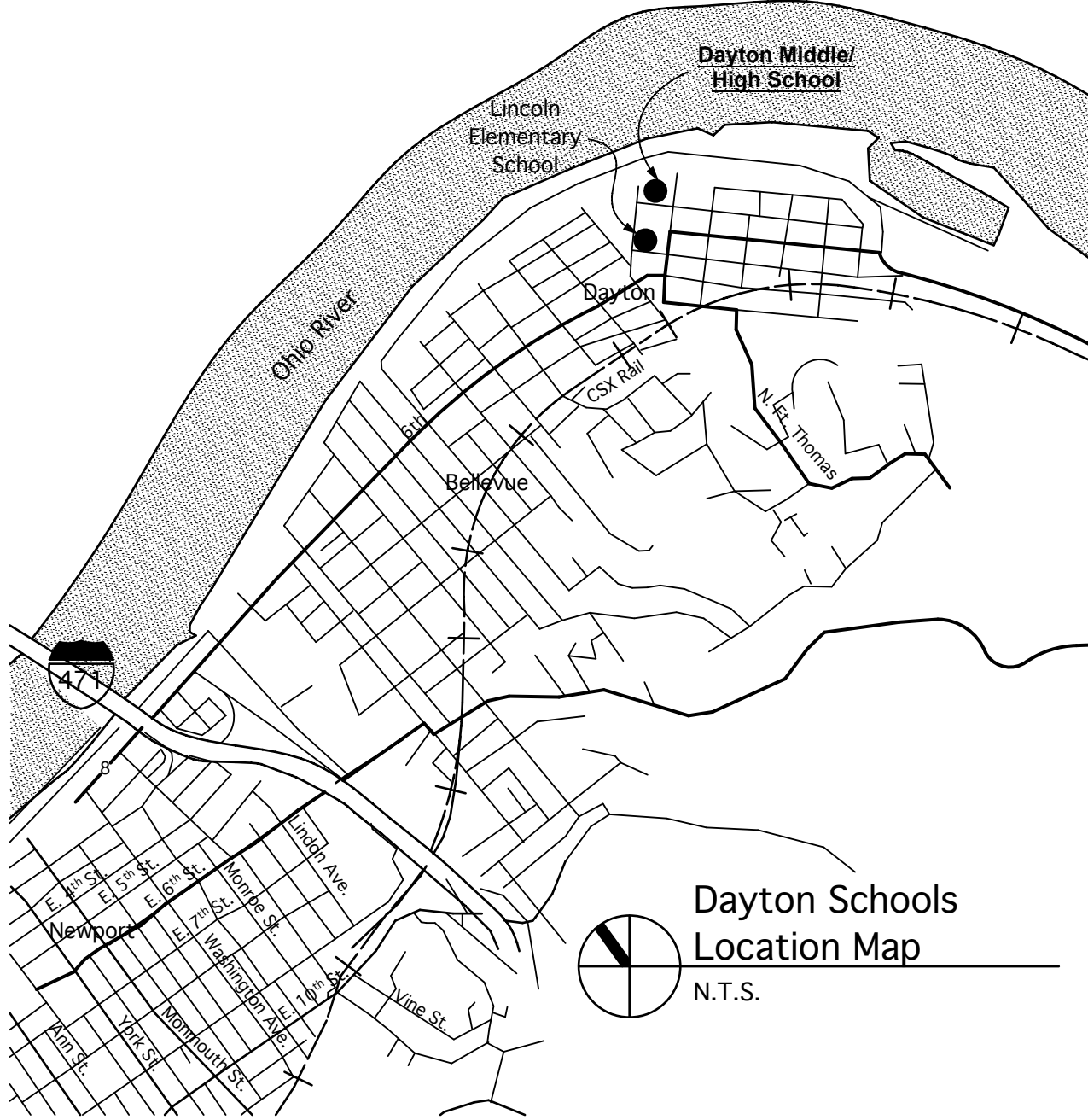
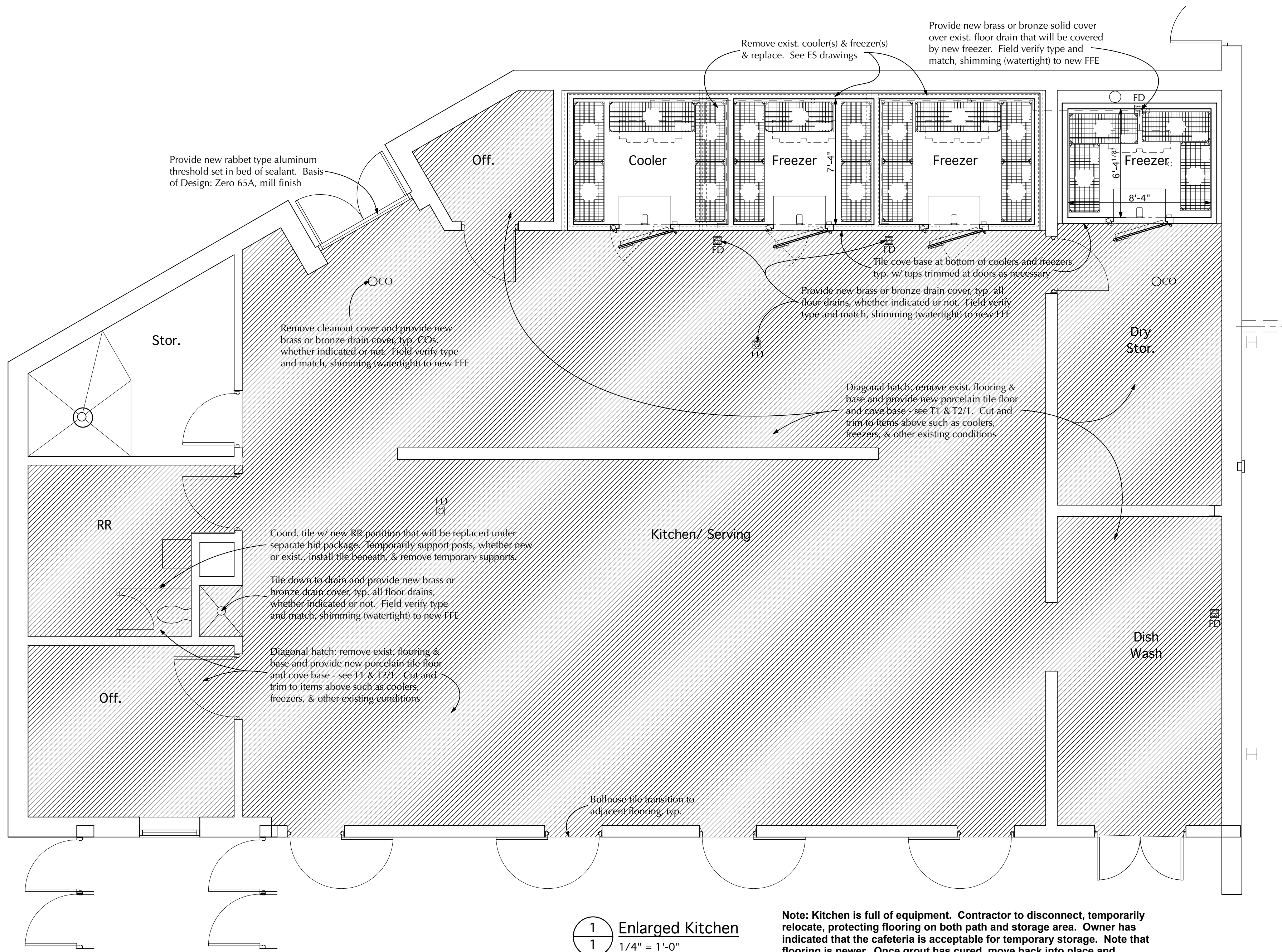


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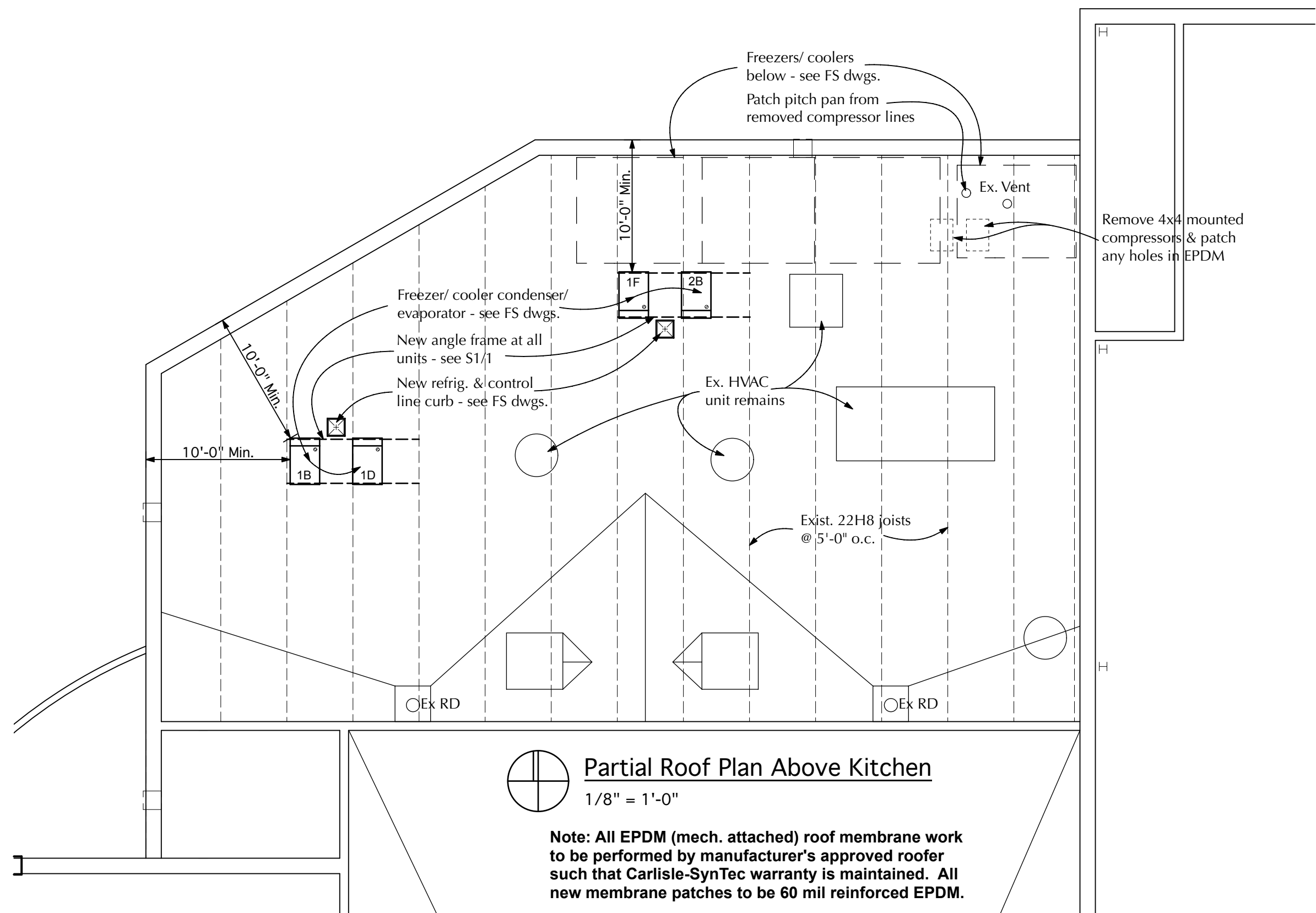
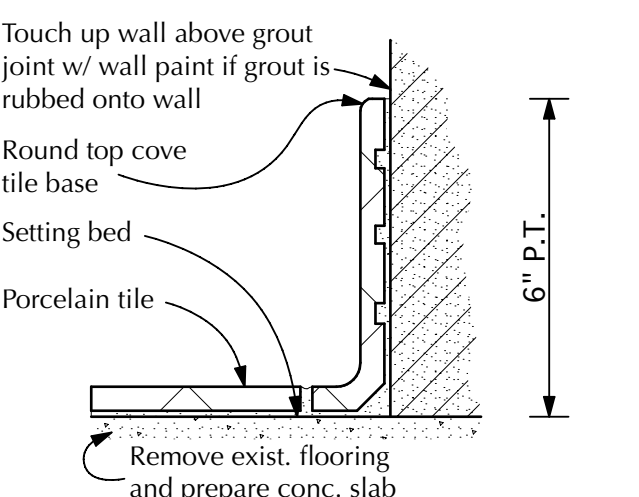
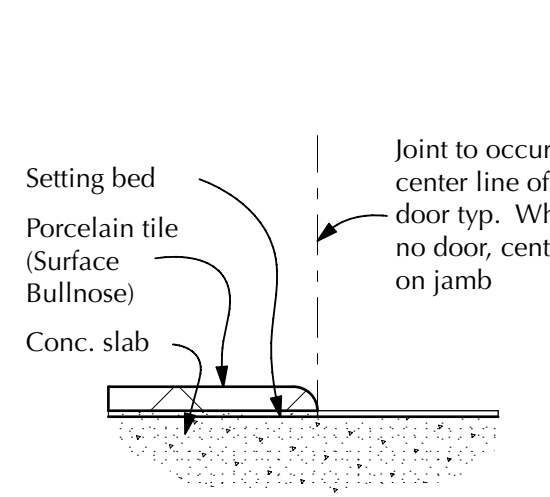


S1  
1  
Typical Frame at Roof Opening  
N.T.S.

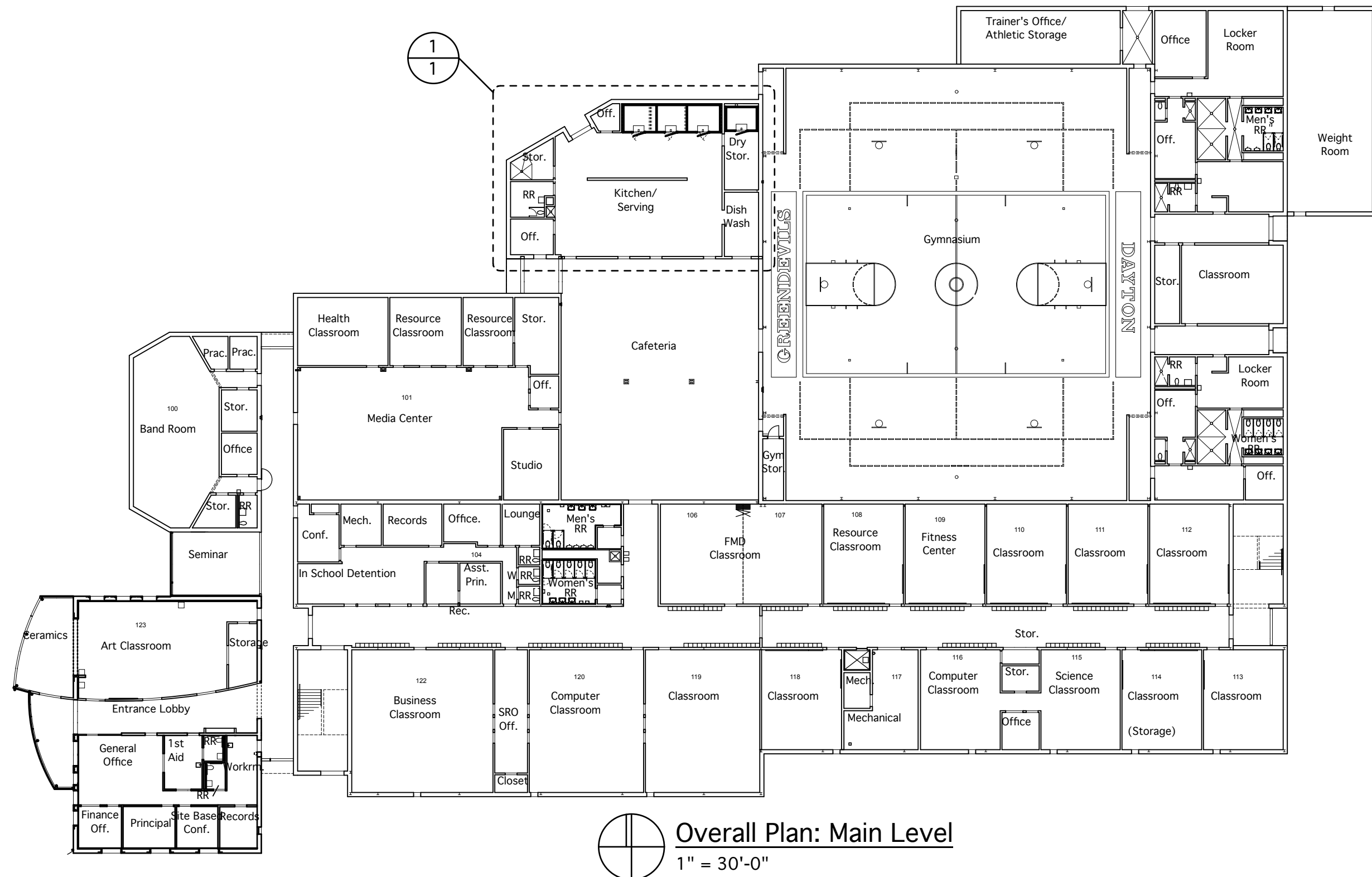


Note: Kitchen is full of equipment. Contractor to disconnect, temporarily relocate, protecting flooring on both path and storage area. Owner has indicated that the cafeteria is acceptable for temporary storage. Note that flooring is newer. Once grout has cured, move back into place and reconnect. Utilize appropriate subcontractors to disconnect and reconnect.

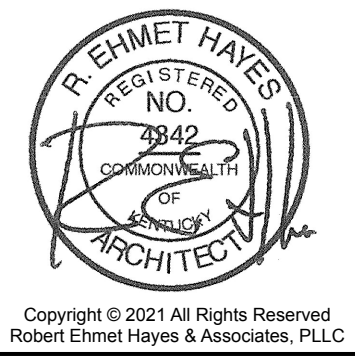
DRAWING INDEX	
Architectural:	1 Kitchen Plan; Roof Plan; Overall Plans; Details
Food Service:	FS-1 Food Service Drawings
Electrical:	E1-001 Legend and Design Criteria
	E1-002 Specifications
	E1-101 Plans and Schedule
	E1-601 Electric Power - Single Line Diagram



Note: All EPDM (mech. attached) roof membrane work to be performed by manufacturer's approved roofer such that Carlisle-SynTec warranty is maintained. All new membrane patches to be 60 mil reinforced EPDM.



REH&A  
ARCHITECTS  
ROBERT EHMET HAYES & ASSOCIATES, PLLC  
2512 DIXIE HIGHWAY - FORT MITCHELL, KENTUCKY 41017 - (609) 331-3121



Dayton High School  
Bid Package #1: Kitchen and Flooring  
200 Greendevil Ln.  
Dayton, KY 41074  
Dayton Independent Schools  
Mr. Jay Brewer - Superintendent



SHEET TITLE

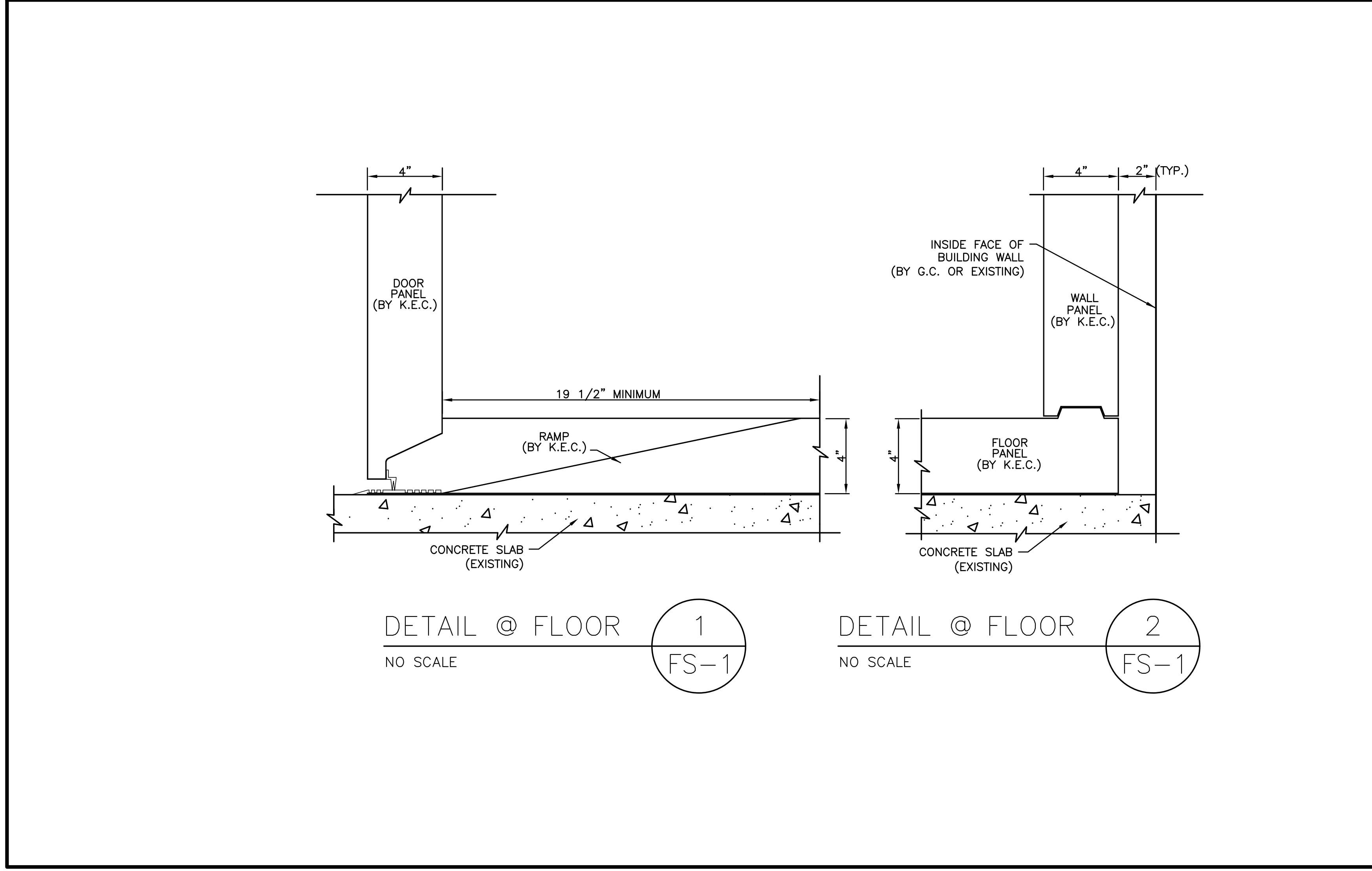
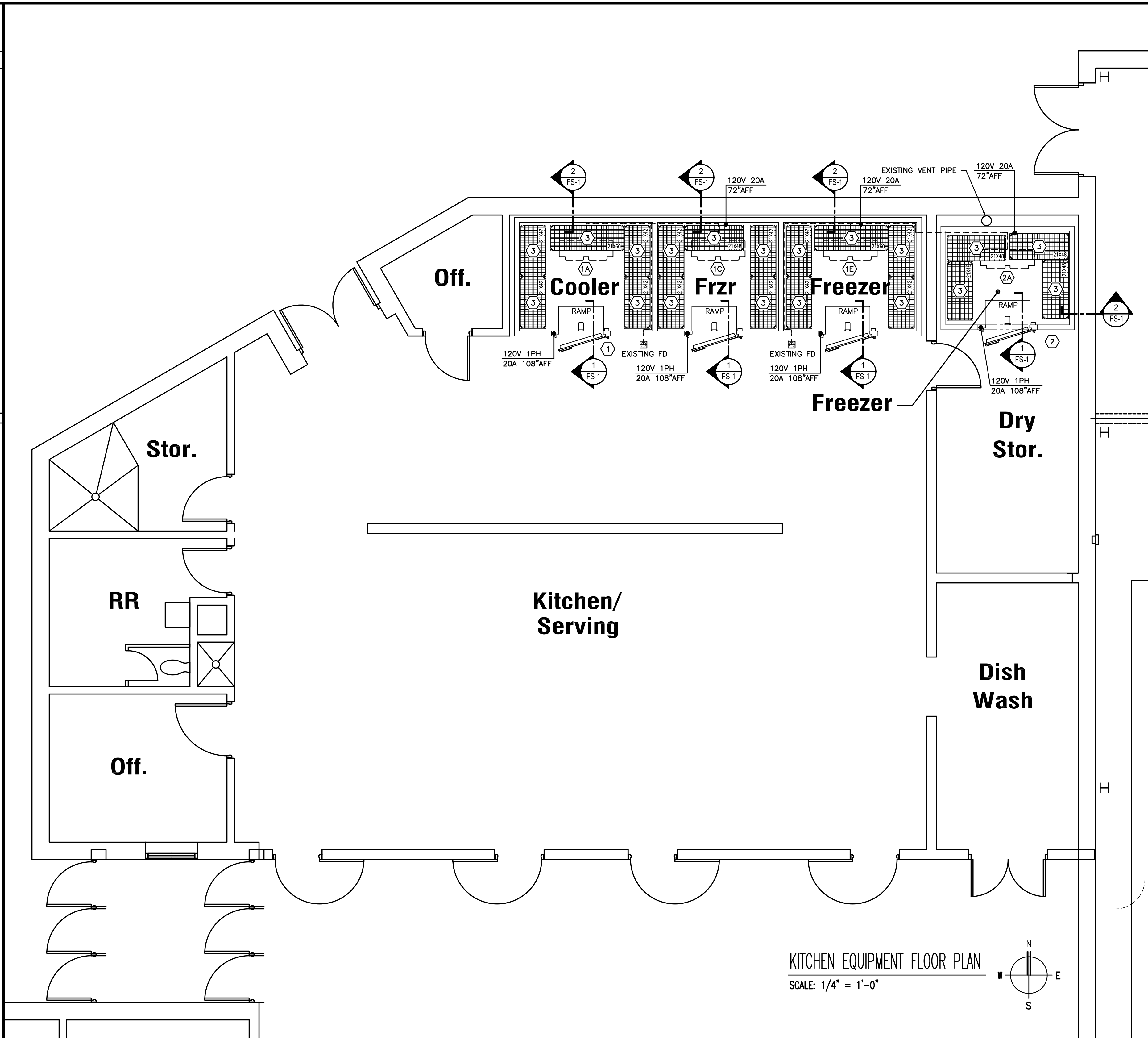
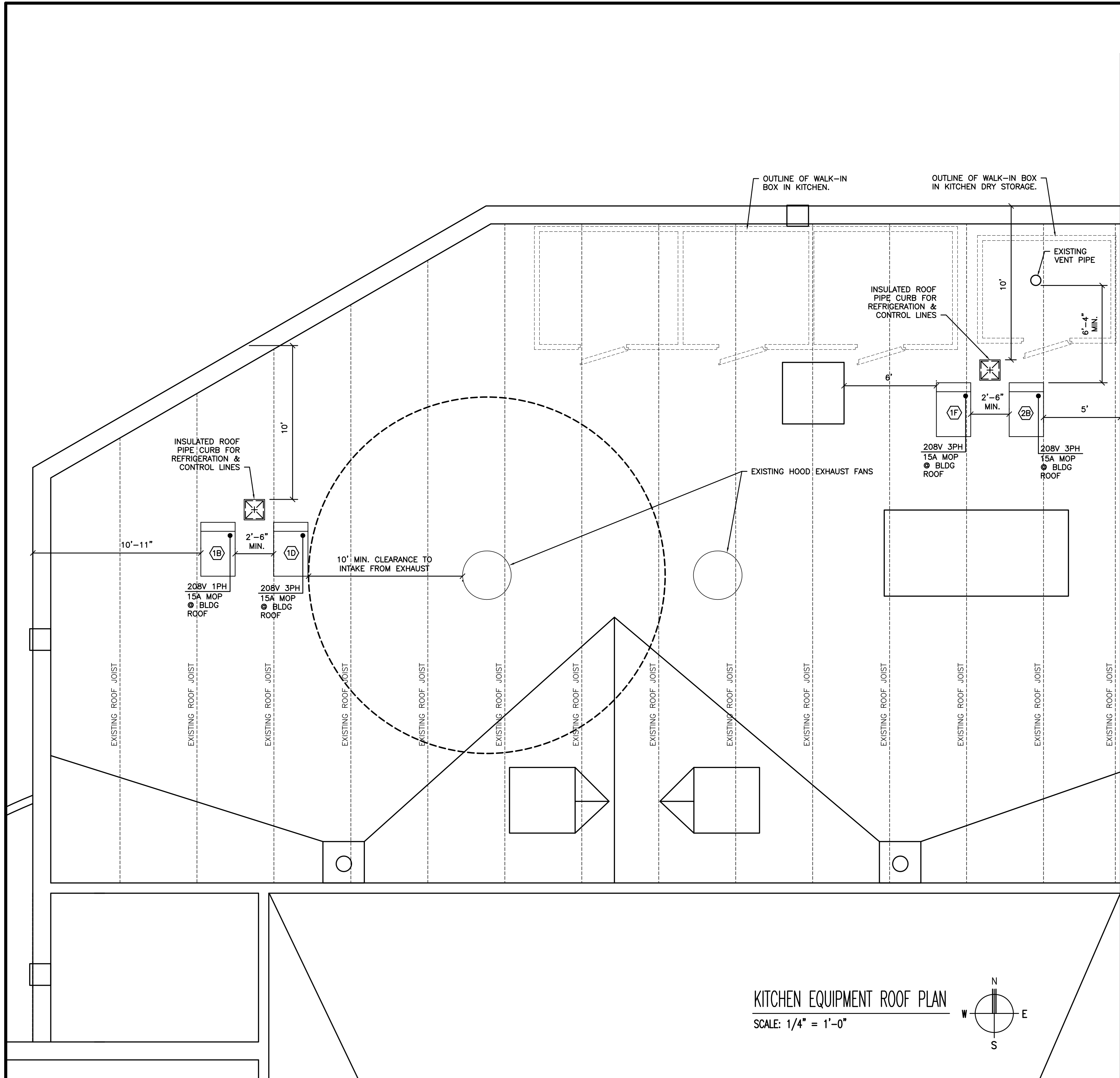
BG #  
BG# 21-222

REH #  
168-221 (RTF)

DATE  
10-27-21

1





# EQUIPMENT SCHEDULE

ITEM NO.	NO. REQ'D	DESCRIPTION	WATER		WASTE	ELECTRICAL					GAS			RESPONSIBILITY				NOTES & COMMENTS
			HOT	COLD		KW.	HP	V/PH	AMPS	CONN.	MTG. HT.	3 PH KW LOAD/G	SIZE	BTU'S	FURN. BY	INSTALL BY	CONN. MC/PC/EC	
1	1	WALK-IN COOLER/FREEZER/FREEZER						(5)120/1	20 EA.	DIR	SEE FLOOR PLAN				K.E.C.	K.E.C.	*	(1)(2)
1A	1	EVAPORATOR - COOLER			FD										K.E.C.	K.E.C.		(3)(4)
1B	1	CONDENSING UNIT - COOLER						208/1	15 MOP	DIR	BUILDING ROOF				K.E.C.	K.E.C.	*	(4) COMPRESSOR WGT.: 200 LBS.
1C	1	EVAPORATOR - FREEZER			FD										K.E.C.	K.E.C.		(3)(4)
1D	1	CONDENSING UNIT - FREEZER						208/3	15 MOP	DIR	BUILDING ROOF				K.E.C.	K.E.C.	*	(4) COMPRESSOR WGT.: 200 LBS.
1E	1	EVAPORATOR - FREEZER			FD										K.E.C.	K.E.C.		(3)(4)
1F	1	CONDENSING UNIT - FREEZER						208/3	15 MOP	DIR	BUILDING ROOF				K.E.C.	K.E.C.	*	(4) COMPRESSOR WGT.: 200 LBS.
2	1	WALK-IN FREEZER/COOLER						(2)120/1	20 EA.	DIR	SEE FLOOR PLAN				K.E.C.	K.E.C.	*	(1)(2)
2A	1	EVAPORATOR - FREEZER			FD										K.E.C.	K.E.C.		(3)(4)
2B	1	CONDENSING UNIT - FREEZER						208/3	15 MOP	DIR	BUILDING ROOF				K.E.C.	K.E.C.	*	(4) COMPRESSOR WGT.: 200 LBS.
3	1 LOT	SHELVING - FREEZER/COOLER													K.E.C.	K.E.C.		

## FOODSERVICE ROOF EQUIPMENT NOTES

K.E.C. AND ROOFING CONTRACTOR TO COORDINATE WITH ONE ANOTHER; THE EXACT LOCATIONS, DIMENSIONS, AND QUANTITIES OF ALL ROOF OPENINGS REQUIRED TO ACCOMMODATE EQUIPMENT BEING PROVIDED BY THE K.E.C. SIZES & WEIGHTS MAY VARY FROM BID DOCUMENTS DEPENDING ON WHICH MANUFACTURER LISTED IN 114000 IS AWARDED THIS CONTRACT.

K.E.C. TO SUPPLY ALL ROOF CURBS AND EQUIPMENT RAILS TO ROOFING CONTRACTOR. ROOFING CONTRACTOR TO INSTALL CURBS, RAILS, AND ALL FLASHING REQUIRED.

K.E.C. TO SET EQUIPMENT ON CURBS AND RAILS.

ROOFING CONTRACTOR TO COORDINATE EXACT LOCATION AND SIZE DETAILS OF ROOF TOP EQUIPMENT WITH K.E.C. SIZES MAY VARY FROM WHAT IS SHOWN ON BID DOCUMENTS, DEPENDING ON WHICH MANUFACTURER LISTED IN 114000 IS AWARDED THIS CONTRACT.

STRUCTURAL CONTRACTOR TO FRAME ROOF OPENINGS AS NEEDED.

E.C. TO PROVIDE ALL SERVICES AT ROOF REQUIRED BY ROOFTOP EQUIPMENT. COORDINATE ELECTRICAL REQUIREMENTS WITH K.E.C.

ALL DIMENSIONS OF EXISTING ARCHITECTURE AND M.E.P. MUST BE VERIFIED AT SITE OF CONTRACT.

## NOTES

(1) E.C. TO PROVIDE 120V 1PH CIRCUIT TO "J" BOX WHERE SHOWN ON FOODSERVICE EQUIPMENT FLOOR PLAN. K.E.C. TO BRANCH TO LIGHTS, DIGITAL ALARM AND HEATED VAPOR RELIEF VENT WHERE REQUIRED.

(2) E.C. TO INSTALL 120V 20A RECEPTACLE, WITH GFCI BREAKER AT ELECTRICAL PANEL, 72" AFF ON INTERIOR BACK WALL OF WALK-IN FREEZER COMPARTMENTS AS SHOWN ON FLOOR PLAN. K.E.C. TO PLUG CONDENSATE DRAIN LINE HEAT TAPE INTO THIS RECEPTACLE.

(3) BLOWER COIL TO BE WIRED THROUGH COMPRESSOR CIRCUIT.

(4) TECHNOLOGY CONTRACTOR TO PROVIDE ETHERNET CONNECTION FROM BUILDING AUTOMATION SYSTEM NETWORK TO ENVIRO-CONTROLLER IN BLOWER COIL HOUSING USING CAT5 COPPER CABLE.

(5) E.C. TO PROVIDE CIRCUIT TO A SINGLE POINT CONNECTION AT COOLER CONDENSING UNIT LOCATED AS SHOWN ON DRAWINGS. K.E.C. TO PROVIDE CONDUIT SIZED FOR FOUR WIRES FROM CONDENSING UNIT TO UNIT COOLER EVAPORATOR AND INTER-WIRING OF COMPONENTS NECESSARY FOR PROPER OPERATION OF THIS SYSTEM.

(6) E.C. TO PROVIDE CIRCUIT TO A SINGLE POINT CONNECTION AT FREEZER CONDENSING UNIT LOCATED AS SHOWN ON DRAWINGS. K.E.C. TO PROVIDE CONDUIT SIZED FOR SEVEN WIRES FROM CONDENSING UNIT TO BLOWER COIL AND INTER-WIRING OF COMPONENTS NECESSARY FOR PROPER OPERATION OF THIS SYSTEM.

## ABBREVIATIONS

A- AMPS  
AFF- ABOVE FINISHED FLOOR  
B.O. BY OTHERS  
B.V. BY VENDOR  
CLNG CEILING  
CW COLD WATER  
DFA DOWN FROM ABOVE  
DIR DIRECT CONNECTION  
DO DUPLEX OUTLET  
E.C. ELECTRICAL CONTRACTOR  
E.C.S. ENERGY DISTRIBUTION SYSTEM  
FD FLOOR DRAIN  
FS FLOOR SINK  
FT FLOOR TROUGH  
FNDL FLOOR DRAIN  
G GAS  
G.C. GENERAL CONTRACTOR  
HP HORSEPOWER  
HW HOT WATER  
J JUNCTION BOX  
K.E.C. KITCHEN EQUIPMENT CONTRACTOR  
KW KILOWATT  
M.C. MECHANICAL CONTRACTOR  
MOA MINIMUM CIRCUIT AMPS  
N.I.C. NOT IN CONTRACT  
O.S. OWNER SUPPLIED  
PC PLUMBING CONTRACTOR  
PH PHASE  
SO SINGLE PURPOSE OUTLET  
V VOLTS  
W WASTE

**JOBY SMITH & ASSOCIATES, INC.**  
COMMERCIAL FOOD SERVICE CONSULTANTS  
7 East Avenue - Maumee, Ohio 44890  
Phone: 313-580-1284 Fax: 313-462-7118

**Dayton High School Renovations**  
200 Greendevil Ln., Dayton, KY 41074  
Dayton Independent Schools  
Mr. Jay Brewer - Superintendent

SHEET TITLE  
FOOD SERVICE EQUIPMENT FLOOR PLAN

BG #  
BG #

REH #  
168-221 (RTF)

DATE  
10/21/2021

FS-1

ELECTRIC LEGEND			
SYMBOL	DESCRIPTION		
RECEPTACLES AND MISCELLANEOUS OUTLETS			
	SINGLE (SIMPLEX), DUPLEX, AND DOUBLE DUPLEX (QUAD) RECEPTACLE RESPECTIVELY		
	GFI / GFCI RECEPTACLES		
	SURGE PROTECTIVE DEVICE RECEPTACLES		
	RECEPTACLE ATTRIBUTES 42" = MOUNT RECEPTACLE AT THIS HEIGHT ABOVE GRADE / FINISHED FLOOR C = INSTALL ABOVE COUNTER AND BACKSPLASH H = INSTALL RECEPTACLE HORIZONTALLY L = LIT (PROVIDE ILLUMINATED FACE OR INDICATOR LIGHT TO INDICATE THERE IS POWER TO RECEPTACLE) SW = SPLIT WIRED TR = TAMPER RESISTANT W = WEATHER PROOF WHILE IN USE COVER AND WEATHER RESISTANT RECEPTACLE		
MISCELLANEOUS			
	INDICATES DIRECT CONNECTION TO EQUIPMENT		
	MOTOR RATED TOGGLE SWITCH, MANUAL STARTER WITH PILOT LIGHT, AND MANUAL STARTER WITH PILOT LIGHT WITH EXTERNAL RELAY FOR CONTROL OR MONITORING RESPECTIVELY - ALL MAY BE KEYED "K"		
	HEAVY DUTY DISCONNECT SWITCH (NON-FUSED) (LEFT) HEAVY DUTY DISCONNECT SWITCH (FUSED) (RIGHT)		
	HAND DRYER		
	ELECTRICAL SWITCHBOARD OR SWITCHGEAR (DIMENSIONS MAY VARY)		
	ELECTRICAL PANELBOARD OR DISTRIBUTION BOARD (DIMENSIONS MAY VARY / FLUSH OR SURFACE MOUNTED AS INDICATED)		
	DRY TYPE TRANSFORMER		
	OIL FILLED TRANSFORMER		
SINGLE LINE DIAGRAM			
	ELECTRIC UTILITY COMPANY METER AND ASSOCIATED CURRENT TRANSFORMERS		
	CUSTOMER ELECTRIC METER AND ASSOCIATED CURRENT TRANSFORMERS HD = HIGH DENSITY METERING CABINET/BANK MOUNTED TO TIGHTLY GROUP ALL METERS TOGETHER GROUNDING ELECTRODE PER NFPA 70 ARTICLE 250 MINIMUM		
	HEAVY DUTY DISCONNECT SWITCH (NON-FUSED)(LEFT) (FUSED)(RIGHT) SIZES MAY BE SHOWN ONLY IN SCHEDULE		
	ELECTRICAL PANELBOARD OR DISTRIBUTION BOARD		
	ELECTRICAL SWITCHBOARD OR SWITCHGEAR		
	AUTOMATIC TRANSFER SWITCH		
	SURGE PROTECTIVE DEVICE		
WIRE / CABLE / RACEWAY			
	BRANCH CIRCUIT HOME RUN WITH PANEL NAME AND CIRCUIT NUMBER(S)		
	CABLING / RACEWAY INSTALLED CONCEALED IN WALLS OR ABOVE CEILING		
	CABLING / RACEWAY INSTALLED BELOW FLOOR OR GRADE		
	CABLE TRAY		
	CONDUIT UP OR DOWN		
ABBREVIATIONS			
42"	DISTANCE ABOVE FINISHED FLOOR / GRADE / PAVEMENT	IG	ISOLATED GROUND
AF	AMP FRAME OF FUSED SWITCH OR CIRCUIT BREAKER	LR	LEGALLY REQUIRED STANDBY
AFCI	ARC-FAULT CIRCUIT INTERRUPTER	LSI	LONG - SHORT - INSTANTANEOUS
AC	AMPS INTERRUPTING CURRENT	LSIG	LONG - SHORT - INSTANTANEOUS - GROUND FAULT
AT	AMP TRIP OF FUSED SWITCH OR CIRCUIT BREAKER	MCR	MAIN CIRCUIT BREAKER
ATS	AUTOMATIC TRANSFER SWITCH	MFR	MANUFACTURER
BAS	BUILDING AUTOMATION SYSTEM	MLO	MAIN LUGS ONLY
C.T.G.	WORK UNDER DIVISION 27 OR 28 AS APPLICABLE	MTS	MANUAL TRANSFER SWITCH
C/B	CIRCUIT BREAKER	NW	MICROWAVE OVEN
CH	COUNTER HEIGHT OR SPECIAL HEIGHT DEVICE	NIC	NOT IN CONTRACT (SHOWN FOR REFERENCE ONLY)
DW	DISHWASHER	NTS	NOT TO SCALE
E	EMERGENCY	OFE	OWNER-FURNISHED EQUIPMENT - INSTALLED AND WIRED BY E.C.
E.C.	WORK UNDER DIVISION 26	OS	OPTIONAL STANDBY
EMS	ENERGY MANAGEMENT SYSTEM	P.C.	WORK UNDER DIVISION 22
EPO	EMERGENCY POWER OFF	(R)	RELOCATE
ER	EQUIPMENT ROOM	S.C.	WORK UNDER DIVISION 21
ERM	ENERGY REDUCTION MAINTENANCE SWITCH	SCCR	SHORT CIRCUIT CURRENT RATING
ESP	EMERGENCY STANDBY RATING	SPD	SURGE PROTECTIVE DEVICE
ETR	EXISTING TO REMAIN	ST	SHUNT TRIP
EW	ELECTRIC WATER COOLER	TAAC	TO ABOVE ACCESSIBLE CEILING
EX	EXISTING	TR	TAMPER RESISTANT
FBO	FURNISHED BY OTHERS - INSTALLED AND WIRED BY E.C.	TTB	TELEPHONE TERMINAL BOARD
FIBO	FURNISHED AND INSTALLED BY OTHERS - WIRED BY E.C.	TYP	TYPICAL
FP	RECEPTACLE TO BE USED FOR A FLAT PANEL DISPLAY	UCR	UNDER COUNTER REFRIGERATOR
FWE	FURNISHED WITH EQUIPMENT BY OTHERS - INSTALLED AND WIRED BY E.C.	UL S.E.	UNDERWRITERS LABORATORY LISTED FOR SERVICE ENTRANCE
GD	GARBAGE DISPOSAL	UNO	UNLESS NOTED OR INDICATED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS
GFEF	GROUND FAULT EQUIPMENT PROTECTION	VFD / VSD	VARIABLE FREQUENCY / SPEED DRIVE
GFI / GFCI	GROUND FAULT CIRCUIT INTERRUPTER DEVICE	VF	VERIFY IN FIELD
GND	GROUND	VM	VENDING MACHINE
H.C.	WORK UNDER DIVISION 23	VP	VANDAL PROOF
H.O.A.	"HAND - OFF - AUTO" SWITCH	W / WP	WEATHERPROOF
		WG	WIRE GUARD
		WR	WEATHER RESISTANT
PLAN-VIEW AND GRAPHIC LINE TYPES			
WORK SHOWN BOLD-CONTINUOUS INDICATES NEW WORK (UNLESS OTHERWISE INDICATED)			
WORK SHOWN FADED INDICATES EXISTING WORK TO REMAIN OR NEW WORK BY OTHERS AS APPLICABLE (UNLESS OTHERWISE INDICATED)			
WORK SHOWN BOLD-DASHED INDICATES SELECTIVE DEMOLITION WORK (UNLESS OTHERWISE INDICATED)			

ELECTRIC DESIGN CRITERIA	
APPLICABLE BUILDING CODES	
2018 KENTUCKY BUILDING CODE (BASED ON THE INTERNATIONAL BUILDING CODE) 2017 NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) 2016 NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE 2012 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)	
GENERAL ELECTRICAL INSTALLATION NOTES	
A.	CODE COMPLIANCE: PROVIDE ALL ELECTRICAL WORK COMPLIANT WITH ALL PREVAILING CODES.
B.	LISTINGS: PROVIDE MATERIALS, COMPONENTS AND ASSEMBLED COMPONENTS WITH LISTINGS AND LABELS FROM A NATIONALLY RECOGNIZED TESTING LABORATORY (NETL) MANUFACTURED, LISTED AND LABELED FOR THEIR INTENDED USE.
C.	RATED BUILDING SURFACES: SEPARATE DEVICE BOXES BY A MINIMUM OF 6 INCHES WHERE INSTALLED BACK-TO-BACK WITHIN DEMISING WALLS TO MAINTAIN REQUIRED FIRE AND SOUND RATING TYPICAL OF ALL DEVICE BOXES INSTALLED ON DEMISING WALLS). PROVIDE LISTED FIRE-RATED WRAPS AROUND ALL RECESSED OUTLET, DEVICE AND EQUIPMENT BOXES IN FIRE/SMOKE RATED WALLS, CEILINGS AND FLOORS TO MEET OR EXCEED THE RESPECTIVE FIRE/SMOKE RATING OF THE SURFACE.
D.	RATED PENETRATIONS: SEAL ALL PENETRATIONS THROUGH FIRE-RATED AND/OR SMOKE RATED MEMBRANES (FLOORS, WALLS, CEILINGS, ETC.) USING SEALANT PRODUCTS THAT MEET OR EXCEED THE RATING OF THE RESPECTIVE MEMBRANE.
E.	GANGED DEVICES: INSTALL WIRING DEVICES GANGED WHEREVER POSSIBLE FOR INSTANCES WHERE THEY ARE SHOWN TOGETHER. THIS INCLUDES LOCATIONS ABOVE COUNTERS AND WORK SURFACES WHERE APPLICABLE.
F.	OUTLET BOXES NEAR CORNERS: INSTALL WALL-MOUNTED SWITCHES, CONTROLS, RECEPTACLES, OUTLETS, ETC. AT LEAST 6 INCHES FROM WALL CORNERS.
G.	CONCEALMENTS: CONCEAL ALL CONDUIT DROPS AND RISES WITHIN WALLS, AND PROVIDE FLUSH-MOUNTED WALL OUTLET BOXES UNLESS OTHERWISE INDICATED.
H.	DOCUMENTS OF OTHER TRADES: REVIEW DOCUMENTS OF OTHER TRADES, INCLUDING ARCHITECTURAL, PRIOR TO SUBMITTING A BID. PROVIDE ELECTRICAL WORK FOR EQUIPMENT, DEVICES, ETC. OF OTHER TRADES AS REQUIRED TO RENDER THEM FULLY OPERATIONAL. REFER TO ARCHITECTURAL ELEVATIONS FOR INTENDED LOCATIONS AND MOUNTING HEIGHTS FOR EQUIPMENT AND OUTLETS, ETC. PRIOR TO COMMENCING WITH ANY RELATED ROUGH-IN WORK.
I.	SCHEMATIC REPRESENTATIONS: CIRCUITING WORK SHOWN ON DRAWINGS IS FOR SCHEMATIC GENERAL GRAPHIC REPRESENTATION ONLY. DETERMINE SPECIFICS IN FIELD: POINT-TO-POINT ROUTING, HOME-RUN LOCATIONS, METHODS OF CONCEALMENT, ETC.). LOCATIONS AND ROUTING INDICATED ON PLANS ARE SCHEMATIC AND DIAGRAMMATIC IN NATURE. LAYOUT AND INSTALL ALL ELECTRICAL WORK IN STRICT COMPLIANCE WITH CHAPTER 1, PART II, ARTICLE 110.26 OF THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70).
J.	HOME-RUN DESIGNATIONS: HOME-RUN DESIGNATIONS INDICATED ON PLANS ARE SCHEMATIC DESIGNATIONS ONLY. DETERMINE EXACT CIRCUIT ASSIGNMENTS IN FIELD BASED ON FIELD CONDITIONS. PROVIDE COLOR-CODED CONDUCTOR INSULATION ACCORDINGLY, CODED PROPERLY DEPENDING ON SYSTEM, PHASE, NEUTRAL, ETC. PROVIDE EQUIPMENT AND PANELBOARD SCHEDULES THAT ACCURATELY INDICATE INSTALLED CONDITIONS.
K.	LOCAL DISCONNECTS AND CONTROLS AT EQUIPMENT: LOCAL DISCONNECTS AND LOCAL CONTROLS SHOWN AT OR ON EQUIPMENT IN FIELD VIEW ARE SHOWN FOR SCHEMATIC ASSOCIATIONS ONLY. AVOID INSTALLING DISCONNECTS OR CONTROLS ON EQUIPMENT ENCLOSURES. INSTALL ON ADJACENT WALLS OR BUILDING STRUCTURE, OR PROVIDE FIELD-FABRICATED UNISTRIP OR EQUIVALENT ASSEMBLIES AS NEEDED. PROVIDE FIELD COORDINATION WITH SITE CONDITIONS AND OTHER TRADES, AND PROVIDE ALL RELATED WORK IN STRICT COMPLIANCE WITH NFPA 70, INCLUDING ARTICLE 110.26. PROVIDE A PERMANENT LABEL ON LOCAL DISCONNECTS NOTING THE EQUIPMENT IT SERVES AND THE PANEL AND CIRCUIT NUMBER FEEDING THE EQUIPMENT PER NFPA 70, ARTICLE 110.22(A).
L.	EQUIPMENT & LOAD COORDINATION: REFER TO AND COORDINATE WITH POWER FLOOR PLANS, EQUIPMENT SCHEDULES INCLUDING EQUIPMENT COORDINATION SCHEDULES, DRAWINGS OF ALL TRADES, ALL DIVISIONS AND SECTIONS OF SPECIFICATIONS AND INSTALLERS OF ALL TRADES, BASED ON ACTUAL EQUIPMENT BEING PROVIDED, DETERMINE AND PROVIDE APPROPRIATE BREAKERS, FUSES, CONDUCTORS, CONTROLS, POWER DISTRIBUTION EQUIPMENT, ETC. PERFORM THESE SERVICES PRIOR TO FURNISHING POWER DISTRIBUTION EQUIPMENT SUBMITTALS.
M.	EXTERIOR ELECTRICAL WORK AND WORK SUBJECT TO MOISTURE: EXTERIOR ELECTRICAL WORK SHALL BE WEATHERPROOF AND WATER-TIGHT, AND SHALL BE RUST-RESISTANT. PROVIDE XHHW-2 CONDUCTORS FOR ALL APPLICATIONS THAT ARE BELOW GRADE OR SUBJECT TO MOISTURE. PROVIDE MINIMUM NEMA 3R ENCLOSURES FOR ALL OUTDOOR EQUIPMENT AND ALL INDOOR EQUIPMENT THAT IS SUBJECT TO MOISTURE. PROVIDE NEMA 1 ENCLOSURES FOR ALL OTHER INDOOR EQUIPMENT.
N.	EQUIPMENT GROUNDING CONDUCTORS: PROVIDE EQUIPMENT GROUNDING CONDUCTORS IN STRICT COMPLIANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70), INCLUDING ARTICLE 250 AND TABLE 250.122. THESE CONDUCTORS MAY OR MAY NOT BE INDICATED ON SINGLE-LINE DIAGRAMS OR ELSEWHERE, BUT SHALL BE PROVIDED UNDER BASE BID NEVERTHELESS.
O.	OVERHEAD WORK: HOLD ALL NEW OVERHEAD ELECTRICAL WORK AS TIGHTLY AS POSSIBLE TO THE BOTTOM OF THE OVERHEAD STRUCTURE. DO NOT INSTALL ANY ELECTRICAL WORK WITHIN SIX INCHES OF ROOF DECKING.
P.	COORDINATION DRAWINGS: LAYOUT ALL PROPOSED RACEWAY ROUTING, ELEVATIONS, INSTALLATION METHODS, ETC. ON COORDINATION DRAWINGS AND COORDINATE ALL PROPOSED RACEWAY ROUTING WITH ALL AFFECTED TRADES PRIOR TO COMMENCING WITH WORK. IN ADDITION, REVIEW THE INFORMATION WITH ARCHITECT, ENGINEER AND OWNER FOR ALL AREAS WHERE THE RACEWAYS WILL BE VISIBLE AFTER COMPLETION OF CONSTRUCTION.
Q.	JUNCTION AND PULL BOXES: LOCATE JUNCTION AND PULL BOXES SO THAT THEY REMAIN ACCESSIBLE AFTER ALL CONSTRUCTION WORK IS COMPLETE. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO COMMENCEMENT OF THE WORK. LOCATE BOXES IN A MANNER THAT AVOIDS HAVING TO USE ACCESS PANELS. IF ACCESS PANELS ARE INEVITABLE, PROVIDE THEM RATED TO MEET OR EXCEED THE FIRE AND/OR SMOKE RATINGS OF THE RESPECTIVE CEILING OR WALL, AND OBTAIN APPROVAL OF DESIGN PROFESSIONALS FOR EACH LOCATION.
R.	CONDUCTOR TERMINATIONS: IN CASES WHERE CONDUCTOR SIZES ARE TOO LARGE TO FIT INTO LUGS/TERMINALS, PROVIDE APPROPRIATE FACTORY LUG KITS FOR AFFECTED EQUIPMENT IF AVAILABLE. ELSEWHERE, PROVIDE INSULATED BUTT-SPLICERS OR EQUIVALENT METHOD, WITH TAILS SIZED TO FIT LUGS/TERMINALS. PROVIDE SPLICES IN SEPARATE BOXES IF REQUIRED BASED ON FIELD CONDITIONS, BOX SIZE LIMITATIONS, ETC. CONCEAL BOXES IN ACCESSIBLE OVERHEAD JOIST SPACES IN FINISHED REGULARLY OCCUPIED AREAS.
S.	TYPE I/II, AC, NM, SE CABLE: WHERE MORE THAN TWO TYPE I/II, AC, NM, OR SE CABLES CONTAINING TWO OR MORE CURRENT CARRYING CONDUCTORS IN EACH CABLE ARE INSTALLED IN CONTACT WITH THERMAL INSULATION, CAULK, OR SEALING FOAM MAINTAIN SPACING BETWEEN CABLES.

ELECTRIC CONDUIT AND WIRE MATERIAL SCHEDULE			
MC - METAL CLAD CABLE MI - MINERAL INSULATED CABLE HMC - HEAT/HAZARD METAL CLAD CABLE USC - UNDERGROUND SERVICE ENTRANCE CABLE SE - SERVICE ENTRANCE CABLE HDPE - HIGH DENSITY POLYETHYLENE CONDUIT NM - NON-METALLIC METAL CONDUIT RMC - RIGID METAL CONDUIT RNC - RIGID NON-METALLIC CONDUIT RTRC - REINFORCED THERMOSETTING RESIN CONDUIT LIM - LINE ISOLATION MONITOR	ARC - ALUMINUM RIGID CONDUIT EMT - ELECTRIC METALLIC TUBING EMT - ELECTRIC NON-METALLIC TUBING FMC - FLEXIBLE METALLIC CONDUIT GRC - GALVANIZED RIGID STEEL CONDUIT HDPE - HIGH DENSITY POLYETHYLENE CONDUIT IMC - INTERMEDIATE METAL CONDUIT LFMC - LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT LFNC - LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT SCH 40 PVC - SCHEDULE 40 POLYVINYL CHLORIDE CONDUIT SCH 80 PVC - SCHEDULE 80 POLYVINYL CHLORIDE CONDUIT		
CONDUIT APPLICATION	CONDUCTOR TYPE	RACEWAY TYPE	RACEWAY AND CONDUCTOR NOTES
--POWER - INDOOR--			
CONCEALED	THHN	EMT	
EXPOSED	THHN	EMT	
--POWER - OUTDOOR--			
EXPOSED	XHHW-2	RMC (GRC)	
CONCEALED	XHHW-2	EMT	

Dayton High School Renovations  
BID PACKAGE #1: KITCHEN AND FLOORING  
200 Greendevil Ln., Dayton, KY 45404  
Dayton Independent Schools  
Mr. Jay Brewer - Superintendent

REVISIONS	

DWN: DTJ CHK: SNF  
DATE: 10/27/2021  
BG #: BG#  
REH #: 168-221

ELECTRIC  
COVER SHEET

E1-001

1" REFERENCE  
KLH PROJECT #  
23479

MECHANICAL/ELECTRICAL  
ENGINEERS  
WWW.KLHENGINEERS.COM  
LEWISTON, KENTUCKY  
LOUISVILLE, KENTUCKY  
FT. THOMAS, KENTUCKY 41075  
859-446-8658 FAX  
859-446-8658 FAX  
KOHRS LOHMEYER HELL ENGINEERS, INC.  
1538 ALEXANDRIA PIKE, SUITE 111  
FT. THOMAS, KENTUCKY 41075  
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26 05 01.00 - COMMON WORK RESULTS FOR ELECTRIC

The General Provisions of the Contract including the General and Supplemental Conditions and General Requirements apply to the work in this section. Before submitting a bid, examine documents of all other trades, visit the site and get acquainted with all conditions that may in any way affect the execution of this contract. Take measurements and be responsible for exact size and locations of all openings required for the installation of work. Noted dimensions convey desired locations for devices. Coordinate with owner's representative for any deviations from noted dimensions for any reason. Where detailed method of installation is not indicated or where variations exist between described work and approved practice, direction of the Owners representative on job site shall be followed.

Whenever the words "contractor," "this contractor," etc. appear on drawings or in these specifications for the Electrical Work, it shall refer to the Electrical Sub-Contractor. Whenever the word "Provide" appears in these documents, it shall be interpreted to mean "Furnish and Install". Whenever the word "Relocate" appears in these documents, it shall be interpreted to disconnect electrical feed, make safe including lock out, store and protect device, reinstall, rework and extend conduit and wire to new location, re-energize and test.

The exact mounting height of devices shall be determined in the field with relation to architectural details and equipment being served. It shall be the responsibility of this contractor to coordinate outlet location with other equipment. The Owners representative shall be permitted to relocate any outlet prior to installation within a 15 foot limit at no additional charge in contract price. All fasteners, hangers and methods of hanging equipment and work in finished areas shall be submitted to the Owners representative for approval before installation.

The contract includes all items of material and labor required for the complete installation and full operation of the electrical work as shown on the drawings and hereinafter specified. All materials and methods shall be in accordance with applicable codes, regulations and ordinances and meet the approval of local inspection authority having jurisdiction. The latest edition of NFPA 70 (NEC/National Electrical Code) shall be the minimum requirement for all work. Examine the drawings and specifications for compliance with the above codes, regulations and ordinances and base bid and work accordingly. Obtain and pay for all permits and inspections related to this work. A certificate of approval for work from inspection authority shall be given to the Owner before final acceptance will be given by Owners representative.

All work, materials, and equipment shall have a one-year warranty after acceptance of the work by the Owner. Any defective items shall be removed and replaced at the electrical sub-contractor's expense and to the satisfaction of the engineer and owner's representative.

Perform work under this contract in close harmony with other contractors so completed work shall present a neat and workmanlike installation. Exposed finished materials and equipment shall be carefully cleaned and wiped to remove grease, smudges, fingerprints, dust and other spots and left smooth and clean. During the progress of the work, the electrical sub-contractor shall carefully clean the job site and shall leave the premises and all portions of the building in which he is working free of debris and in a clean and safe condition.

This contractor shall be responsible for the training of owner's representatives of each system to the satisfaction of the Owners representative.

The Electrical Contractor shall consult the Plumbing, HVAC and Structural plans (where applicable) in all instances before installing his work so that his work will not interfere with those branches. In the event of a conflict, this contractor shall report to the Owners representative at once and do no further work to be installed until a satisfactory arrangement is decided upon. Any work done, or equipment placed in position by this contractor, creating a conflict in violation hereof, shall be readjusted to the satisfaction of the Owner's representative at the expense of the contractor. The decision of the Owners representative shall be final in regard to changes due to conflicting conditions. Contractor shall complete his work or part thereof at such time as may be designated by the Owner, so that it can be used for temporary or permanent use and such use of the system shall not be construed as an acceptance of same by Owner.

Two sets of electrical drawings shall be provided as record drawings which shall be separate, clean, copies reserved for the purpose of showing a complete picture of the work as actually installed. The drawings shall also serve as work progress report sheets and the electrical contractor shall make any notations, neat and legible thereon daily as work proceeds. The drawings shall be available for inspection at all times and kept at the job at a location designated by the Owners representative. At the completion of the work, these record drawings shall be signed by the electrical contractor, dated and returned to the Owners representative. Final payment of contract will not be made until receipt and review of said drawings.

Provide two neatly bound (with tabbed sections) copies of maintenance books, instruction books and parts list pertaining to all equipment furnished. Submit to the Owners representative for approval. Final payment will not be made until drawings for record, maintenance books and instruction manuals are delivered to the Owners representative.

26 05 02.00 - COMMON ELECTRICAL MATERIALS AND METHODS

All materials and equipment shall be new. All materials, apparatus and equipment shall bear the seal of Underwriters Laboratories Inc. (UL), or a similar credible testing agency, label where regularly supplied. Certain manufacturers of material and equipment are specified and plans are detailed according to this material. This contractor shall base his bid on furnishing and installing this make of material and equipment.

Where more than one make of material or equipment is specified, the contractor shall state in his bid which make he proposes to furnish. Shop drawings shall be submitted on material and equipment to be furnished by the contractor for Engineers approval. This approval to be obtained prior to shipment of equipment.

Hold routing of new raceways in new and existing buildings as tightly as possible to the structure above. Obtain approval of owner's representative prior to installation. Do not install any electrical work within 6 inches of roof decking.

Neatly dress all work. Install all work parallel and perpendicular to surfaces or exposed structural members, and follow surface contours, where possible. Install splice and tap connectors which possess equivalent or better mechanical strength and insulation rating than conductors being spliced. Use splice and tap connectors which are compatible with the conductor material. All wires shall be run continuous from outlet to outlet/luminaire to luminaire. Insulation value of joints shall be 100% in excess of wire. Provide adequate length of conductors for connection to enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors no larger than 10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal.

Maintain a uniform elevation for all cable runs wherever possible. All cables shall be supported/anchored at maximum 4 foot intervals and within 12" of box or outlet and shall not sag. Install cables in a manner that prevents overbending. Cables shall be fastened directly to the structure using factory clamps/cups specifically designed for the respective cable (Caddy or equal).

Keep conductor splices to minimum. Pull conductors simultaneously where more than one is being installed in same raceway. Use UL listed pulling compound or lubricant, where necessary. Increase wire sizes to offset voltage drop as/iff required.

Branch subfeeder circuits shall be installed as shown on the floor plans. Where outlets are indicated by letters on plans, they shall be controlled by corresponding switches.

Outlets shall be located approximately as shown on the plans and shall be wired to provide control of outlets indicated. All wires of any one circuit shall be run in the same conduit.

Mechanical wire splicers shall be Scotchlock insulated type, Tan/B Stakon or approved equal. The conductors terminating at each wired outlet shall be left not less than 8" long thick with the conductors in the raceway installed over the luminaires. Friction and rubber tape conform to Federal Specifications HT-11 and HH-1-111. Plastic electrical tape shall be Scotch #33+ or approved equal.

Do not share neutrals when amongst multiple branch circuits or with multi-wire branch circuits.

Provide grounding electrode conductors for service entrances and derived systems.

Provide all feeders and branch circuits with insulated (green covering) equipment grounding.

Only install conduit exposed on rooftops when it is impossible to do otherwise, or only if specifically indicated for such installation case-by-case elsewhere in documents. Installation convenience, financial considerations, lack of coordination with other trades and similar rationale are not sufficient reasons for doing so. In cases where conduits must be installed on rooftops, de-rate conductors and modify conduit sizes as needed to accommodate this condition. Provide expansion fittings, which are UL listed and labeled for the respective applications, at all building

expansion joints and at maximum distances of 100 feet. Paint all such conduits with at least two coats of UV-resistant waterproof paint. Provide white paint on all conduit, where conduits shall be provided with expansion fittings with bonding jumpers. Conduits passing through structural members shall be provided with stub and coupling or sleeve in the member. Where moisture conditions are encountered, a hole shall be drilled at the lowest point in the conduit run. Also provide sleeves for all fire wall and smoke partition penetrations (sealed accordingly).

Provide all cutting and patching required for the admission of work. Any damage done by this contractor to the building during the progress of work shall be made good at contractor's own expense. All patching shall be done by a skilled craftsman in that respective trade. It shall be the responsibility of this contractor to supervise the installation of, and pay for all additional members, wood or metal and labor which may be required to support any type of permanent or temporary electrical apparatus employed in the execution of this contractor's work.

Access Doors: Do not use access doors unless special prior written permission is granted from the Owner's Representative. Install pull boxes, junction boxes, and areas which are accessible after completion of construction. Do not install pull boxes or junction boxes above gypsum board or similar inaccessible ceiling systems. Where there is no other recourse but to provide an access door to the satisfaction, and where approval of Owner's Representative has been obtained, provide required access doors/panels as required for a complete code-compliant electrical installation as defined below. Provide access doors in fire/smoke ratings that meet or exceed the surrounding surface that is being penetrated.

Seal all new floor, ceiling, wall, slab, etc. penetrations to match or exceed existing assembly fire ratings. Provide sleeves for all electric, provide sleeves for all penetrations. All penetrations of fire-rated or smoke-rated wall, floors ceilings, etc. shall be sealed immediately after raceways are installed. All new electrically related work shall be supported directly from building structural members. New electrically related work shall not be supported from ductwork, ductwork hanger, ceiling supports, existing conduit support, etc.

26 05 03.00 - SUBMITTALS FOR ELECTRICAL SYSTEMS

Provide submittals in accordance with the Contract Documents. In addition to Division 01, the Contractor is advised to review and comply with the requirements articulated within each Division and within each section of that Division.

Some Divisions may include a division-specific "Submittal Requirements for ..." section. Where this section exists, it articulates additional requirements for submittals that apply to the work of that Division. The following requirements help to identify, track and keep the project organized for all parties involved. They are necessary to ensure a timely turnaround and an appropriate technical review. Submittals that do not conform to the administrative requirements are rejected and returned without technical review.

Supply submittals for each section: Submittals shall be supplied on a section-by-section and type-by-type basis. For example, independent product data submittals shall be furnished for each section that requires independent data submittals. Submittals shall be furnished for each section that requires shop drawings. Separate PDF file packages shall be supplied for each section, for each submittal type. Each PDF shall represent a single standalone submittal.

Include a transmittal: Transmittals shall enumerate each submittal for each section of each type and iteration.

Include cover sheet / title page: The cover sheet shall include the information identified in the contract documents. It shall be included as the first page of each electronic and/or hardcopy document-based submittal. An editable and printable PDF form created with editable fields and specification compliant appearance is available from KHLH upon request. It is also downloadable from the KHLH website at [www.khlhngs.com](http://www.khlhngs.com)

Include an index: The index shall enumerate the contents of the submittal.

Include checklists: Where checklists are included with the specifications, complete and include them within the appropriate submittal. Supply checklists for submittals that apply to the work of that Division. Partial submittals will be rejected. Where a section requires a product data submittal, all product data for that section shall be supplied together, at one time, as one complete submittal. When resubmittal is required (e.g. Revision and Resubmit) the revised submittal shall be more complete, more accurate and more contract-compliant than its rejected predecessor. The submittal number (for each section and type) shall increment for each resubmission (01 – First Resubmission, 02 – Second Resubmission, etc...). Resubmittals shall include a copy of the reviewers comments supplied with the prior submittal rejection and shall be clearly labeled as such. Minimum static design load used upon the reviewer's comments. The absence of this on resubmittal is cause for rejection.

Name electronic files to match the submittal ID and cover sheet: The electronic file name of submittals shall match the submittal ID included on the submittals cover page. For example: The original/first submittal data submittal for Section 2605019 would be labeled as "260519.00-PD-00"; the first resubmittal of same shall be labeled "260519.00-PD-01". The original/first shop drawings submittal file for the same section shall be labeled "260519.00-SD-01".

If expressly permitted by the Owner and the terms of the Contract, editable electronic drawings may be made available for the creation of shop and as-built drawings upon request. Drawings will be made available at the discretion of the Engineer.

"Request Drawings" form can be accessed, filled out and submitted at <http://www.khlhngs.com> (right hand side of page - Contractor Resources). Direct access to this form can be found here: <http://khlh.khlhngs.com/requestdrawings.html>

26 05 19.00 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

Submit Product Data For each type of conductor and cable.

Furnish and install all necessary cable of the size and type indicated on the drawings or specified hereinafter. All wire shall be copper. All wiring shall be new. No wire smaller than #12 AWG shall be installed unless specifically designated. Use of #14 color coded wire will be allowed for splicing. Use splice and tap connectors which are compatible with the conductor material. All wires shall be run continuous from outlet to outlet/luminaire to luminaire. Insulation value of joints shall be 100% in excess of wire. Provide adequate length of conductors for connection to enclosures and train the conductors to terminal points with no excess. Bundle multiple conductors, with conductors no larger than 10 AWG cabled in individual circuits. Make terminations so there is no bare conductor at the terminal.

Provides THHN/THWN-2 insulation for all conductors as appropriate for the locations where installed. Provide color coded insulation/jacket for phase identification. All wires shall be rated at 600 volts. Provide type XHHW-2 insulation for all wiring below grade or subject to moisture.

Unless specifically indicated otherwise on drawings, provide grounded ("neutral") conductors that are at least party-sized with corresponding phase/line conductors for all applications.

All conductors shall be rated for 90 deg. C. minimum. Provide with green insulated equipment ground conductor. Provide compatible steel fittings with integral red plastic insulated throat bushings. Cables shall be 90 deg. C. rated with all components and fittings listed for grounding and compliance with the following: UL Std.4 and UL Std. 83; ANSI E19 and E814; NFPA 70.

Cables: Route cables perpendicular and parallel to the building architectural lines, surfaces and structural members, keeping offsets to a minimum and following surface contours where possible. Maintain a uniform elevation for cable runs wherever possible. Support and anchor cables at maximum 4 foot intervals and within 12" of box or outlet in a manner that prevents sagging. Install cables in a manner that prevents overheating. Fasten cables directly to the structure using factory clamps and clips (zip ties and like products are not permitted) specifically designed for the respective cable (Caddy or equal). Cables may be utilized only if code-approved for the intended use and in the limited applications defined below.

26 05 26.00 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

All metallic conduit, surface raceways, wireways, supports, cabinet and equipment shall be grounded.

26 05 29.00 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

It shall be the responsibility of the electrical contractor to supervise the installation of and pay for all additional members, wood or metal and labor which may be required to support any type of permanent or temporary electrical apparatus employed in the execution of the electrical contractor's work. Provide supports, anchors, sleeves and seals furnished as part of factory-fabricated equipment as required. Locations and routing that may be shown on plans are schematic and diagrammatic in nature. Metallic products shall be galvanized steel.

Conduit shall be supported by approved struts, fasteners and hangers. Hangers shall be suspended from rods. Perforated straps will not be acceptable. Fasteners shall be lead expansion shields in block or

concrete, toggle bolts in hollow walls, machine screws on metal surfaces and wood screws on wood construction. At building expansion joints and where deflection is expected, use expansion anchors and provide expansion fittings with bonding jumpers. Conduits passing through structural members shall be provided with stub and coupling or sleeve in the member. Where moisture conditions are encountered, a hole shall be drilled at the lowest point in the conduit run. Also provide sleeves for all fire wall and smoke partition penetrations (sealed accordingly).

All conduit shall be supported independently from all other building systems and shall be supported directly from structural components. Electrically related work shall not be supported from ductwork, ductwork hangers, ceiling supports, existing conduit supports, etc.

Use of synthetic or plastic "tie-wraps", "zip ties", "wire ties" and similar products are not permitted as a permanent means of anchoring, securing, supporting or otherwise installing any cables, conductors, conduits, raceways, devices, equipment or other electrical work.

All conduits, raceways and cables (where applicable) shall be routed parallel and perpendicular to building structural members. Any and all noncompliant work installed by the electrical contractor shall be removed and reinstalled by the electrical contractor to the satisfaction, and where approval of Owner's representative and the Engineer, at the expense of the Owner's representative. At building expansion joints and where deflection is expected, provide conduits with expansion fittings with bonding jumpers. Conduits passing through structural members shall be provided with stub and coupling or sleeve in the member. Where moisture conditions are encountered, a hole shall be drilled at the lowest point in the conduit run. Also provide sleeves for all fire wall and smoke partition penetrations (sealed accordingly).

Stem lengths of all pendant fixtures shall be as directed by the owner's representative. All fasteners, hangers and method of hanging exposed work in finished areas shall be submitted to the owner's representative for review before installation. Fasteners shall be zinc-coated, type, grade, and class as required for a neat finished installation.

Place and secure anchorage devices. Use supported equipment manufacturer's settings, templates, diagrams, instructions, and directions furnished with items to be embedded, install anchor bolts to elevations required for proper attachment to supported equipment. Provide female expansion anchors, and install studs and nuts after equipment is positioned. Provide bushing for floor/wall-mounted equipment anchors to allow for resilient media between anchor bolts/studs and mounting hole in concrete.

Touchup Painting: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting.

Provide supports for multiple raceways capable of supporting combined weight of supported systems, equipment, connected systems and components. Provide adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this project, with a minimum structural safety factor of five times the applied force.

Coordinate installation of roof curbs, equipment supports, and roof penetrations.

Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly. Construct with all necessary fittings which mate and match with U-channel. Provide metallic coatings that are hot-dip galvanized after fabrication and applied according to MFMA-4. Provide channel dimensions that are selected for applicable load criteria. Comply with NFPA 70 and NFPA 70E unless requirements in this or other specification sections are stricter.

Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted, sized so capacity can be increased by at least 50 percent in future without exceeding specified design load limits. Secure raceways and cables to these supports with two-bolt conduit clamps, single-bolt conduit clamps, or single-bolt conduit clamps using spring friction action for retention in support channel as applicable.

Overhead Electric Work: Install work so that no raceway or cable is within six inches below roof deck(s). Suspend and support overhead electrical work from roof trusses and joists/joist girders only at panel points, at top cord only, unless otherwise noted.

Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads and specified loading limits. Minimum static design load used upon strength determination shall be weight of supported components plus 200 lb.

26 05 33.00 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

Normal system power feeders and branch circuits shall be installed in separate raceways from emergency system power. All wiring for different power voltages shall be installed in separate raceways from each other. All wiring for the various electrical systems shall be installed in raceway systems separate from each other.

All conduit installed indoors shall be galvanized steel EMT (3/4" minimum); all fittings shall be set-screw or compression type steel, with insulated throats. Unless indicated otherwise on drawings or in other parts of the electrical specifications, all wiring of all systems shall be installed in conduit.

Conduit shall be cleaned inside before any wires are pulled. Conduit ends shall be capped and plugged with standard accessories as soon as conduit has been permanently installed. Conduit installed without conduits shall be provided with sweep beads and baling wire for pulling.

All joints shall be made tight with watertight couplings matching conduit and all corners shall be made with long radius elbows. The ends of all conduits shall be cut square and reamed and all joints brought to a shoulder. Conduit shall be continuous between outlets to make a complete installation and to provide a continuous ground. Suitable supports and fastening shall be provided for conduit.

All raceways shall be entirely free of plaster, mortar, water and other foreign matter before installing conduits or cables.

In general, gage type outlet boxes shall not be used. The outlet box locations indicated on drawings shall be considered approximate, and therefore, it shall be incumbent upon this contractor to study the general construction with relation to spaces and equipment surrounding each outlet. All outlet, switch and junction boxes shall be made of code galvanized steel completely with rings and screw cover plates and located where shown and noted on drawings. Where conduit is concealed, boxes shall not be less than 4" square x 1-1/2" deep. All boxes shall be equipped with proper covers to bring flush with finished wall surface.

Where outlet boxes occur in block, cinder, or concrete block, facing tile or other material where such materials form the finished wall surface, the opening for the box shall be cut neatly and of the size that the cover plate will cover all parts of the opening. Condulets shall be used on exposed raceways. In general, junction boxes shall be constructed of #12 gauge steel with removable front fastened on with counter sunk head screws or other approved means. For special application, junction boxes shall be noted, detailed and/or sized on the drawings or in the field as required.

Prior to rough-in, verify all box/device mounting heights and locations in field with Owners representative. In general, where not located at center areas, the height of boxes from finished floor to center of boxes shall be as follows, unless otherwise noted on plans. In cases where using center of box for measurement would result in a switch-height device having an operable component higher than 48 inches above finished floor, install boxes lower than 48 inches from top of operable component is higher than 48 inches. Other devices: As directed in field.

26 05 53.00 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

Provide manufacturers standard self-adhesive vinyl tape not less than 3 mils thick by 1-1/2" wide. Where applicable, install the tape on the raceway raceways at connection to all junction boxes, pull boxes, equipment, wall/floor/roof penetrations, etc. Unless otherwise indicated or required by governing regulations, provide orange tape with black letters. Provide circuit identification bands for all cables and conductors. Provide manufacturers standard color coding for cable/conductor jacket and/or insulation for all cables and conductors of all systems. Match identification with marking system used in existing systems (where applicable), shop drawings, contract documents, and similar previously established identification for projects electrical work. Provide on all conductors of all systems.

The following insulation color code shall be used for system and voltage identification. This shall apply to both feeder and branch circuit wiring. Interchangeability of colors shall not be permitted.  
240/120V System: Black, Red and White (neutral)  
208Y/120V System: Black, Red, Blue and White (neutral)  
480Y/277V System: Brown, Orange, Yellow and Gray (neutral)  
Equipment Grounding: Green

Systems: To match existing where applicable  
- verify in field.

Provide engraved plastic-laminate sign on major units of electrical equipment, including panelboards, disconnects, starters, control panels, etc. Except as otherwise indicated, provide single line of text, 1/2" high lettering, on 1-1/2" high sign (2" high where 2 lines are required), white lettering in black field. Unless determined otherwise in field, provide text matching terminology and numbering of the contract documents and shop drawings. Secure to substrate with fasteners, except use adhesive where fasteners should not or cannot penetrate substrate.

All equipment and system identification nomenclature shown on drawings or listed herein is shown for general design and installation reference only. The actual nomenclature, etc., nomenclature for this project shall be verified by electrical contractor in field prior to fabrication and where applicable, shall be an extension of existing nomenclature used on the site as determined in field by electrical contractor.

Equipment to Be Labeled: All enclosures for all electrical equipment furnished or installed under Divisions 26 and 28; Remote-controlled switches, dimmer modules, and control devices, via engraved wall plates; Miscellaneous Control Stations; Access doors and panels for concealed electrical items; Other similar equipment designated by owner's representative, architect or engineer in field.

26 05 84.00 - MECHANICAL EQUIPMENT

Provide all necessary electrically related work as required to render all mechanical equipment (including plumbing, heating, ventilating and air conditioning equipment) fully operational and fully compliant with all local and national codes. This includes, prior to ordering materials or commencing with rough-in, reviewing equipment manufacturer's literature and coordinating with installing contractors to ensure the correct size, rating and quantity of conduits are provided.

Locations of equipment and devices are shown only for schematic indication of wiring requirements.

Refer to all contract documents for additional electrical requirements and concerns, and for further representation of this work.

Provide raceway, wiring, connections, and terminations for power and interlocks for electrically operated equipment.

Provide disconnect switch ahead of all equipment, including controls, unless the mechanical equipment comes with integral disconnect(s) that are compliant with NFPA 70. Provide NEMA 3R enclosures where installed outdoors and where installed indoors in areas subject to moisture. Install metal frames of equipment by connecting frames to the grounded metal raceway and to a full size green ground conductor or both. Provide the necessary electrical connections between the specified equipment and the junction box near equipment with flexible metallic conduit (liquid-tight outdoors) and matched connectors (see Section 26.05.33). Where mechanical equipment lugs cannot accommodate conductor sizes shown on drawings, provide ILSCO ClearTap Insulated Multi-Tap Connectors.

Sizes, electrical ratings, etc. of equipment and wiring shown on drawings are based on the respective equipment design base manufacturers. If different manufacturer(s) or model(s) are supplied, provide necessary coordination in field (prior to ordering materials and prior to rough-in) and provide the necessary size of related electrical equipment, wiring, conduit, etc.

Prior to furnishing submittals and prior to rough-in, determine exact electrically related characteristics, loads, voltages, disconnect and starter requirements, locations, mounting heights, connection points, etc. of mechanical equipment.

Provide lugs, lug kits and related accessory work as required to accommodate the conductor sizes and quantities needed for each application. Coordinate with single-line diagram, field conditions, equipment installers, etc.

HACR Breakers: Coordinate in field with the respective trades and determine case type, which equipment is factory listed for use with Heating and Air Conditioning Rated (HACR) breakers. To minimize requirements for stocking of fuses by the owner, utilize HACR breakers at the source panelboards as the required overcurrent protection wherever possible (in lieu of fusing local disconnect switches).

Disconnect and Controller Locations: Locations shown on drawings are indicated for schematic purposes only. Determine exact locations in field. Refer to NEC and NEC schedules on disconnect switches. Provide disconnects, starters, accessories, wiring, connections, services, etc. where defined as "EC" in the schedule. Information in this section supplements the information in schedule(s).  
Disconnect and Controller Locations: Locations shown on drawings are indicated for schematic purposes only. Determine exact locations in field. Refer to NEC and NEC schedules on disconnect switches. Provide disconnects, starters, accessories, wiring, connections, services, etc. where defined as "EC" in the schedule. Information in this section supplements the information in schedule(s).

Maintenance Receptacles for Rooftop Units, Rooftop Exhaust Fans and any Miscellaneous Exterior Equipment: Provide two WR duplex receptacles with "WR/GFCI" next to it denoting derating factor shall be provided with a WR GFCI receptacle. Provide duplex weather-resistant receptacles equal to Leviton #W7899 series. Provide weather-resistant receptacles with 15A breakers, provide NEMA 5-15R equivalents.

Maintenance Receptacles for Indoor Equipment: Provide duplex receptacle within 25 feet of all indoor electrically operated equipment of any nature that requires periodic testing or maintenance.

Refer to Coordination Schedules on drawings for information associated with equipment. Provide disconnects, starters, accessories, wiring, connections, services, etc. where defined as "EC" in the schedule. Information in this section supplements the information in schedule(s).

260501.00 - COMMON WORK RESULTS FOR ELECTRIC

Submit Product Data For equipment, materials and systems specified in this section. Include product data, descriptive information, technical data, wiring diagrams, etc.

Hand Dryers Subject to compliance with specifications and project requirements, provide products by one of the following manufacturers: Excel, Dyson, World, Saniflow or Comac. Blasting Hand Dryer Provide surface wall mounted units equivalent to Excel ThinAir TA series, including the following features: ADA-compliant protrusion from wall, 4-inch maximum depth, Nominal 9 inches wide x 14 inches height; Washable pre-filter; Automatic sensor activation: Nominal 545W of heating; Nominal 915 total watts at 120V; 10-15 seconds for complete drying time; Nominal 10 lbs. in weight; Adjustable heat settings of high, low, medium and off; Adjustable speed and sound control; Externally-visible service LED; Optical sensor next to air outlet that activates hand dryer assembly, and operates as long as hands are under the air outlet (with timed lockout feature if hands are not removed).

Provide hand dryer covers that are one-piece, heavy-duty, reinforced, corrosion-resistant, lightweight, unbreakable, and installed with tamper-proof hardware.

• Provide exposed surface devices that are brushed stainless steel.  
• Feed from dedicated 20A/1P GCI branch breaker (verify with manufacturer's installation instructions prior to ordering breakers and prior to rough-in). Provide permanently installed lock-out/tag-out device at source circuit breaker for all on site. Coat install hand dryer parts according to Underwriters' Laboratories, Inc. requirements. Internally ground entire mechanism. Mount hand dryer heating element inside the bottom housing so it is vandal proof.  
• Protect unit with automatic resetting thermostat that opens whenever air flow is cut off and closes when flow of air is resumed.

• Coordinate all mounting heights with Design Professional prior to rough-in. Unless indicated otherwise on architectural documents or directed otherwise by Design Professional in field, install units at the following mounting heights (from finished floor to bottom of dryer). Where more than one unit is shown in a toilet room, coordinate with Design Professional regarding which units are to be installed at which height.  
Men's: First unit at 37 inches (for compliance with ADA for use by the handicapped), and additional units (if any) at 45 inches.  
Ladies': First unit at 37 inches (for compliance with ADA for use by the handicapped), and additional units (if any) at 43 inches.

Teenagers': First unit at 37 inches (for compliance with ADA for use by the handicapped), and additional units (if any) at 41 inches.  
Small Children: First unit at 37 inches (for compliance with ADA for use by the handicapped), and additional units (if any) at 35 inches.

26 24 16.00 - PANELBOARDS

Submit Product Data For each type provide bus configuration, current ratings, voltage ratings, SCRR Ratings, overcurrent protective device(s), surge suppression device(s), accessory, and components indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.  
Subject to compliance with requirements, provide panelboard products of one of the following (for each type and location of panelboard and enclosure): Square D Company, GE/ABB, Siemens, Eaton/Cutler-Hammer.

Panelboards shall bear UL labels for their specific applications. Panelboards shall be suitable for service voltage with number of branch circuits of capacity scheduled. Unless otherwise indicated, panelboards and sections thereof, if any, shall have main bus(es) of capacity equal to, or greater than, the rating or setting of the over the current protective device next back on the line. All circuit breaker panelboard bus assemblies shall be electrically bonded to a position between "on" and "off" to indicate automatic tripping. All breakers shall be bolt-on type.  
208Y/120V panelboards shall be equal to Square D NQ with bolt-on branch breakers  
All bussing shall be copper or aluminum.

All branch circuit breakers shall be full ambient compensated thermal magnetic molded case with quick-make and quick-break action and positive handle trip indication, both on manual and on automatic operation. Breakers shall be of the over-the-center toggle operating type with the handle going to a position between "on" and "off" to indicate automatic tripping. All breakers shall be bolt-on type.  
All circuit breakers shall be full size. "Tandem" or "split" breakers shall not be permitted. All multi-pole breakers shall have internal common trip with all load side box lugs of one breaker in the same gutter. All circuit breakers shall have sealed cases to prevent tampering. All 15 and 20 ampere branch circuit breakers shall be UL listed as SWD (switching duty). All 15-70 ampere branch circuit breakers shall be HACR Type. All GFCI circuit breakers shall be UL Class A with maximum threshold of 5 mA. All branch circuit breakers serving all ballasted (fluorescent/HID) lighting loads shall be HID rated.

Provide all electrical distribution related equipment with appropriately braced bussing and properly rated breakers, fuses, etc., for the available fault currents. In existing buildings where fault current values are not indicated on drawings, coordinate with existing "upstream" distribution equipment provide equipment IAC ratings to meet or exceed same.  
Fill out panelboard's circuit directory card upon completion of installation work. Directories shall be neatly typewritten. All panelboard directories shall include the actual room names/numbers that are selected for interior signage/designation.

All recessed panelboards shall be provided with a minimum of three 1-1/4" empty conduits terminated to a single 12" X 12" X 6" deep junction box above accessible ceiling.

26 27 26.00 - WIRING DEVICES

Submit Product Data For each type include electrical characteristics, configurations, ratings, markings, colors, etc.

Unless specifically indicated otherwise, or directed otherwise in field, coordinate finishes for wiring devices with architect and owner prior to ordering.

Provide grounded ("neutral") conductors in all wall switch, dimmer and other lighting control outlet boxes, even if not immediately utilized.  
Provide wall plates with engraved legends where indicated on drawings and/or where required per 26 05 53.00 - IDENTIFICATION FOR ELECTRICAL SYSTEMS. All device wall plates shall be standard size; "midway", "oversized" ("jumbo") or "extra deep" wall plates shall not be acceptable. Construct with metal screws for securing plates to devices; and provide matching finish plates. Except where specifically indicated otherwise on drawings, wall plates in finished areas shall be commercial specification grade, satin finish stainless steel, with beveled edges, equal to Leviton type 430 series. Wall plates in unfinished areas shall be galvanized steel unless otherwise noted. Refer to architectural finish schedules and owner representative for additional information.

Receptacles: Special purpose receptacles shall be of the size, type and manufacturer as indicated on the plans or as determined in field.

Weather Resistant (WR) GFCI Receptacles: Provide for all receptacles installed in damp or wet locations. Any type WR duplex receptacles with "WR/GFCI" next to it denoting derating factor shall be provided with a WR GFCI receptacle. Provide duplex weather-resistant receptacles equal to Leviton #W7899 series. Provide weather-resistant receptacles with 15A breakers, provide NEMA 5-15R equivalents.  
Duplex and Single Specification Grade Receptacles: 2-pole, 3-wire grounding, self-grounding, green grounding screw, ground terminals and poles internally connected to mounting yoke, color coded base, 20-ampere, 125-volts, with metal plated ears, back and side wiring, NEMA configuration 5-20R. Provide duplex receptacles equal to Leviton #5362 series





## EQUIPMENT SCHEDULE

ITEM NO.	NO. REQD	DESCRIPTION	WATER		WASTE	ELECTRICAL					GAS		RESPONSIBILITY				NOTES & COMMENTS	
			HOT	COLD		KW.	HP	V/PH	AMPS	CONN.	MTG. HT.	3 PH KW LOADG	SIZE	BTU'S	FURN. BY	INSTALL. BY		CONN. MC
1	1	WALK-IN COOLER/FREEZER/FREEZER												K.E.C.	K.E.C.		*	(1) (2)
1A	1	EVAPORATOR - COOLER			FD			(5)120/1	20 EA.	DIR	@SEE FLOOR PLAN			K.E.C.	K.E.C.		*	(3) (4)
1B	1	CONDENSING UNIT - COOLER						208/1	15 MOP	DIR	@BUILDING ROOF			K.E.C.	K.E.C.		*	(5) COMPRESSOR WGT: 200 LBS.
1C	1	EVAPORATOR - FREEZER			FD									K.E.C.	K.E.C.		*	(3) (4)
1D	1	CONDENSING UNIT - FREEZER						208/3	15 MOP	DIR	@BUILDING ROOF			K.E.C.	K.E.C.		*	(4) (6) COMPRESSOR WGT: 200 LBS.
1E	1	EVAPORATOR - FREEZER			FD									K.E.C.	K.E.C.		*	(3) (4)
1F	1	CONDENSING UNIT - FREEZER						208/3	15 MOP	DIR	@BUILDING ROOF			K.E.C.	K.E.C.		*	(4) (6) COMPRESSOR WGT: 200 LBS.
2	1	WALK-IN FREEZER/COOLER						(2)120/1	20 EA.	DIR	@SEE FLOOR PLAN			K.E.C.	K.E.C.		*	(1) (2)
2A	1	EVAPORATOR - FREEZER			FD									K.E.C.	K.E.C.		*	(3) (4)
2B	1	CONDENSING UNIT - FREEZER						208/3	15 MOP	DIR	@BUILDING ROOF			K.E.C.	K.E.C.		*	(4) (6) COMPRESSOR WGT: 200 LBS.
3	1 LOT	SHELVING - FREEZER/COOLER												K.E.C.	K.E.C.		*	

## FOODSERVICE ROOF EQUIPMENT NOTES

K.E.C. AND ROOFING CONTRACTOR TO COORDINATE WITH ONE ANOTHER; THE EXACT LOCATIONS, DIMENSIONS, AND QUANTITIES OF ALL ROOF OPENINGS REQUIRED TO ACCOMMODATE EQUIPMENT BEING PROVIDED BY THE K.E.C. SIZES & WEIGHTS MAY VARY FROM BID DOCUMENTS DEPENDING ON WHICH MANUFACTURER LISTED IN 114000 IS AWARDED THIS CONTRACT.

K.E.C. TO SET EQUIPMENT ON CURBS AND RAILS.

ROOFING CONTRACTOR TO COORDINATE EXACT LOCATION AND SIZE DETAILS OF ROOF TOP EQUIPMENT WITH K.E.C. SIZES MAY VARY FROM WHAT IS SHOWN ON BID DOCUMENTS, DEPENDING ON WHICH MANUFACTURER LISTED IN 114000 IS AWARDED THIS CONTRACT.

STRUCTURAL CONTRACTOR TO FRAME ROOF OPENINGS AS NEEDED

E.C. TO PROVIDE ALL SERVICES AT ROOF REQUIRED BY ROOFTOP EQUIPMENT  
COORDINATE ELECTRICAL REQUIREMENTS WITH K.E.C.

ALL DIMENSIONS OF EXISTING ARCHITECTURE AND M.E.P. MUST BE VERIFIED AT SITE OF CONTRACT.

**ⓧNOTES**

- 1 E.C. TO PROVIDE 120V 1PH CIRCUIT TO "J" BOX WHERE SHOWN ON FOODSERVICE EQUIPMENT FLOOR PLAN. K.E. TO BRANCH TO LIGHTS, THERMAL ALARM AND HEATED VAPOR RELEASE VENT WHERE REQUIRED.
- 2 E.C. TO INSTALL 120V 20A RECEPTACLE, WITH GFCI BREAKER AT ELECTRICAL PANEL, 2" AFF ON INTERIOR BACK WALL OF WALK-IN REFRIGERATOR. REFRIGERATOR TO BE SUPPLIED WITH 1/2" P.V.C. TO 1/2" PLUG CONDENSATE DRAIN LINE HEAT TAPE INTO THIS RECEPTACLE.
- 3 BLOWER COIL TO BE WIRED THROUGH COMPRESSOR CIRCUIT.
- 4 TECHNOLOGY CONTRACTOR TO PROVIDE ETHERNET CONNECTION FROM BUILDING AUTOMATION SYSTEM NETWORK TO 24VDC FAN COILROLLER IN BLOWER COIL HOUSING USING CAT5 COPPER CABLE.
- 5 E.C. TO PROVIDE CIRCUIT TO A SINGLE POINT CONNECTION AT COOLER CONDENSING UNIT LOCATED AS SHOWN ON DRAWINGS.
- 6 K.E. TO PROVIDE CONDENSING COIL TO COOLER CONDENSING UNIT.
- 7 CONDENSING UNIT TO UNIT COOLER EVAPORATOR AND INTER-WIRING OF COMPONENTS NECESSARY FOR PROPER OPERATION OF THIS SYSTEM.
- 8 E.C. TO PROVIDE CIRCUIT TO A SINGLE POINT CONNECTION AT FREEZER CONDENSING UNIT LOCATED AS SHOWN ON DRAWINGS.
- 9 K.E. TO PROVIDE CONDENSING COIL TO FREEZER CONDENSING UNIT.
- 10 CONDENSING UNIT TO BLOWER COIL, AND INTER-WIRING OF COMPONENTS NECESSARY FOR PROPER OPERATION OF THIS SYSTEM.

## ABBREVIATIONS

A	AMPS
AF	ABOVE FINISHED FLOOR
B	BY OTHERS
B.V.	BY VENDOR
C	CEILING
CH	COLD WATER
D	DOWN FROM ABOVE
DFA	DIRECT CONNECTION
DO	DOOR/EXIT OUTLET
E	ELECTRICAL CONTRACTOR
E.D.S.	ENERGY DISTRIBUTION SYSTEM
F	FLOOR DRAIN
FS	FLOOR SINK
FT	FLOOR TROUGH
F.NLD	FUNNEL DRAIN
G	GENERAL GAS
G.C.	GENERAL CONTRACTOR
HP	HORSEPOWER
HW	HOT WATER
J	JUNCTION BOX
K.E.C.	KITCHEN EQUIPMENT CONTRACTOR
K	KITCHEN
M.C.	MECHANICAL CONTRACTOR
M.C.M.	MINIMUM CIRCUIT AMPS
N.C.	NOT IN CONTRACT
O.S.	OWNER SUBSISTANCE
PC	PLUMBING CONTRACTOR
PH	PHASE
SO	SOILABLE PURPOSE OUTLET
V	VOLTS
W	WASTE



## KEYED NOTES

[illegible]

DWN: DTJ CHK: SN

DATE: 10/27/2021

BG #:	BG#
REH #:	168-221

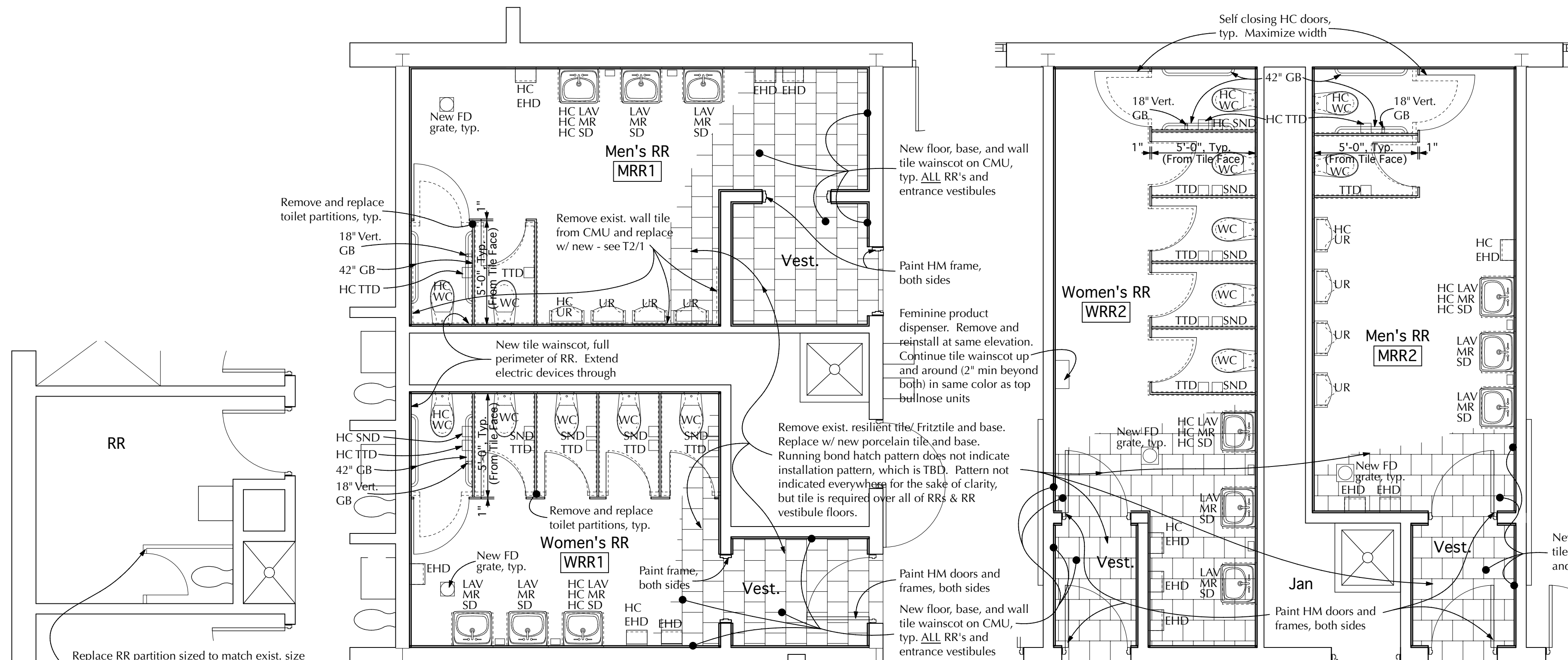
## ELECTRIC KITCHEN PLAN

E1-101

1\* REFERENCE  
KLH PROJECT #  
23479

ELECTRIC PANELBOARD AND SWITCHBOARD SCHEDULE																								
TYPICAL EQUIPMENT NAME NOMENCLATURE: 1 - POWER DISTRIBUTION SYSTEM (BLANK - NORMAL, E - EMERGENCY, S - STANDBY, L - LIFE SAFETY) 2 - DESCRIPTION (H - 480Y/277V, L - 208Y/120V) 3 - FLOOR / LEVEL 4 - SEQUENCE																								
EQUIPMENT	PHASE	SPACE NUMBER	SPACE NAME	SUPPLY FROM	POWER BRANCH	TYPE	VOLTAGE	PHASE	WIRES	DEMAND (kVA)	DEMAND (A)	MAINS RATING (A)	MAINS FRAME RATING (A)	MAINS TYPE	FEEDER	LUGS TYPE	SPD	ULSE	GE	ENCLOSURE TYPE	FAULT CURRENT (A)	SHORT CIRCUIT RATING (A)	NOTES	
KBA	Existing		KITCHEN	T5	NORMAL	Branch Panelboard	208	3	4	0 VA	0 A	200	200	THERMAL MAGNETIC	EXISTING FEEDER, (4) #3/0 AWG CU, (1) #4 AWG CU GND, IN 2-1/2" CONDUIT 75C RATED									
	New Construction		OFF	T5	NORMAL	Branch Panelboard	208	3	4	13950 VA	39 A	100	100	THERMAL MAGNETIC	(4) #1 AWG AL, (1) #6 AWG AL GND, IN 1-1/2" CONDUIT 75C RATED					NEMA 1	6038	EXISTING		
KC	Existing		KITCHEN	T4	NORMAL	Branch Panelboard	240	3	3	0 VA	0 A	200	200	THERMAL MAGNETIC	EXISTING FEEDER, (4) #3/0 AWG CU, (1) #4 AWG CU GND, IN 2-1/2" CONDUIT 75C RATED					NEMA 1	5268	EXISTING		
MSB	Existing	117	MECHANICAL	UTILITY	NORMAL	Switchboard	480	3	4	778488 VA	936 A	1600	1600	FUSED - BOLTED PRESSURE	EXISTING FEEDER, (4) SETS OF (4) #750 KCMIL CU IN 4" CONDUIT EACH 75C RATED			Yes	Yes		NEMA 1	34828	EXISTING	EXISTING GE SWITCHBOARD



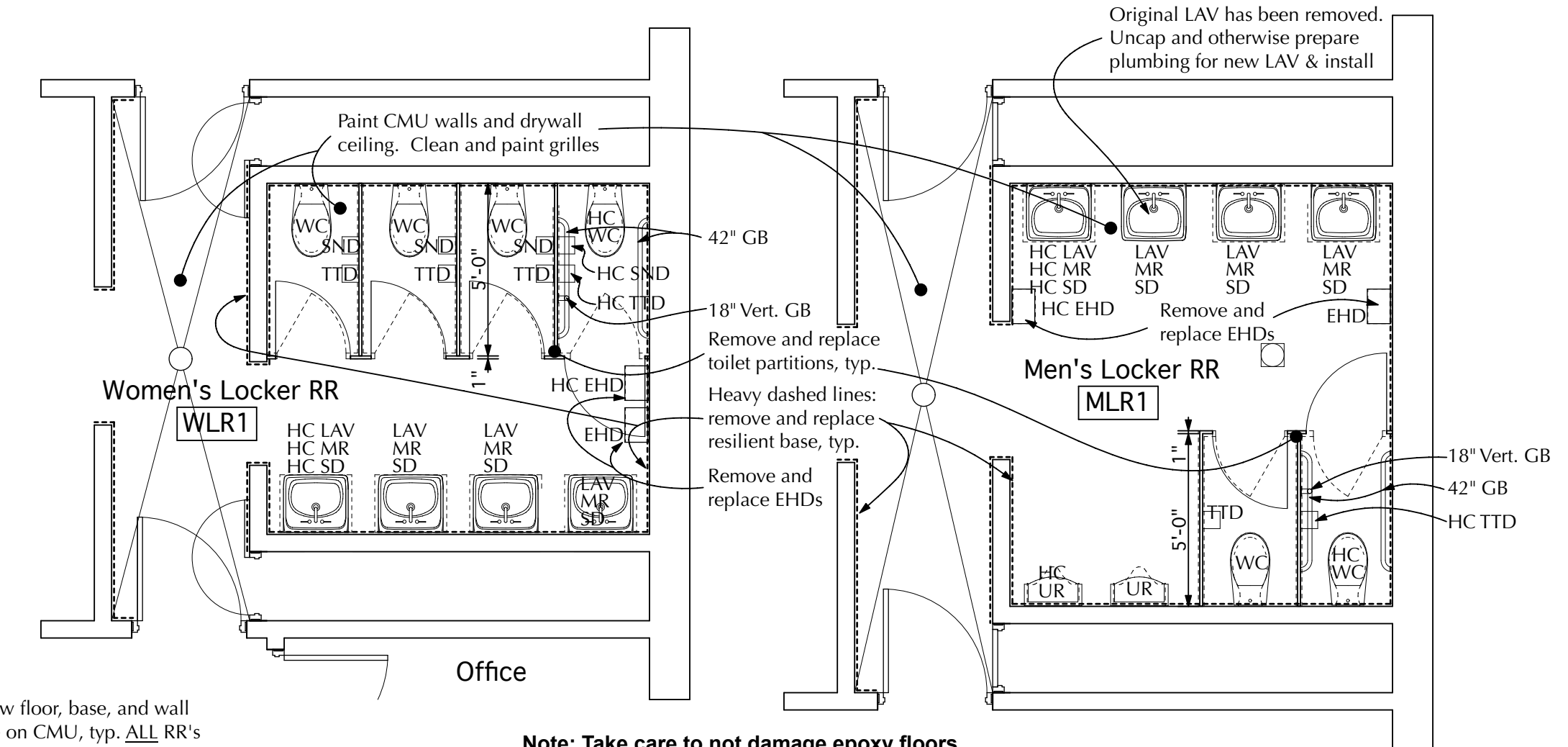


**1 Kitchen Staff RR (Base Bid)**  
1/4" = 1'-0"

**2 Enlarged Classroom RR: Main Level (Base Bid)**  
1/4" = 1'-0"

**3 Enlarged Classroom RR: Upper Level (Base Bid)**  
1/4" = 1'-0"

**General Notes for 2/1 & 3/1 (Base Bid):**  
Remove & replace EHDs, LAVs, SDs, MRs, TTDs, GBs, SNDs, WCs, URs, toilet partitions, CO, & FD grates. TTDs and SDs will be furnished by owner but installed by contractor.  
At new HC Lavs, HC URs, & HC WCs, adjust plumbing to new height as necessary. Patch abandoned holes in CMU w/ CMU and mortar prior to new tile installation  
Match width of exist. toilet partitions. Depth to be 5'-0". Maximize width of HC stall door



**4 Enlarged Women's Locker Room RR (Alternate Bid)**  
1/4" = 1'-0"

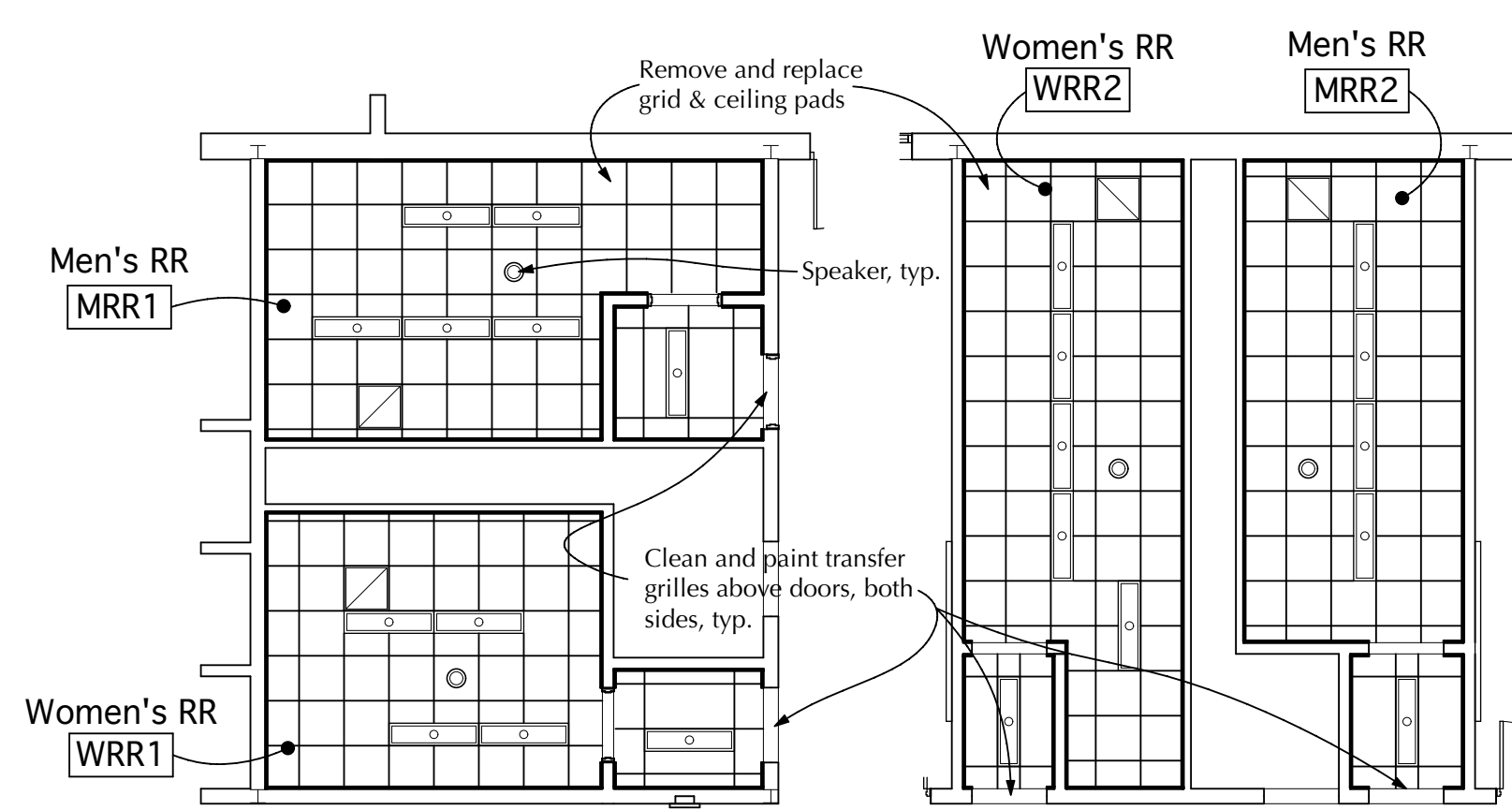
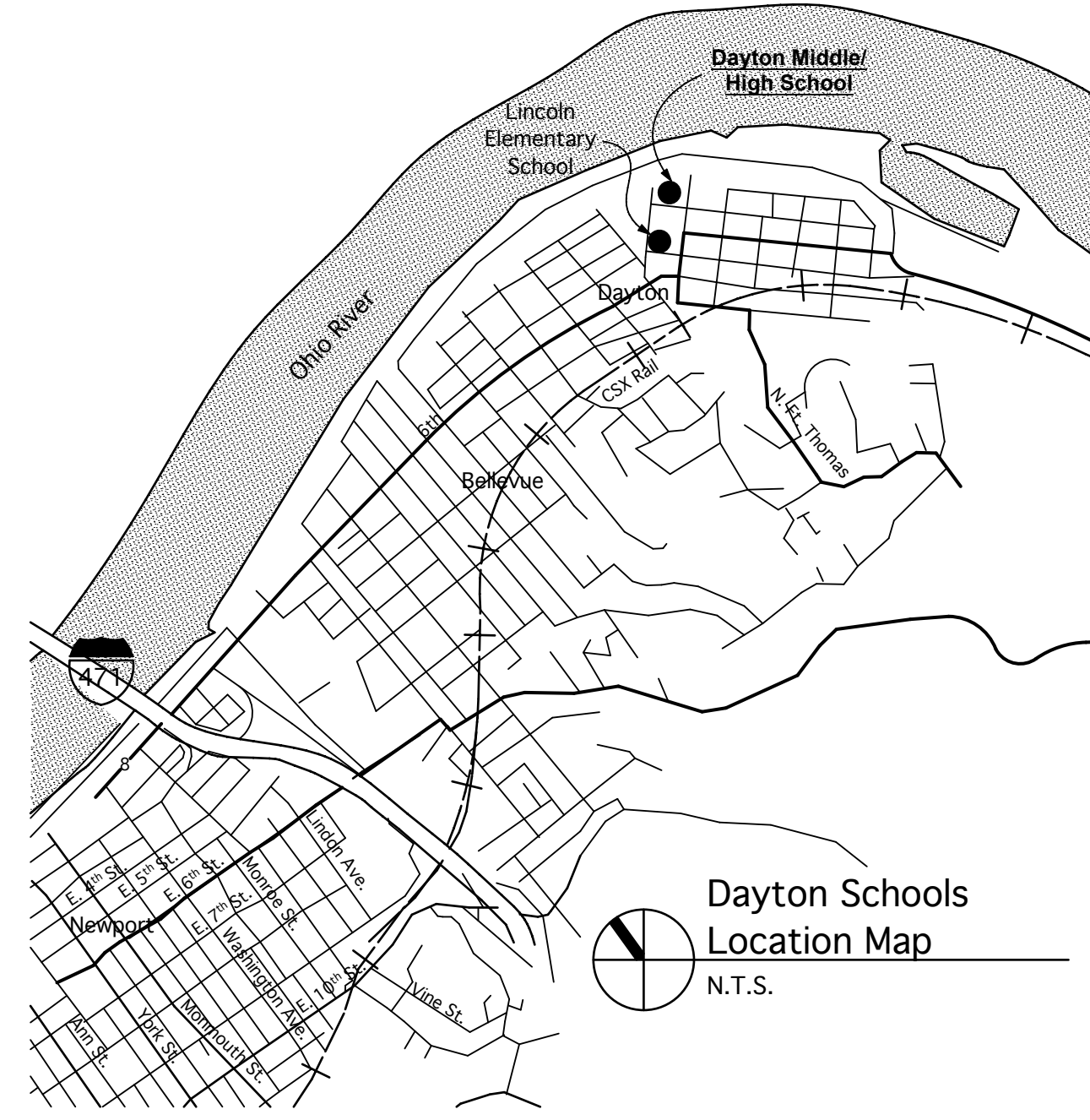
**5 Enlarged Men's Locker Room RR (Alternate Bid)**  
1/4" = 1'-0"

**General Notes for 4/1 & 5/1 (Alternate Bid):**  
Remove & replace LAVs, SDs, MRs, TTDs, GBs, SNDs, WCs, URs, & toilet partitions. TTDs and SDs will be furnished by owner but installed by contractor.  
At new HC Lavs, HC URs, & HC WCs, adjust plumbing to new height as necessary. Patch abandoned holes in CMU w/ CMU and mortar prior to new tile installation  
Match width of exist. toilet partitions. Depth to be 5'-0". Maximize width of HC stall door

<u>Abbreviations:</u>			
ADA	Same as HC	MR	Mirror
AFF	Above Finish Floor	NIC	Not In Contract
CMU	Concrete Masonry Unit		(ie. by others)
CO	Cleanout	PTD	Paper Towel Dispenser
DW	Drywall	SND	Sanitary Napkin Disposal
EHD	Electric Hand Dryer	SIM	Similar
EWC	Electric Water Cooler	SD	Soap Dispenser
FD	Floor Drain	TBR	To Be Removed
FV	Field Verify	TTD	Toilet Tissue Dispenser
GB	Grab Bar	Typ	Typical
HC	Handicap (ie. complies w/ ADA)	UNO	Unless Noted Otherwise
LAV	Lavatory	WC	Water Closet
MFR	Manufacturer		

**ADA Note:** Project consists of 1:1 fixture replacement. Restrooms will not be fully ADA compliant as building was constructed prior to ADA becoming law and plumbing lines, etc. are existing to be reused. However, ADA features such as mounting heights, grab bars, etc. are being implemented as much as is feasible.

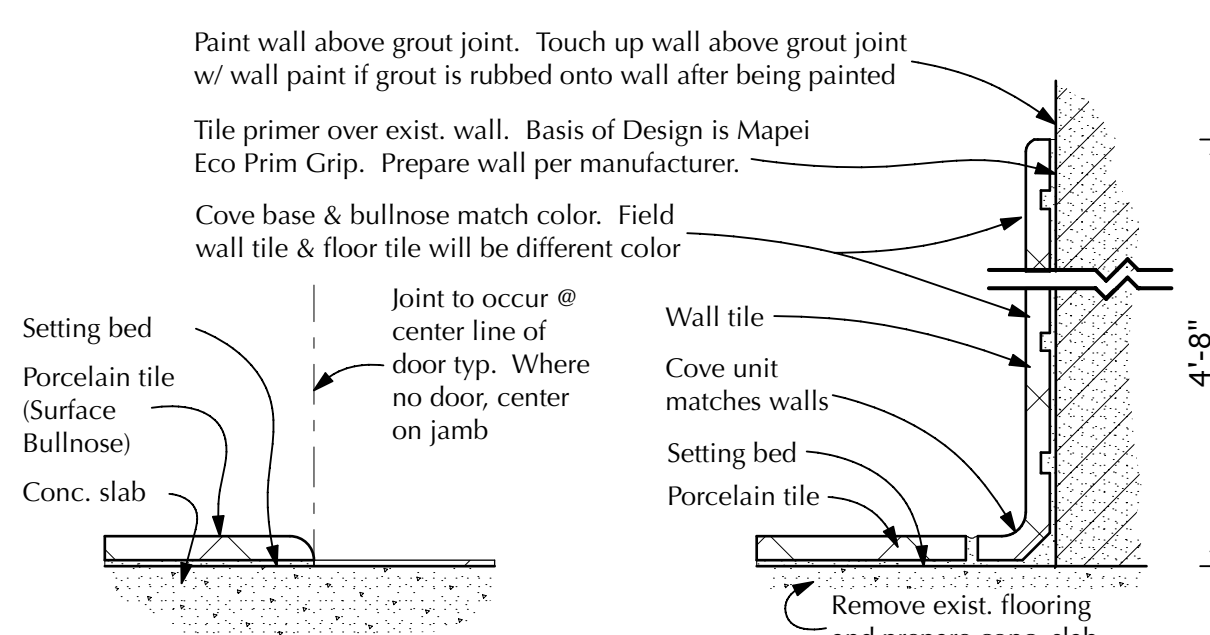
DRAWING INDEX	
Architectural:	1 Plans, Reflected Ceiling Plans; Overall Plans; Details
Plumbing:	P2-101 Plumbing Plans - Level 1; Schedules
P2-102	Plumbing Plans - Level 2
P2-103	Specifications
Electrical:	E2-001 Legend and Design Criteria
E2-002	Specifications
E2-101	Plans
Alternate	1 Locker Room Restrooms



**Reflected Ceiling Plan: Main Level RRs (Base Bid)**  
1/8" = 1'-0"

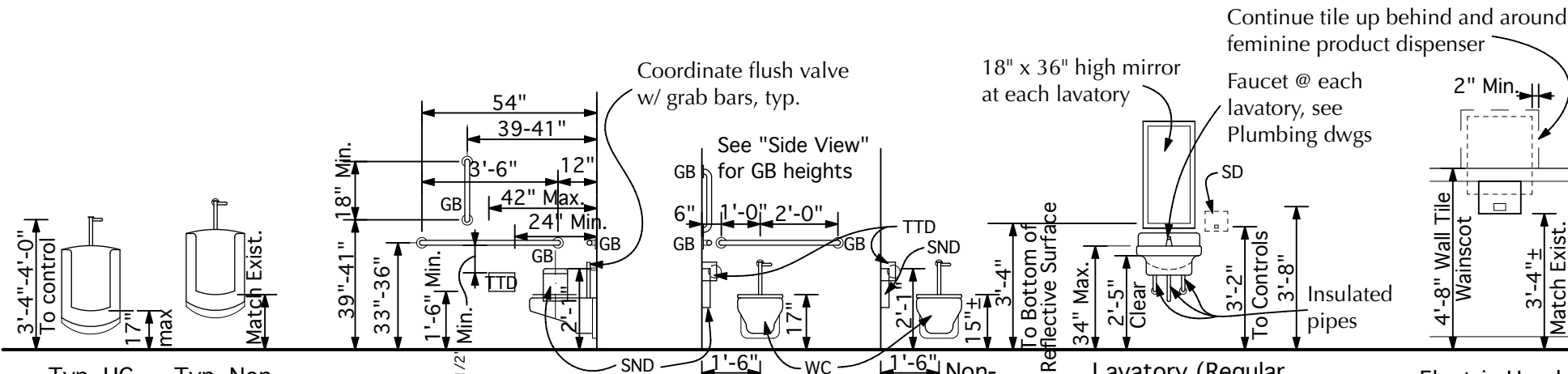
**Reflected Ceiling Plan: Upper Level RRs (Base Bid)**  
1/8" = 1'-0"

**Note:** Ceiling grid and pads to be replaced. Temporarily support and clean diffusers, grilles, lights, etc. - they are to remain. Rework sprinkler heads to new ceiling (not shown). Ceilings may not be exact.



**T1 Floor Transition Dtl.**  
3" = 1'-0"

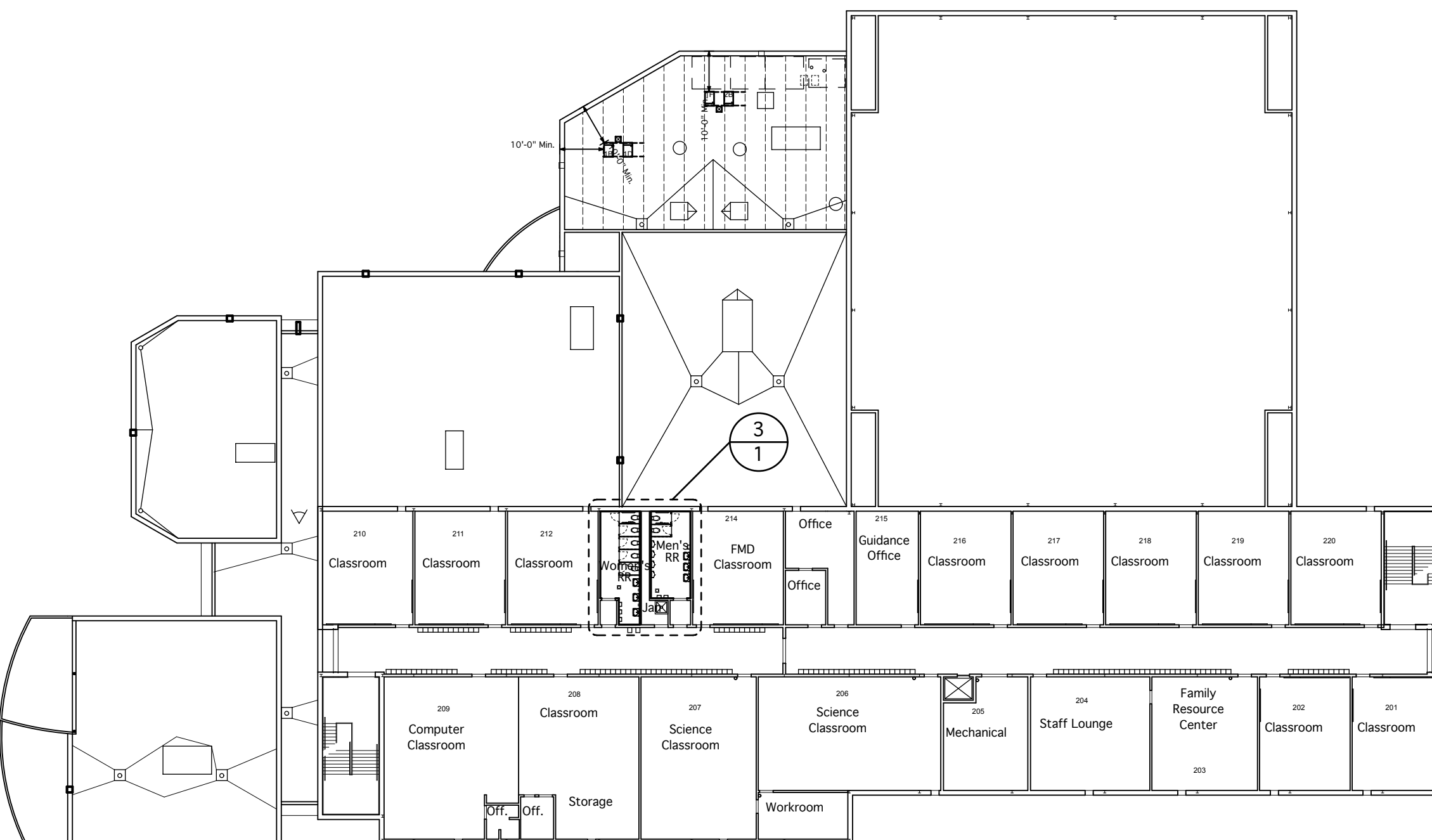
**T2 Porcelain Tile Detail**  
3" = 1'-0"



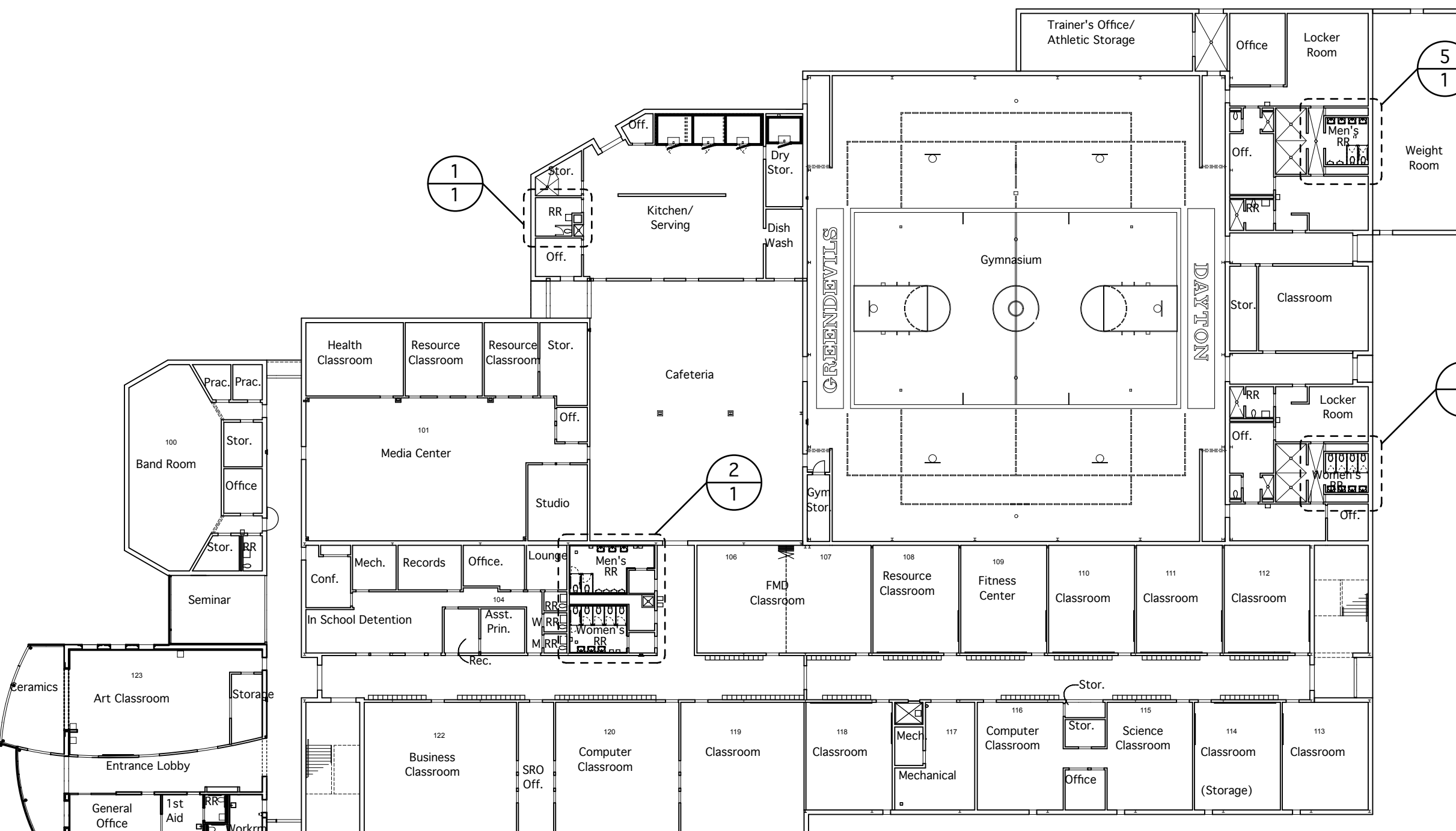
**Typical Mounting Heights**

**Note:** It is understood that the mounting heights may differ based on exist. conditions. HC Urinal, Lavatory, and Toilet heights & accessories shall adhere to the above as much as possible. Notify architect if not possible prior to demolition.

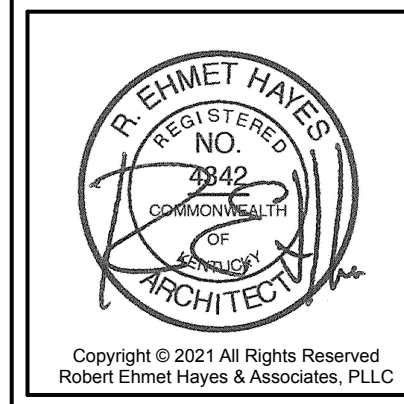
Provide MR, SD, & pipe covers (ADA only) at ALL lavatories even if not indicated on plans



**Overall Plan: Upper Level/  
Roof of Main Level**  
1" = 30'-0"



**Overall Plan: Main Level**  
1" = 30'-0"



SHEET TITLE

BG #  
BG# 21-222

REH #  
168-221 (RTF)

DATE  
10-27-21

**1**

ELECTRIC LEGEND			
SYMBOL	DESCRIPTION		
RECEPTACLES AND MISCELLANEOUS OUTLETS			
	SINGLE ("SIMPLEX"), DUPLEX, AND DOUBLE DUPLEX ("QUAD") RECEPTACLE RESPECTIVELY		
	GFI / GFCI RECEPTACLES		
	SURGE PROTECTIVE DEVICE RECEPTACLES		
	<b>RECEPTACLE ATTRIBUTES</b> 42" = MOUNT RECEPTACLE AT THIS HEIGHT ABOVE GRADE / FINISHED FLOOR C = INSTALL ABOVE COUNTER AND BACKSPLASH H = INSTALL RECEPTACLE HORIZONTALLY L = LIT (PROVIDE ILLUMINATED FACE OR INDICATOR LIGHT TO INDICATE THERE IS POWER TO RECEPTACLE) SW = SPLIT WIRED T = TAMPER-RESISTANT W = WEATHER PROOF WHILE IN USE COVER AND WEATHER RESISTANT RECEPTACLE		
MISCELLANEOUS			
	INDICATES DIRECT CONNECTION TO EQUIPMENT		
	MOTOR RATED TOGGLE SWITCH, MANUAL STARTER WITH PILOT LIGHT, AND MANUAL STARTER WITH PILOT LIGHT WITH EXTERNAL RELAY FOR CONTROL OR MONITORING RESPECTIVELY - ALL MAY BE KEYED "K"		
	HEAVY DUTY DISCONNECT SWITCH (NON-FUSED) (LEFT) HEAVY DUTY DISCONNECT SWITCH (FUSED) (RIGHT)		
	HAND DRYER		
	ELECTRICAL SWITCHBOARD OR SWITCHGEAR (DIMENSIONS MAY VARY)		
	ELECTRICAL PANELBOARD OR DISTRIBUTION BOARD (DIMENSIONS MAY VARY / FLUSH OR SURFACE MOUNTED AS INDICATED)		
	DRY TYPE TRANSFORMER		
	OIL FILLED TRANSFORMER		
SINGLE LINE DIAGRAM			
	ELECTRIC UTILITY COMPANY METER AND ASSOCIATED CURRENT TRANSFORMERS		
	CUSTOMER ELECTRIC METER AND ASSOCIATED CURRENT TRANSFORMERS HD = HIGH DENSITY METERING CABINET/BANK MOUNTED TO TIGHTLY GROUP ALL METERS TOGETHER		
	GROUNDING ELECTRODE PER NFPA 70 ARTICLE 250 MINIMUM		
	HEAVY DUTY DISCONNECT SWITCH (NON-FUSED)(LEFT) (FUSED)(RIGHT) SIZES MAY BE SHOWN ONLY IN SCHEDULE		
	ELECTRICAL PANELBOARD OR DISTRIBUTION BOARD		
	ELECTRICAL SWITCHBOARD OR SWITCHGEAR		
	AUTOMATIC TRANSFER SWITCH		
	SURGE PROTECTIVE DEVICE		
WIRE / CABLE / RACEWAY			
	BRANCH CIRCUIT HOME RUN WITH PANEL NAME AND CIRCUIT NUMBER(S)		
	CABLING / RACEWAY INSTALLED CONCEALED IN WALLS OR ABOVE CEILING		
	CABLING / RACEWAY INSTALLED BELOW FLOOR OR GRADE		
	CABLE TRAY		
	CONDUIT UP OR DOWN		
ABBREVIATIONS			
42"	DISTANCE ABOVE FINISHED FLOOR / GRADE / PAVEMENT	IG	ISOLATED GROUND
AF	AMP FRAME OF FUSED SWITCH OR CIRCUIT BREAKER	LR	LEGALLY REQUIRED STANDBY
AFCI	ARC-FAULT CIRCUIT INTERRUPTER	LI	LONG - INSTANTANEOUS
AIC	AMPS INTERRUPTING CURRENT	LSI	LONG - SHORT - INSTANTANEOUS
AT	AMP TRIP OF FUSED SWITCH OR CIRCUIT BREAKER	LSIG	LONG - SHORT - INSTANTANEOUS - GROUND FAULT
ATS	AUTOMATIC TRANSFER SWITCH	MCB	MAIN CIRCUIT BREAKER
BAS	BUILDING AUTOMATION SYSTEM	MFR	MANUFACTURER
C.T.C.	WORK UNDER DIVISION 27 OR 28 AS APPLICABLE	MLO	MANUAL LOGS ONLY
CB	CIRCUIT BREAKER	MTS	MANUAL TRANSFER SWITCH
CH	COUNTER HEIGHT OR SPECIAL HEIGHT DEVICE	MW	MICROWAVE OVEN
DW	DISHWASHER	NIC	NOT IN CONTRACT (SHOWN FOR REFERENCE ONLY)
E	EMERGENCY	NTS	NOT TO SCALE
E.C.	WORK UNDER DIVISION 26	OFE	OWNER-FURNISHED EQUIPMENT - INSTALLED AND WIRED BY E.C.
EMS	ENERGY MANAGEMENT SYSTEM	OS	OPTIONAL STANDBY
EPO	EMERGENCY POWER OFF	P.C.	WORK UNDER DIVISION 22
ER	EQUIPMENT ROOM	(R)	RELOCATE
ERM	ENERGY REDUCTION MAINTENANCE SWITCH	S.C.	WORK UNDER DIVISION 21
ESP	EMERGENCY STANDBY RATING	SCCR	SHORT CIRCUIT CURRENT RATING
ETR	EXISTING TO REMAIN	SPD	SURGE PROTECTIVE DEVICE
EW	ELECTRIC WATER COOLER	ST	SHUNT TRIP
EX	EXISTING	TAAO	TO ABOVE ACCESSIBLE CEILING
FBO	FURNISHED BY OTHERS - INSTALLED AND WIRED BY E.C.	TR	TAMPER RESISTANT
FIBO	FURNISHED AND INSTALLED BY OTHERS - WIRED BY E.C.	TTB	TELEPHONE TERMINAL BOARD
FP	RECEPTACLE TO BE USED FOR A FLAT PANEL DISPLAY	TYP	TYPICAL
PWE	FURNISHED WITH EQUIPMENT BY OTHERS - INSTALLED AND WIRED BY E.C.	UCR	UNDER COUNTER REFRIGERATOR
GD	GARBAGE DISPOSAL	UL	UNDERWRITERS LABORATORY
GFP	GROUND FAULT EQUIPMENT PROTECTION	UL S.E.	LISTED FOR SERVICE ENTRANCE
GFI / GFCI	GROUND FAULT CIRCUIT INTERRUPTER DEVICE	UNO	UNLESS NOTED OR INDICATED OTHERWISE ON DRAWINGS OR IN SPECIFICATIONS
GND	GROUND	VFD / VSD	VARIABLE FREQUENCY / SPEED DRIVE
H.C.	WORK UNDER DIVISION 23	VIF	VERIFY IN FIELD
H.O.A.	"HAND - OFF - AUTO" SWITCH	VM	VENDING MACHINE
		VP	VANDAL PROOF
		W / WP	WEATHERPROOF
		WG	WIRE GUARD
		WR	WEATHER RESISTANT
PLAN-VIEW AND GRAPHIC LINE TYPES			
WORK SHOWN BOLD-CONTINUOUS INDICATES NEW WORK (UNLESS OTHERWISE INDICATED)			
WORK SHOWN FADED INDICATES EXISTING WORK TO REMAIN OR NEW WORK BY OTHERS AS APPLICABLE (UNLESS OTHERWISE INDICATED)			
WORK SHOWN BOLD-DASHED INDICATES SELECTIVE DEMOLITION WORK (UNLESS OTHERWISE INDICATED)			

ELECTRIC DESIGN CRITERIA	
APPLICABLE BUILDING CODES	
2018 KENTUCKY BUILDING CODE (BASED ON THE INTERNATIONAL BUILDING CODE) 2017 NFPA 70 - NATIONAL ELECTRICAL CODE (NEC) 2016 NFPA 72 - NATIONAL FIRE ALARM AND SIGNALING CODE 2012 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)	
GENERAL ELECTRICAL INSTALLATION NOTES	
A.	CODE COMPLIANCE: PROVIDE ALL ELECTRICAL WORK COMPLIANT WITH ALL PREVALING CODES.
B.	LISTINGS: PROVIDE MATERIALS, COMPONENTS AND ASSEMBLED COMPONENTS WITH LISTINGS AND LABELS FROM A NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL), MANUFACTURED, LISTED AND LABELED FOR THEIR INTENDED USE.
C.	RATED BUILDING SURFACES: SEPARATE DEVICE BOXES BY A MINIMUM OF 6 INCHES WHERE INSTALLED BACK-TO-BACK WITHIN DEMISING WALLS TO MAINTAIN REQUIRED FIRE AND SOUND RATING (TYPICAL OF ALL DEVICE BOXES INSTALLED ON DEMISING WALLS). PROVIDE LISTED FIRE RATED WRAPS AROUND ALL RECESSED OUTLET, DEVICE AND EQUIPMENT BOXES IN FIRE/SMOKE RATED WALLS, CEILINGS AND FLOORS TO MEET OR EXCEED THE RESPECTIVE FIRE/SMOKE RATING OF THE SURFACE.
D.	RATED PENETRATIONS: SEAL ALL PENETRATIONS THROUGH FIRE-RATED AND/OR SMOKE-RATED MEMBRANES (FLOORS, WALLS, CEILINGS, ETC.) USING SEALANT PRODUCTS THAT MEET OR EXCEED THE RATING OF THE RESPECTIVE MEMBRANE.
E.	GANGED DEVICES: INSTALL WIRING DEVICES GANGED WHEREVER POSSIBLE FOR INSTANCES WHERE THEY ARE SHOWN TOGETHER. THIS INCLUDES LOCATIONS ABOVE COUNTERS AND WORK SURFACES WHERE APPLICABLE.
F.	OUTLET BOXES NEAR CORNERS: INSTALL WALL-MOUNTED SWITCHES, CONTROLS, RECEPTACLES, OUTLETS, ETC. AT LEAST 6 INCHES FROM WALL CORNERS.
G.	CONCEALMENTS: CONCEAL ALL CONDUIT DROPS AND RISES WITHIN WALLS, AND PROVIDE FLUSH-MOUNTED WALL OUTLET BOXES UNLESS OTHERWISE INDICATED.
H.	DOCUMENTS OF OTHER TRADES: REVIEW DOCUMENTS OF OTHER TRADES, INCLUDING ARCHITECTURAL, PRIOR TO SUBMITTING A BID. PROVIDE ELECTRICAL WORK FOR EQUIPMENT, DEVICES, ETC. OF OTHER TRADES AS REQUIRED TO RENDER THEM FULLY OPERATIONAL. REFER TO ARCHITECTURAL ELEVATIONS FOR INTENDED LOCATIONS AND MOUNTING HEIGHTS FOR EQUIPMENT AND OUTLETS, ETC. PRIOR TO COMMENCING WITH ANY RELATED ROUGH-IN WORK.
I.	SCHEMATIC REPRESENTATIONS: CIRCUITING WORK SHOWN ON DRAWINGS IS FOR SCHEMATIC GENERAL GRAPHIC REPRESENTATION ONLY. DETERMINE SPECIFICS IN FIELD (POINT-TO-POINT ROUTING, HOME-RUN LOCATIONS, METHODS OF CONCEALMENT, ETC.). LOCATIONS AND ROUTING INDICATED ON PLANS ARE SCHEMATIC AND DIAGRAMMATIC IN NATURE. LAYOUT AND INSTALL ALL ELECTRICAL WORK IN STRICT COMPLIANCE WITH CHAPTER 1, PART II, ARTICLE 110.28 OF THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70).
J.	HOME-RUN DESIGNATIONS: HOME-RUN DESIGNATIONS INDICATED ON PLANS ARE SCHEMATIC DESIGNATIONS ONLY. DETERMINE EXACT CIRCUIT ASSIGNMENTS IN FIELD BASED ON FIELD CONDITIONS. PROVIDE COLOR-CODED CONDUCTOR INSULATION ACCORDINGLY, CODED PROPERLY DEPENDING ON SYSTEM, PHASE, NEUTRAL, ETC. PROVIDE EQUIPMENT AND PANELBOARD SCHEDULES THAT ACCURATELY INDICATE INSTALLED CONDITIONS.
K.	LOCAL DISCONNECTS AND CONTROLS AT EQUIPMENT: LOCAL DISCONNECTS AND LOCAL CONTROLS SHOWN AT OR ON EQUIPMENT IN PLAN VIEW ARE SHOWN FOR SCHEMATIC ASSOCIATIONS ONLY. AVOID INSTALLING DISCONNECTS OR CONTROLS ON EQUIPMENT ENCLOSURES. INSTALL ON ADJACENT WALLS OR BUILDING STRUCTURE, OR PROVIDE FIELD-FABRICATED UNISTRUIT OR EQUIVALENT ASSEMBLIES AS NEEDED. PROVIDE FIELD COORDINATION WITH SITE CONDITIONS AND OTHER TRADES, AND PROVIDE ALL RELATED WORK IN STRICT COMPLIANCE WITH NFPA 70, INCLUDING ARTICLE 110.28. PROVIDE A PERMANENT LABEL ON LOCAL DISCONNECTS NOTING THE EQUIPMENT IT SERVES AND THE PANEL AND CIRCUIT NUMBER FEEDING THE EQUIPMENT PER NFPA 70, ARTICLE 110.22(A).
L.	EQUIPMENT & LOAD COORDINATION: REFER TO AND COORDINATE WITH POWER FLOOR PLANS, EQUIPMENT SCHEDULES (INCLUDING EQUIPMENT COORDINATION SCHEDULES), DRAWINGS OF ALL TRADES, ALL DIVISIONS AND SECTIONS OF THESE SERVICES PRIOR TO FURNISHING POWER DISTRIBUTION EQUIPMENT SUBMITTALS.
M.	EXTERIOR ELECTRICAL WORK AND WORK SUBJECT TO MOISTURE: EXTERIOR ELECTRICAL WORK SHALL BE WEATHERPROOF AND WATER-TIGHT, AND SHALL BE RUST-RESISTANT. PROVIDE #12-2 CONDUCTORS FOR ALL APPLICATIONS THAT ARE BELOW GRADE OR SUBJECT TO MOISTURE. PROVIDE MINIMUM NEMA 3R ENCLOSURES FOR ALL OUTDOOR EQUIPMENT AND ALL INDOOR EQUIPMENT THAT IS SUBJECT TO MOISTURE. PROVIDE NEMA 1 ENCLOSURES FOR ALL OTHER INDOOR EQUIPMENT.
N.	EQUIPMENT GROUNDING CONDUCTORS: PROVIDE EQUIPMENT GROUNDING CONDUCTORS IN STRICT COMPLIANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NFPA 70), INCLUDING ARTICLE 250 AND TABLE 250.122. THESE CONDUCTORS MAY OR MAY NOT BE INDICATED ON SINGLE-LINE DIAGRAMS OR ELSEWHERE, BUT SHALL BE PROVIDED UNDER BASE BID NEVERTHELESS.
O.	OVERHEAD WORK: HOLD ALL NEW OVERHEAD ELECTRICAL WORK AS TIGHTLY AS POSSIBLE TO THE BOTTOM OF THE OVERHEAD STRUCTURE. DO NOT INSTALL ANY ELECTRICAL WORK WITHIN SIX INCHES OF ROOF DECKING.
P.	COORDINATION DRAWINGS: LAYOUT ALL PROPOSED RACEWAY ROUTING, ELEVATIONS, INSTALLATION METHODS, ETC. ON COORDINATION DRAWINGS AND COORDINATE ALL PROPOSED RACEWAY ROUTING WITH ALL AFFECTED TRADES PRIOR TO COMMENCING WITH WORK. IN ADDITION, REVIEW THE INFORMATION WITH ARCHITECT, ENGINEER AND OWNER FOR ALL AREAS WHERE THE RACEWAYS WILL BE VISIBLE AFTER COMPLETION OF CONSTRUCTION.
Q.	JUNCTION AND PULL BOXES: LOCATE JUNCTION AND PULL BOXES SO THAT THEY REMAIN ACCESSIBLE AFTER ALL CONSTRUCTION WORK IS COMPLETE. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO COMMENCEMENT OF THE WORK. LOCATE BOXES IN A MANNER THAT AVOIDS HAVING TO USE ACCESS PANELS. IF ACCESS PANELS ARE INEVITABLE, PROVIDE THEM RATED TO MEET OR EXCEED THE FIRE AND/OR SMOKE RATINGS OF THE RESPECTIVE CEILING OR WALL, AND OBTAIN APPROVAL OF DESIGN PROFESSIONALS FOR EACH LOCATION.
R.	CONDUCTOR TERMINATIONS: IN CASES WHERE CONDUCTOR SIZES ARE TOO LARGE TO FIT INTO LUGS/TERMINALS, PROVIDE APPROPRIATE FACTORY LUG KITS FOR AFFECTED EQUIPMENT IF AVAILABLE. ELSEWHERE, PROVIDE INSULATED BUTT SPLICES OR EQUIVALENT METHOD, WITH TAILS SIZED TO FIT LUGS/TERMINALS. PROVIDE SPLICES IN SEPARATE BOXES IF REQUIRED BASED ON FIELD CONDITIONS, BOX SIZE LIMITATIONS, ETC. CONCEAL BOXES IN ACCESSIBLE OVERHEAD JOIST SPACES IN FINISHED REGULARLY OCCUPIED AREAS.
S.	TYPE MC, AC, NM, SE CABLE: WHERE MORE THAN TWO TYPE MC, AC, NM, OR SE CABLES CONTAINING TWO OR MORE CURRENT CARRYING CONDUCTORS IN EACH CABLE ARE INSTALLED IN CONTACT WITH THERMAL INSULATION, CALK, OR SEALING FOAM MAINTAIN SPACING BETWEEN CABLES.

ELECTRIC CONDUIT AND WIRE MATERIAL SCHEDULE			
MC - METAL CLAD CABLE MI - MINERAL INSULATED CABLE HMC - HEALTHCARE METAL CLAD CABLE USE - UNDERGROUND SERVICE ENTRANCE CABLE SE - SERVICE ENTRANCE CABLE HDFE - HIGH DENSITY POLYETHYLENE CONDUIT NM - NON-METALLIC SHEATHED CABLE RMC - RIGID METAL CONDUIT RNC - RIGID NON-METALLIC CONDUIT RTRC - REINFORCED THERMOSETTING RESIN CONDUIT LIM - LINE ISOLATION MONITOR	ARC - ALUMINUM RIGID CONDUIT EMT - ELECTRIC METALLIC TUBING ENT - ELECTRIC NON-METALLIC TUBING FMC - FLEXIBLE METALLIC CONDUIT GRC - GALVANIZED RIGID STEEL CONDUIT HDPE - HIGH DENSITY POLYETHYLENE CONDUIT IMC - INTERMEDIATE METAL CONDUIT LFMC - LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT LFNC - LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT SCH 40 PVC - SCHEDULE 40 POLYVINYL CHLORIDE CONDUIT SCH 80 PVC - SCHEDULE 80 POLYVINYL CHLORIDE CONDUIT		
CONDUIT APPLICATION	CONDUCTOR TYPE	RACEWAY TYPE	RACEWAY AND CONDUCTOR NOTES
--POWER - INDOOR--			
CONCEALED	THHN	EMT	
EXPOSED	THHN	EMT	
--POWER - OUTDOOR--			
EXPOSED	XHHW-2	RMC (GRC)	
CONCEALED	XHHW-2	EMT	

Dayton High School Renovations  
BID PACKAGE #2: RESTROOMS  
200 Greendevil Ln., Dayton, KY 41074  
Mr. Jay Brewer - Superintendent  
Dayton Independent Schools

REVISIONS	

DWN: DTJ CHK: SNF  
DATE: 10/27/2021  
BG #: BG#  
REH #: 168-221

ELECTRIC  
COVER SHEET

E2-001

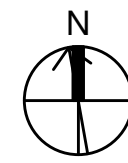
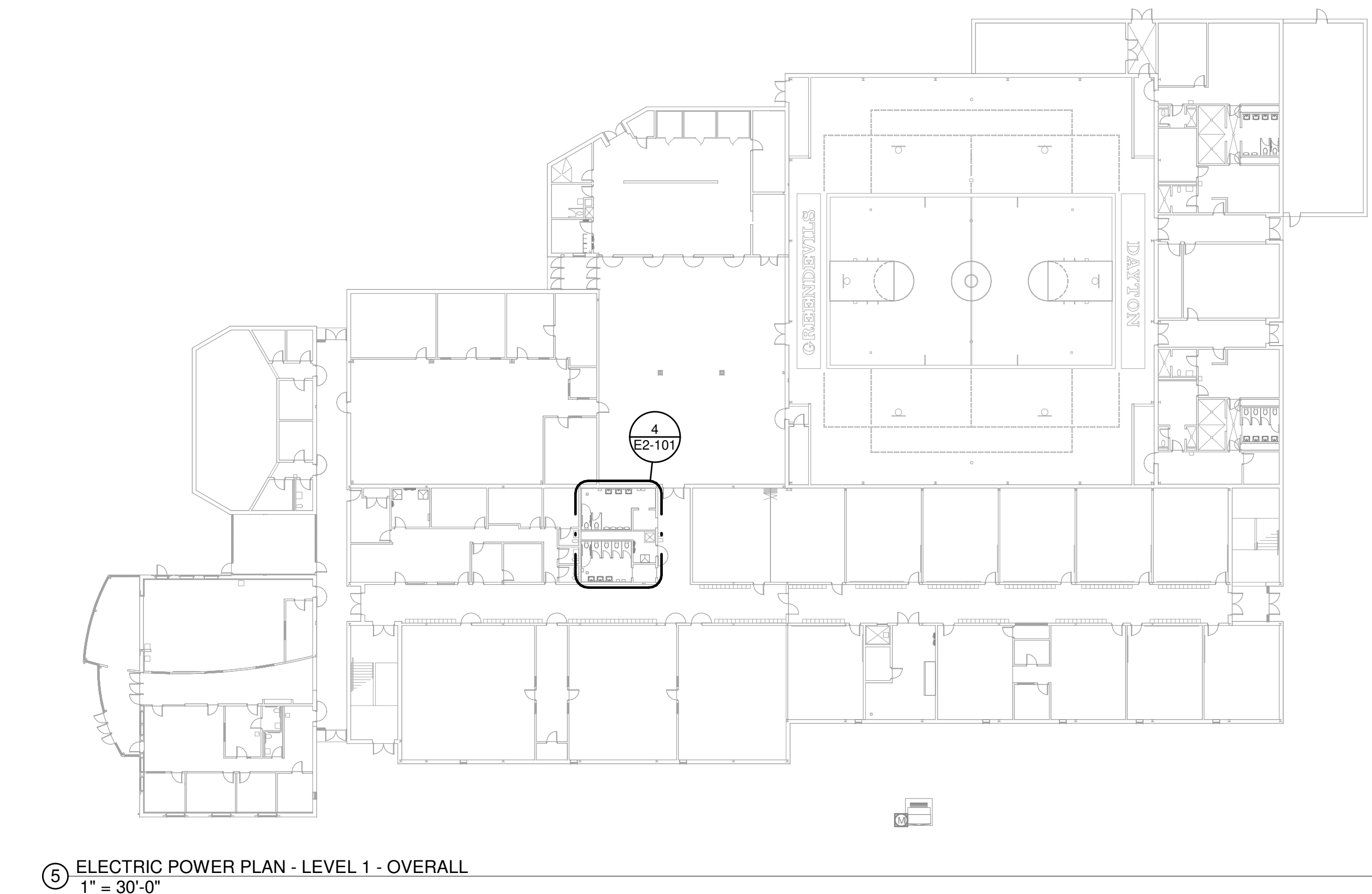
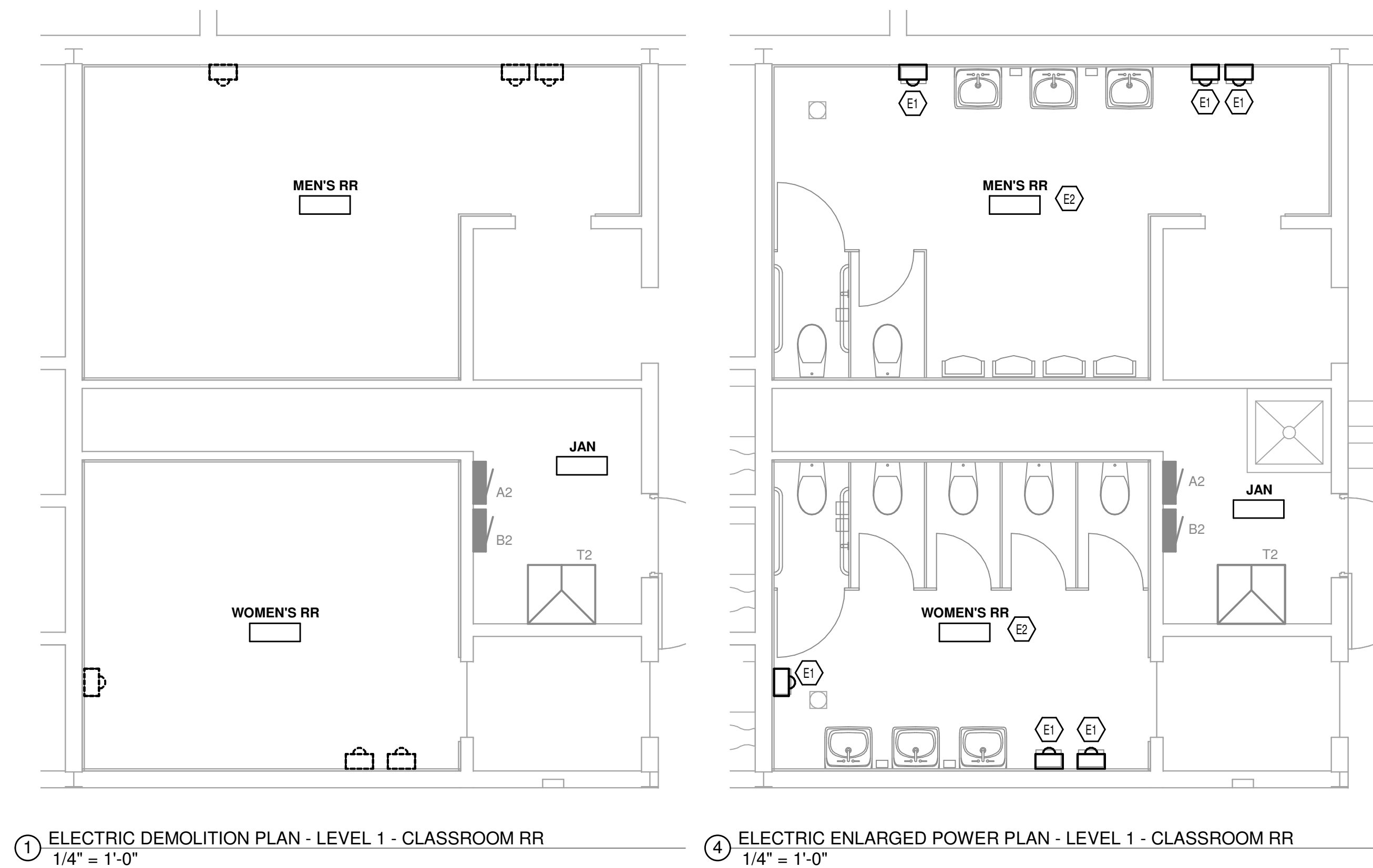
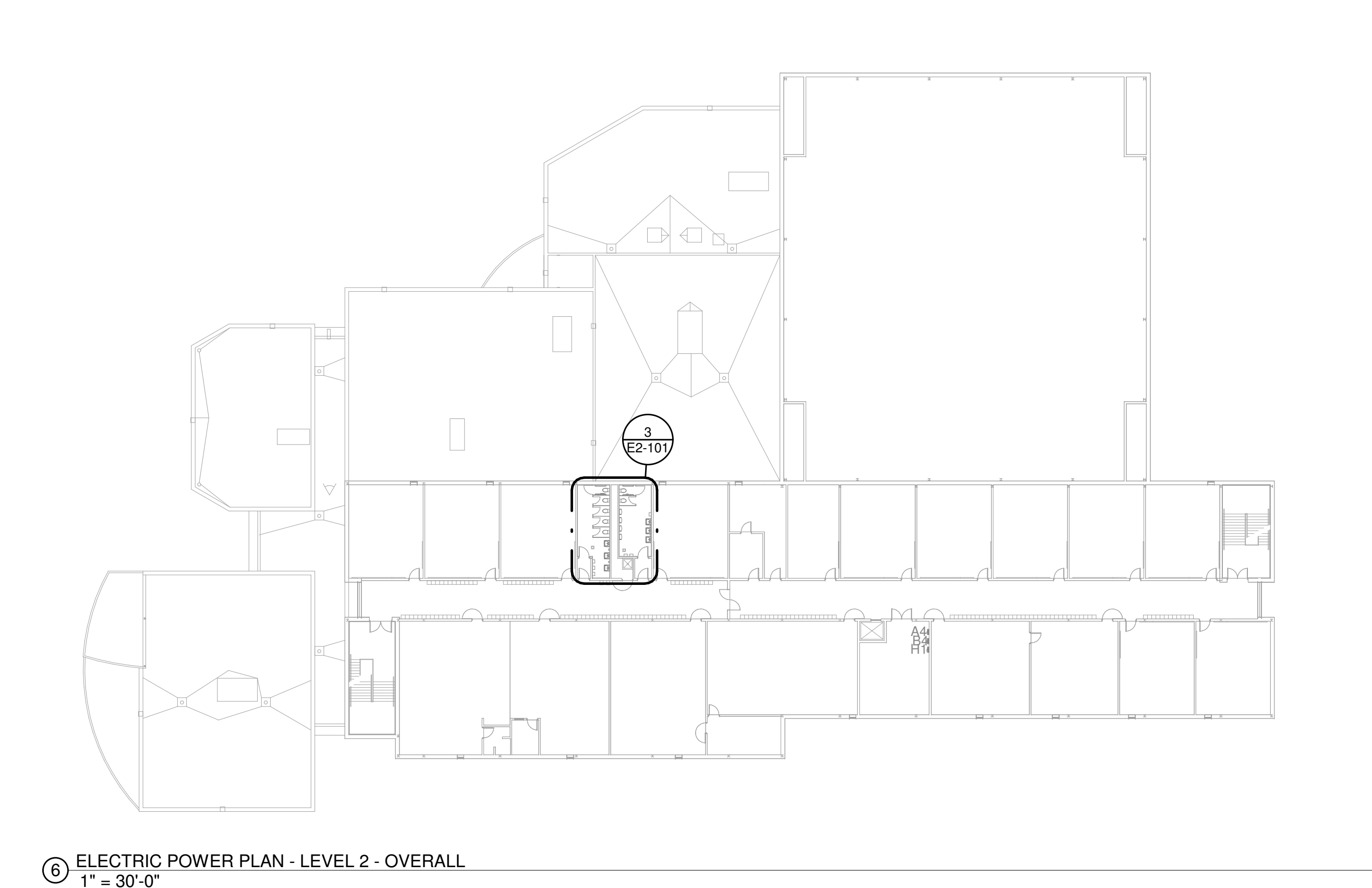
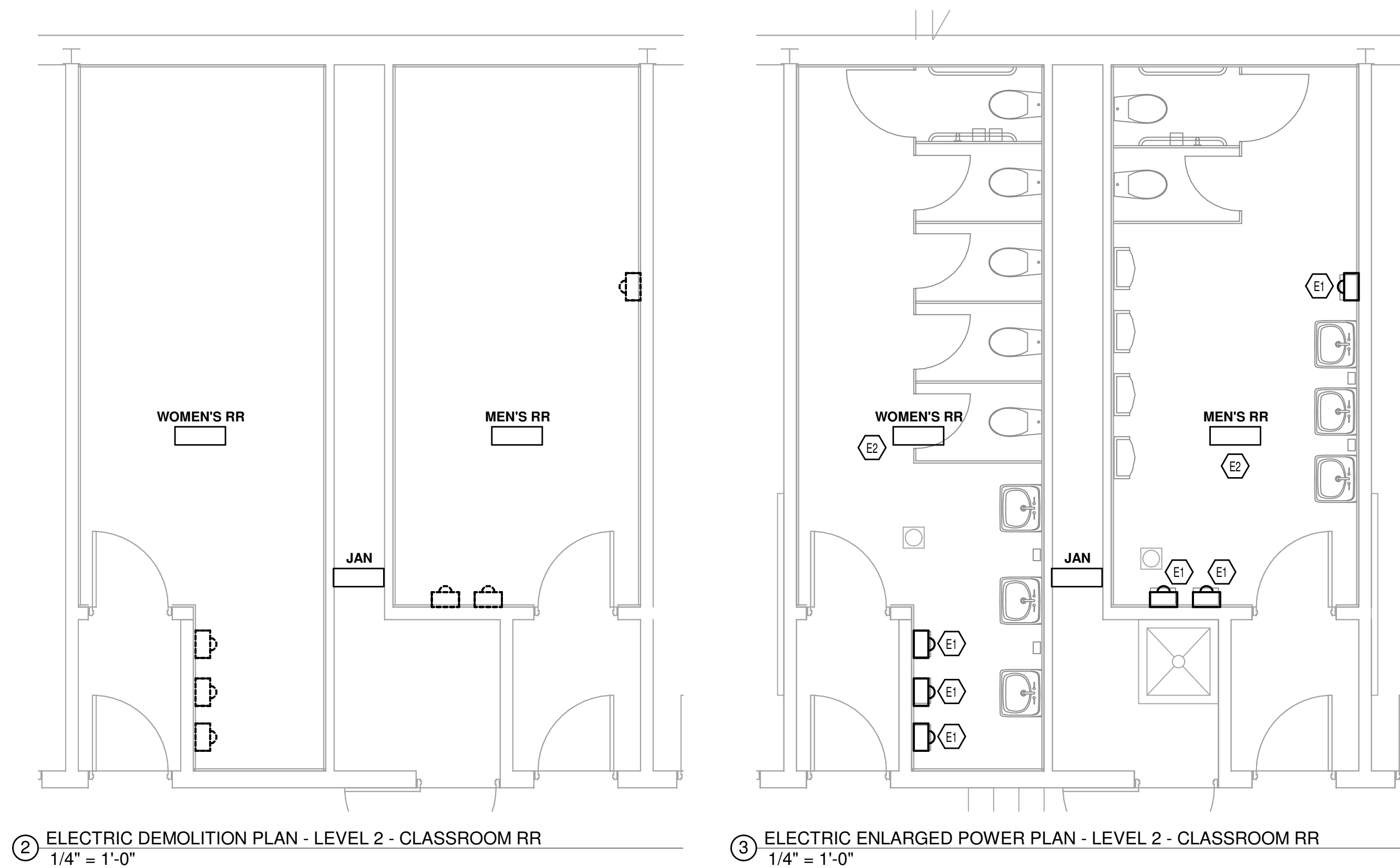
1" REFERENCE  
KLH PROJECT #  
23479

MECHANICAL/ELECTRICAL  
ENGINEERS  
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ENGINEERS  
KOHRS, LONEMANN, HELL, ENGINEERS, INC.  
1538 ALEXANDRIA PIKE, SUITE 11  
LEWISTON, KENTUCKY 40351  
LOUISVILLE, KENTUCKY 40244-4636  
859-446-8658 FAX  
859-446-8658 FAX









KEYED NOTES	
E1	PROVIDE NEW ELECTRIC HAND DRYER. EXTEND / MODIFY EXISTING ELECTRIC HAND DRYER CIRCUIT MADE AVAILABLE UPON DEMOLITION.
E2	CEILING TILES TO BE REPLACED. PROVIDE SUPPORT FOR ALL CEILING DEVICES (FIRE ALARM, LIGHTING, ETC.) DURING REPLACEMENT AND PROTECT DURING CONSTRUCTION.

Dayton High School Renovations  
BID PACKAGE #2: RESTROOMS  
200 Greendevil Ln., Dayton, KY 45404  
Dayton Independent Schools  
Mr. Jay Brewer - Superintendent

REVISIONS	

DWN: DTJ	CHK: SNF
DATE:	10/27/2021
BG #:	BG#
REH #:	168-221

ELECTRIC  
RESTROOM  
PLANS

E2-101

1" REFERENCE  
KLH PROJECT #  
23479

MECHANICAL, ELECTRICAL  
ENGINEERS

KLH  
ENGINEERS

KOHR'S LONNEMANN HELL ENGINEERS, INC.  
1538 ALEXANDRIA PIKE, SUITE 11  
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859-446-8000  
859-446-8055 FAX

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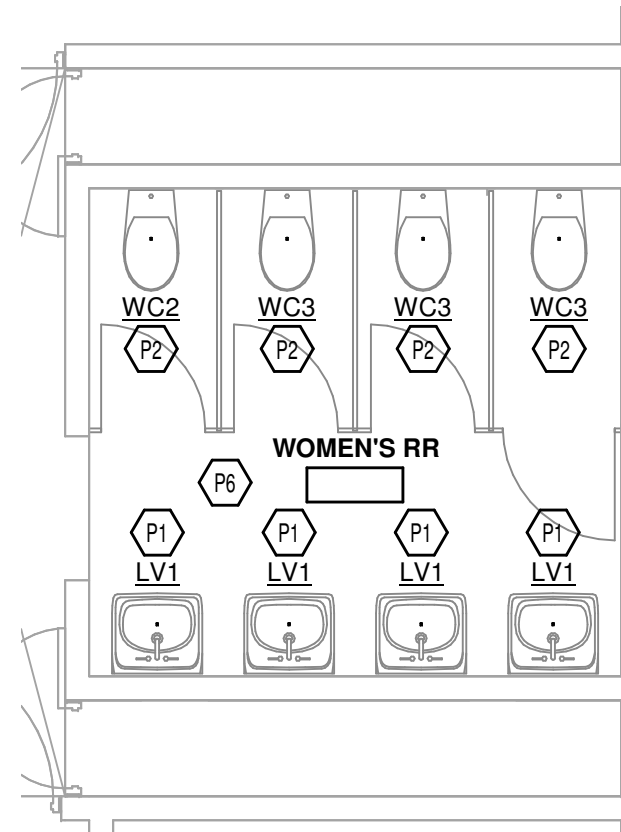


LVN	DESCRIPTION	LOCATION	MANUFACTURER	MODEL	VALVE/FAUCET MFR	VALVE/FAUCET MODEL	CW SIZE (in)	HW SIZE (in)	SAN SIZE (in)	VENT SIZE (in)	TRAP SIZE (in)	NO TRAP	ACCESSORIES
LAV1	LAVATORY WALL MOUNT	RESTROOMS	AMERICAN STANDARD	0355-012	AMERICAN STANDARD	0355-012	1/2	1-1/2	1-1/2	1-1/2	1-1/2	---	0.5 GPM. BATTERY SENSOR. USE WITH TMV1, ADA
TMV1	THERMOSTATIC MIXING VALVE	LAVATORIES	WATTS	LFUSB-8	---	---	1/2	1/2	---	---	---	---	ASSE 170 OPER. USE WITH LV1
UR1	URINAL WALL MOUNT	MEN'S RESTROOMS	AMERICAN STANDARD	6590-001	SLOAN	ROYAL 186 SMO	3/4	---	1-1/2	1-1/2	---	YES	0.125 GPF. BATTERY SENSOR. ADA
WC1	WATER CLOSET WALL MOUNT	RESTROOMS	AMERICAN STANDARD	2687-101	SLOAN	ROYAL 131 SMO	1	---	4	---	---	YES	1.28 GPF. BATTERY SENSOR. ADA
WC2	FLUSH VALVE WATER CLOSET FLOOR MOUNT	RESTROOMS	AMERICAN STANDARD	3461-001	SLOAN	ROYAL 111 SMO	1	---	4	---	---	YES	1.28 GPF. BATTERY SENSOR. ADA
WC3	FLUSH VALVE WATER CLOSET FLOOR MOUNT	RESTROOMS	AMERICAN STANDARD	3451-001	SLOAN	ROYAL 111 SMO	1	---	4	2	---	YES	1.28 GPF. BATTERY SENSOR. ADA

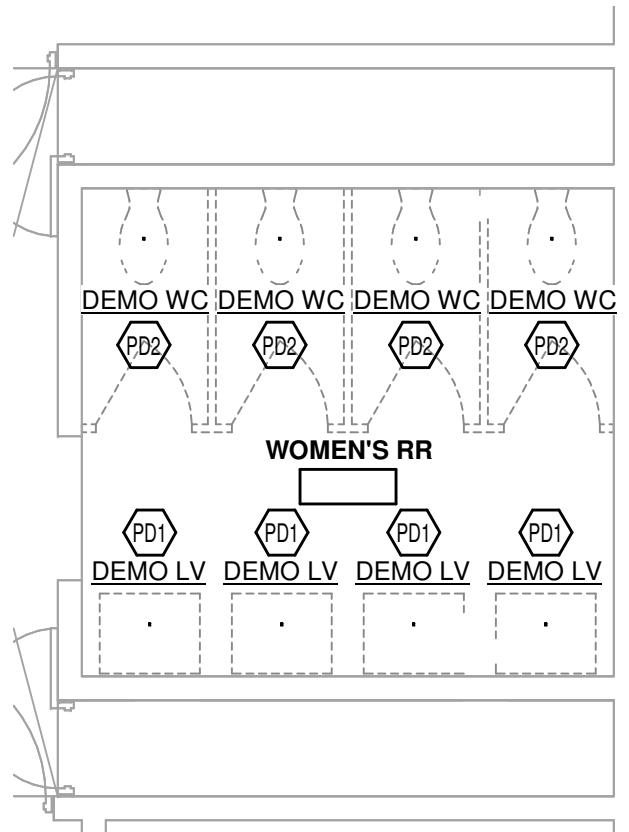
PLUMBING DRAIN SCHEDULE									
MARK	DESCRIPTION	LOCATION	MANUFACTURER	MODEL	TRAP PRIMER	TRAP SIZE (in)	SAF SIZE (in)	VENT SIZE (in)	ACCESSORIES/REMARKS
FD1	FLOOR DRAIN	RESTROOMS	WATTS	FD-100-A	YES	3	3	1-1/2	6"x6" STRAINER, NICKEL BRONZE STRAINER

## KEYED NOTES

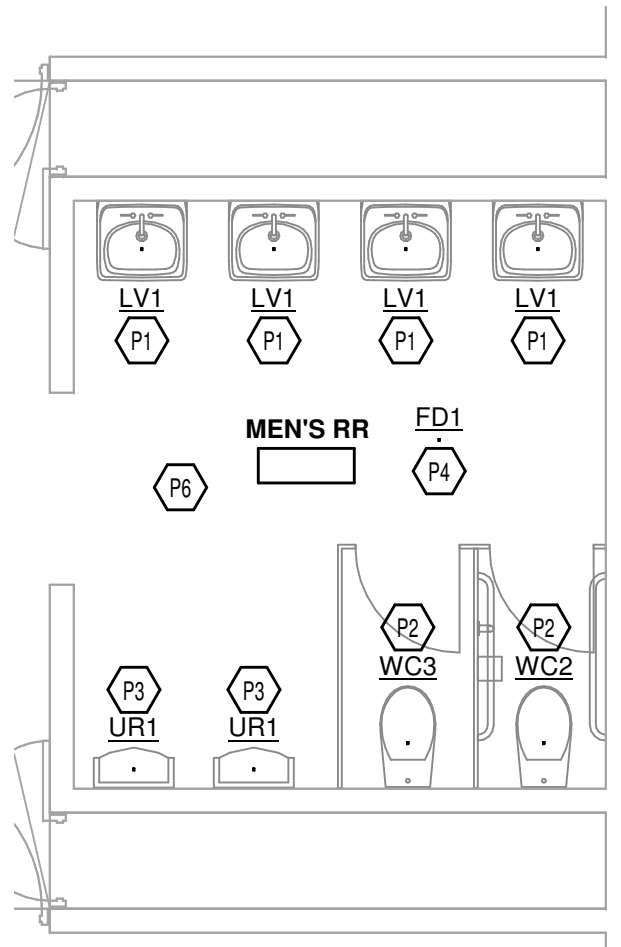
P1	CONNECT NEW HOT WATER, COLD WATER, AND SANITARY PIPING SERVING NEW LAVATORY FIXTURE TO EXISTING HOT WATER, COLD WATER, AND SANITARY PIPING.
P2	CONNECT NEW COLD WATER AND SANITARY PIPING SERVING NEW WATER CLOSET FIXTURE TO EXISTING COLD WATER AND SANITARY PIPING.
P3	CONNECT NEW COLD WATER AND SANITARY PIPING SERVING NEW URINAL FIXTURE TO EXISTING COLD WATER AND SANITARY PIPING.
P4	CONNECT NEW SANITARY PIPING SERVING NEW FLOOR DRAIN FIXTURE TO EXISTING SANITARY PIPING.
P5	EXISTING MOP SINK FIXTURE TO REMAIN.
P6	REWORK EXISTING SPRINKLER HEADS AS NEEDED WITH NEW CEILING WORK. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL NEW WORK.
PD1	DEMOLISH EXISTING LAVATORY. MAINTAIN EXISTING HOT WATER, COLD WATER, SANITARY, AND VENT PIPING FOR NEW LAVATORY FIXTURE.
PD2	DEMOLISH EXISTING WATER CLOSET. MAINTAIN EXISTING COLD WATER, SANITARY, AND VENT PIPING FOR NEW WATER CLOSET FIXTURE.
PD3	DEMOLISH EXISTING URINAL. MAINTAIN EXISTING COLD WATER, SANITARY, AND VENT PIPING FOR NEW URINAL FIXTURE.
PD4	DEMOLISH EXISTING FLOOR DRAIN. MAINTAIN EXISTING SANITARY AND VENT PIPING FOR NEW FLOOR DRAIN FIXTURE.



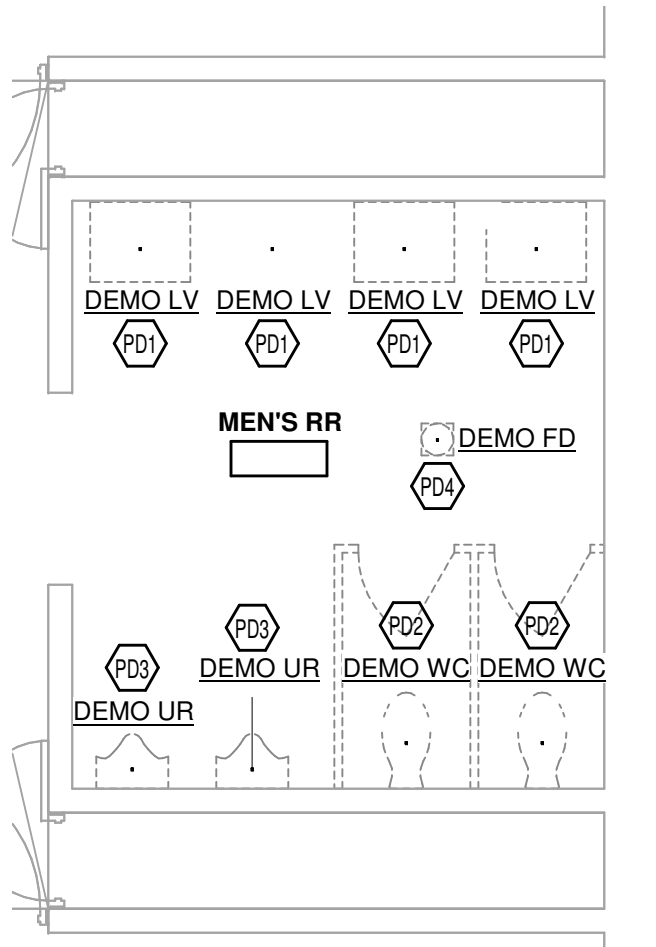
⑦ PLUMBING - LEVEL 1 - ENLARGED PLAN - WOMENS LOCKER RR (ALTERNATE #2)  
1/4" = 1'-0"



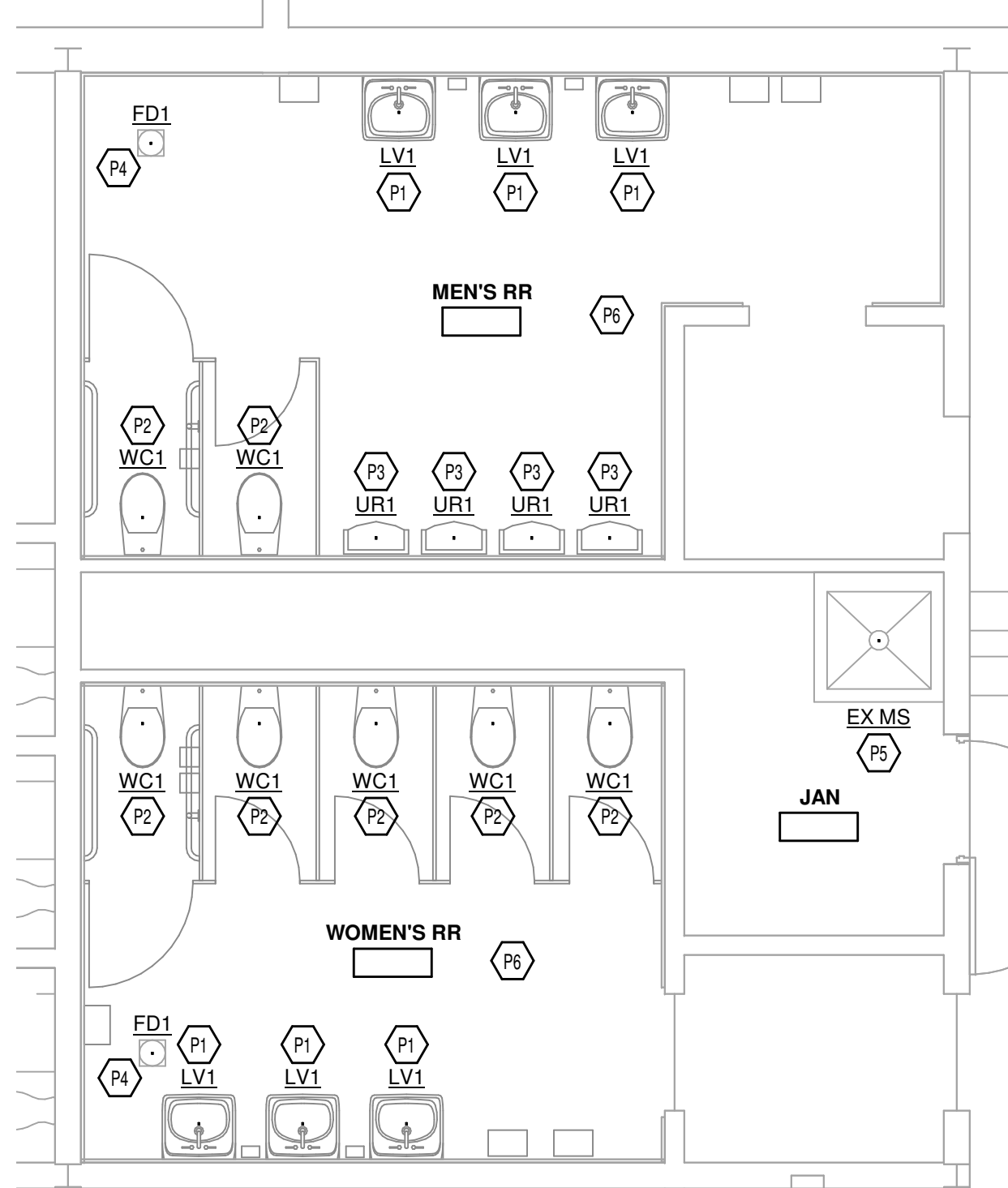
PLUMBING - LEVEL 1 - ENLARGED DEMOLITION PLAN - WOMENS LOCKER RR  
(ALTERNATE #2)  
1/4" = 1'-0"



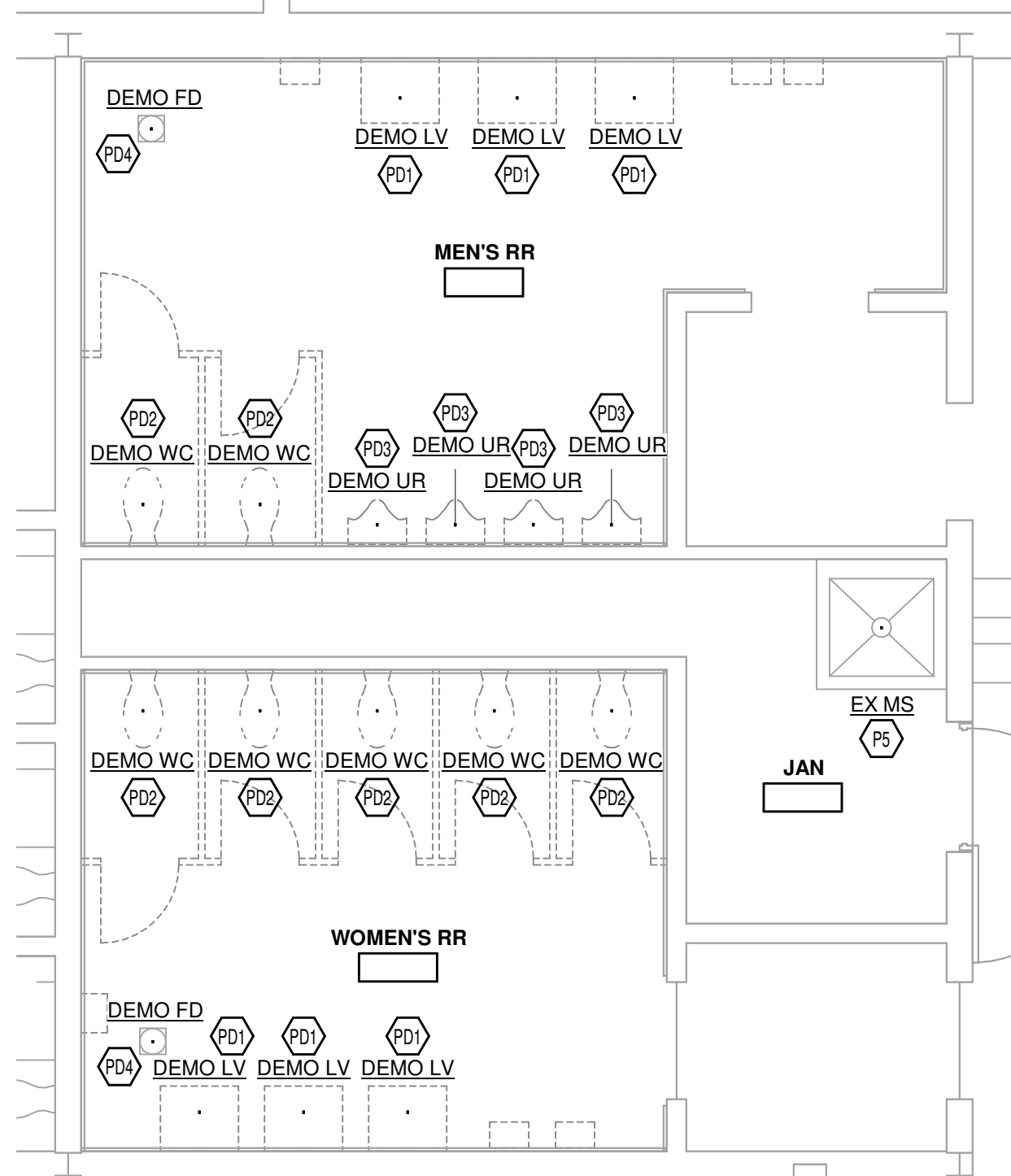
5 PLUMBING - LEVEL 1 - ENLARGED PLAN - MENS LOCKER RR (ALTERNATE #2)  
1/4" = 1'-0"



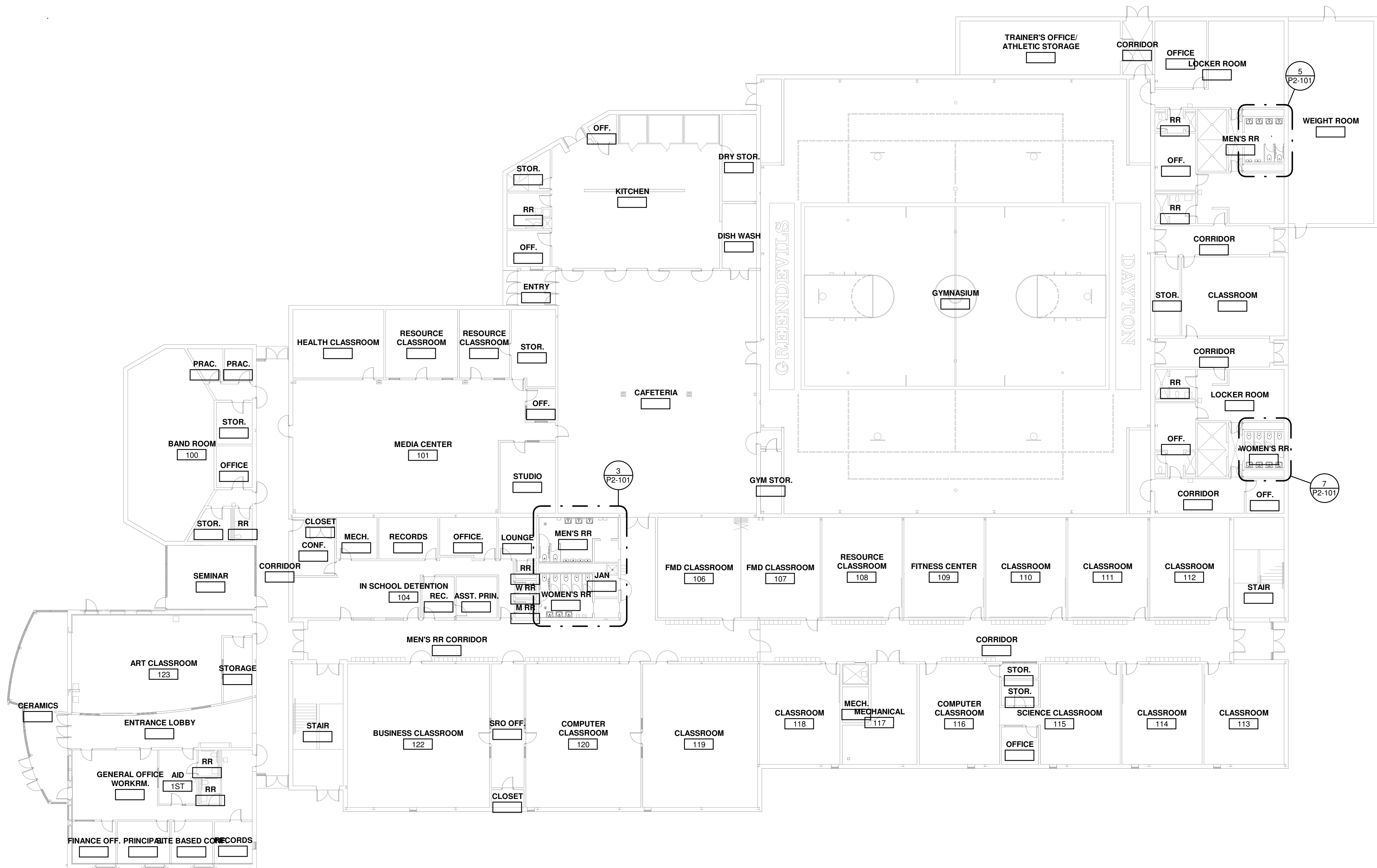
④ PLUMBING - LEVEL 1 - ENLARGED DEMOLITION PLAN - MENS LOCKER RR (ALTERNATE #2)  
1/4" = 1'-0"



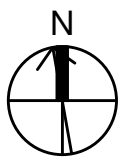
③ PLUMBING - LEVEL 1 - ENLARGED PLAN - CLASSROOM RR  
1/4" = 1'-0"



② PLUMBING - LEVEL 1 - ENLARGED DEMOLITION PLAN - CLASSROOM RR  
1/4" = 1'-0"

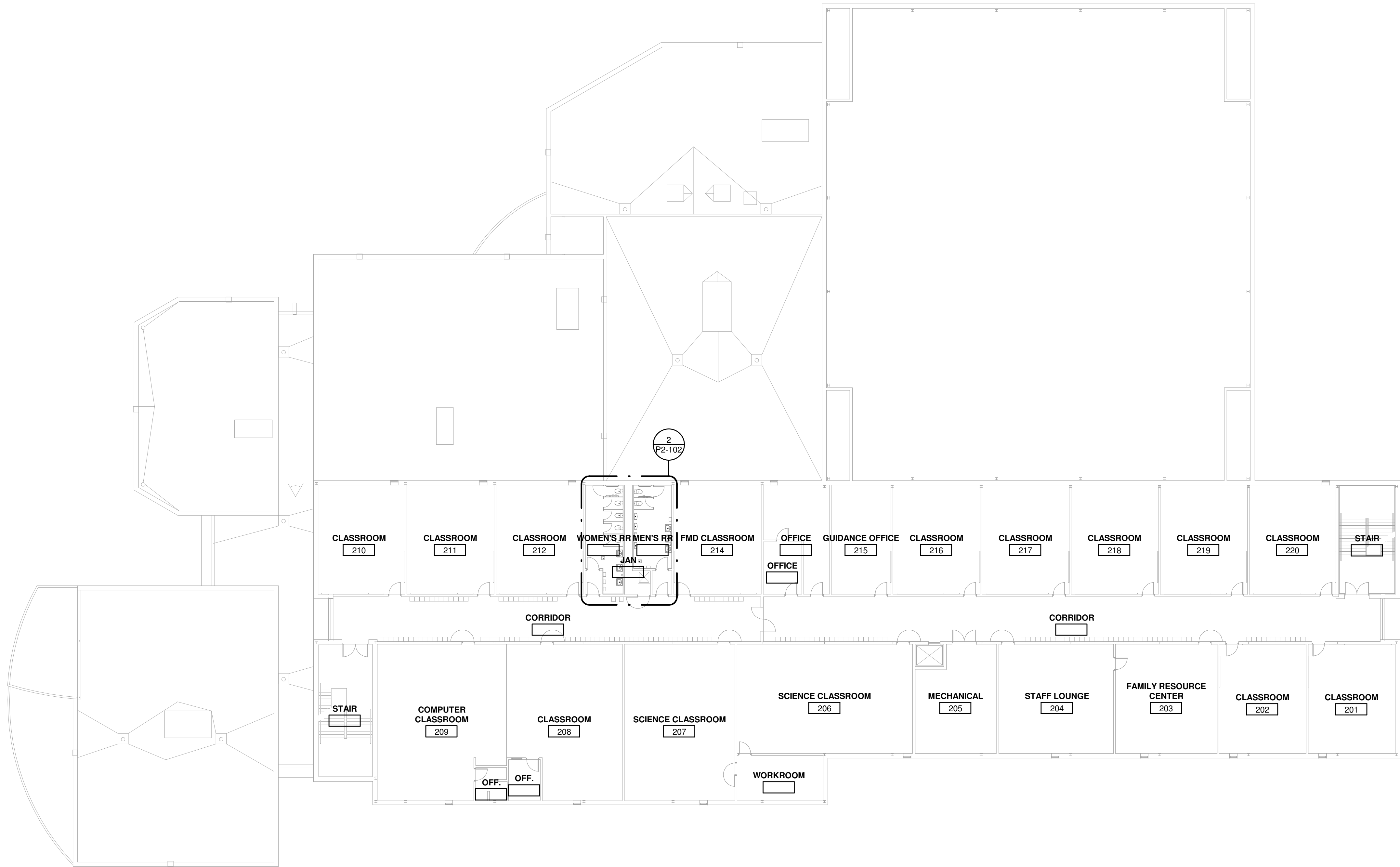


① PLUMBING - LEVEL 1 - ABOVE GROUND PLAN - OVERALL  
1/16" = 1'-0"

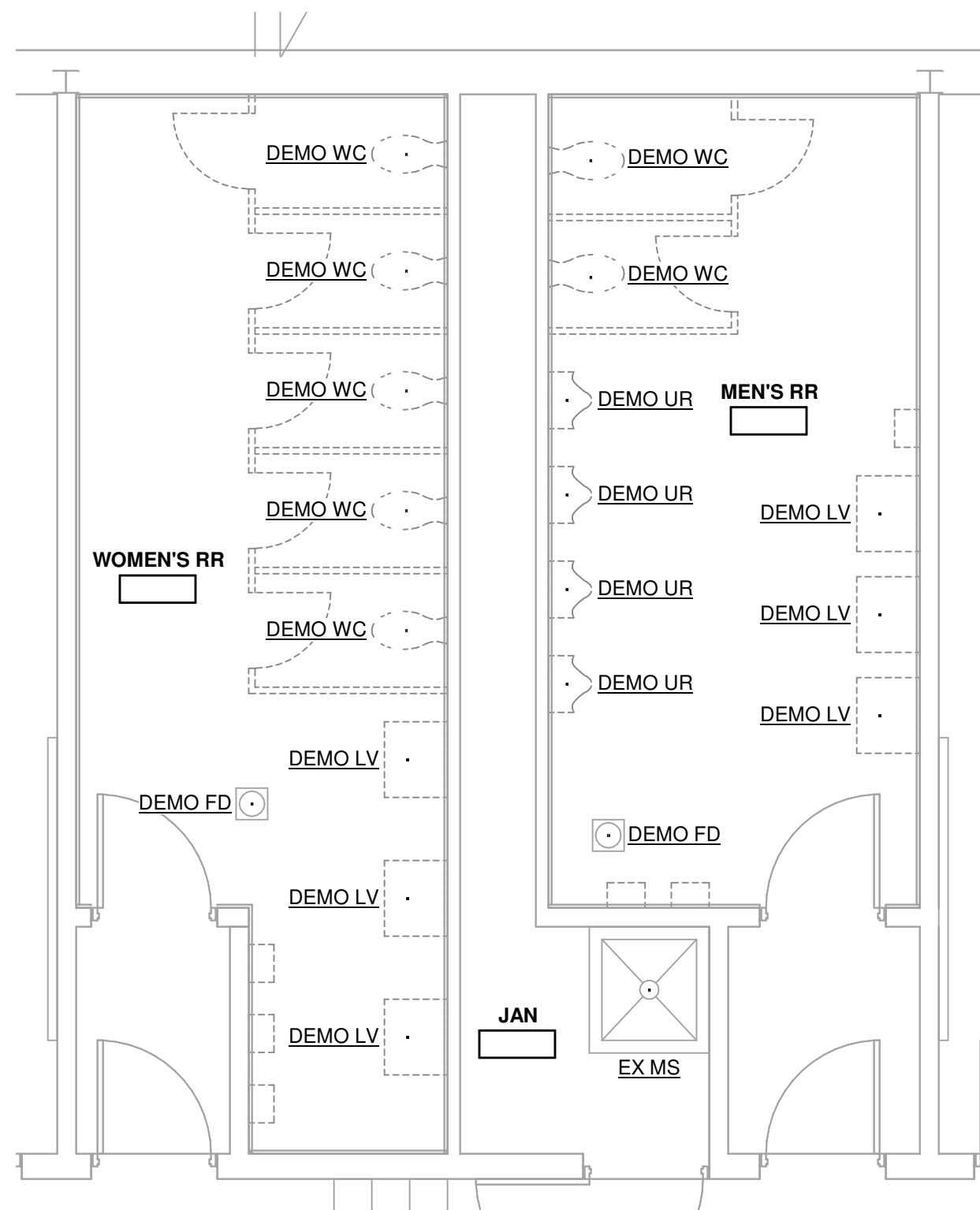




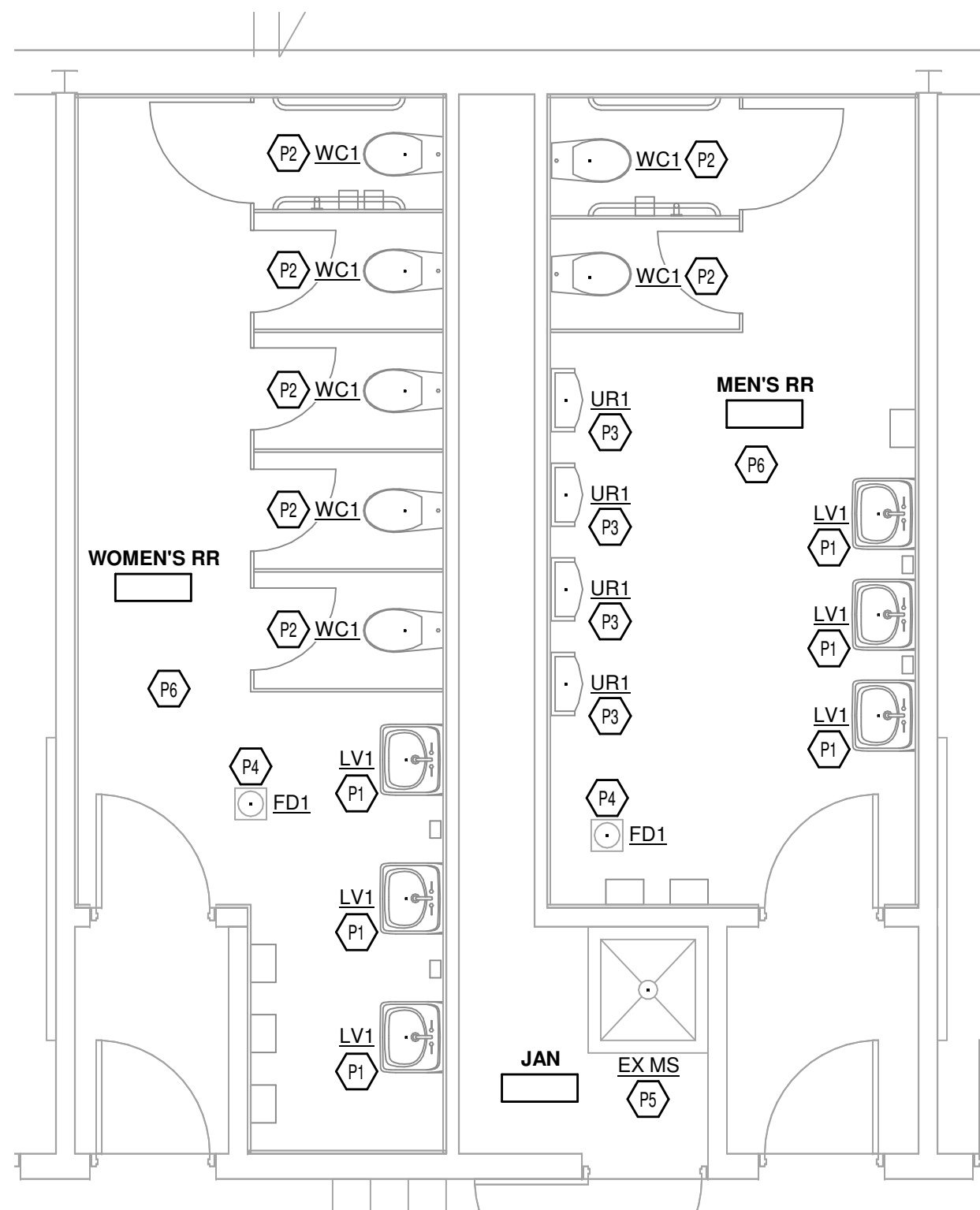
1 PLUMBING - LEVEL 2 - ABOVE GROUND PLAN - OVERALL  
1/16" = 1'-0"



3 PLUMBING - LEVEL 2 - DEMOLITION PLAN - CLASSROOM RR  
1/4" = 1'-0"



2 PLUMBING - LEVEL 2 - ENLARGED PLAN - CLASSROOM RR  
1/4" = 1'-0"



#### KEYED NOTES

- P1 CONNECT NEW HOT WATER, COLD WATER, AND SANITARY PIPING SERVING NEW LAVATORY FIXTURE TO EXISTING HOT WATER, COLD WATER, AND SANITARY PIPING.
- P2 CONNECT NEW COLD WATER AND SANITARY PIPING SERVING NEW WATER CLOSET FIXTURE TO EXISTING COLD WATER AND SANITARY PIPING.
- P3 CONNECT NEW COLD WATER AND SANITARY PIPING SERVING NEW URINAL FIXTURE TO EXISTING COLD WATER AND SANITARY PIPING.
- P4 CONNECT NEW SANITARY PIPING SERVING NEW FLOOR DRAIN FIXTURE TO EXISTING SANITARY PIPING.
- P5 EXISTING MOP SINK FIXTURE TO REMAIN.
- P6 REWORK EXISTING SPRINKLER HEADS AS NEEDED WITH NEW CEILING WORK. REFER TO ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.

## Dayton High School Renovations

### BID PACKAGE #2: RESTROOMS

200 Greendevil Ln., Dayton, KY 41074

**Dayton Independent Schools**

Mr. Jay Brewer - Superintendent

MECHANICAL/ELECTRICAL ENGINEERS  
WWW.KLHENGINEERS.COM  
LEWISTON, KENTUCKY  
LOUISVILLE, KENTUCKY  
NEW YORK, NEW YORK



KOHS LOHMEYER HILL ENGINEERS, INC.  
1538 ALEXANDRIA PIKE, SUITE 11  
FT. THOMAS, KENTUCKY 40105  
859-446-4600  
859-446-8555 FAX

#### REVISIONS

NO.	DESCRIPTION	DATE

DWN: DMR CHK: RAL  
DATE: 10/27/2021  
BG #: BG#  
REH #: 168-221

PLUMBING  
LEVEL 2 PLAN

P2-102

1" REFERENCE  
KLH PROJECT #  
23479



DIVISION 22 - PLUMBING SPECIFICATIONS

SECTION 22 05 00.00 - COMMON WORK RESULTS FOR PLUMBING

**GENERAL**  
The General Provisions of the Contract including the General and Supplemental Conditions and General Requirements apply to the work in this section. Before submitting a bid, examine documents of all other trades, visit the site and get acquainted with all conditions that may in any way affect the execution of this contract. Contractor shall obtain and pay for all permits, certificates of inspection and approvals required. Submittal of a bid indicates that the contractor has examined the drawings, specifications, and had an opportunity to visit the site to be able to provide a comprehensive complete bid to include providing all materials, labor, tools, and equipment required to provide complete plumbing systems as outlined in Division-22. Clearly state all full load amps (FLA), voltages and model numbers on all submittals. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories. Provide wiring diagrams: For power, signal, and control wiring.

**APPLICABLE STANDARDS**  
The installation of all plumbing work shall conform to all the following, but not limited, applicable local and municipal utility standards, rules and regulations, plumbing codes and statutes having jurisdiction. All plumbing fixtures, equipment, accessories, and appurtenances shall be NSF/ANSI 61-372 compliant. **Kentucky Building Code;** **Kentucky Plumbing Code;** American Society for Test Materials (ASTM); National Sanitation Foundation (NSF); American Standards Association (ASA); Underwriters Laboratories (UL); National Fire Protection Association (NFPA); National Electric Code (NEC);

**PLANS AND SPECIFICATIONS**  
Obtain the latest design and construction standards document(s). Comply with all owner-specific requirements in addition to requirements set forth in these specifications and accompanying drawings. Should there be a conflict, the owner's standards shall take precedence, unless prevailing codes and regulations mandate otherwise. The drawings that accompany these specifications are diagrammatic. Wherever possible make use of submittal data and verify all dimensions on site. Provide additional fittings as required by site conditions and codes at no additional cost to conform to the structure, avoid obstructions, provide required service clearances and preserve headroom. Do not scale from drawings, all measurements should be taken in the field.

**EXISTING CONDITIONS**  
Where new plumbing systems are required to be connected to existing plumbing systems, provide all camera scoping and dye testing necessary to verify the exact location, size, invert elevation, pressure, pipe integrity, and system type to ensure a proper connection is executed. The contractor shall notify the engineer immediately if it is found a proper connection cannot be executed.

**CUTTING, PATCHING AND DEMOLITION**  
The contractor shall be responsible for damages to the grounds, walks, road, building, piping systems, electrical systems, and their equipment and contents, caused by leaks in the piping systems being installed or having been installed by him. The contractor shall repair at his expense all damaged so caused. All repair work shall be done as directed by and in such manner as satisfactory to the architect. Owner reserves the right to make emergency repairs as required to keep equipment in operation without voiding the contractor's guarantee bond nor relieving the contractor of his responsibilities during the bonding period. Cut and drill all openings in roofs, walls, and floors required for the installation. Neatly patch all openings cut. Hold cutting and patching to a minimum by arranging with other contractors for all sleeves and openings before construction is started. When drilling/cutting concrete slabs, utilize ground penetrating radar (GPR) and/or X-ray scanning equipment to verify the location is free from obstructions, including but not limited to: structural rebar/strands/tendons, electrical conduit/wiring, and/or piping/ductwork.

**WARRANTY**  
This contractor shall warrant that all work under this section shall be free of defective work, materials and parts for a period of one year after acceptance of the work and shall repair, revise, and replace, at no cost to the owner, any such defects occurring within the warranty period. Use of Electronic Drawings from the Owner's Design Team expressly permitted by the Owner and the terms of the Contract, editable electronic drawings may be made available for the creation of shop and as-built drawings upon request. Drawings will be made available at the discretion of the Engineer. "Request Drawings" form can be accessed, filled out and submitted at <http://www.klhengrs.com> (right hand side of page - Contractor Resources). Direct access to this form can be found here: <http://files.klhengrs.com/requestdrawings.html>

22 05 03.00 - SUBMITTALS FOR PLUMBING

Provide submittals in accordance with the Contract Documents. In addition to Division 01, the Contractor is advised to review and comply with the requirements articulated within each Division and within each section of that Division. Some Divisions may include a division-specific "Submittal Requirements for ..." section. Where this section exists, it articulates additional requirements for submittals that apply to the work of that Division. The following requirements help to identify, track and keep the project organized for all parties involved. They are necessary to ensure a timely turnaround and an appropriate technical review. Submittals that do not conform to the administrative requirements are rejected and returned, without technical review. Supply submittals for each section: Submittals shall be supplied on a section-by-section and type-by-type basis. For example, independent product data submittals shall be furnished for each section that requires product data submittals. Independent shop drawing submittals shall be furnished for each section that requires shop drawings. Separate PDF file packages shall be supplied for each section, for each submittal type. Each PDF shall represent a single standalone submittal. Include a transmittal: Transmittals shall enumerate each submittal for each section of each type and iteration. Include cover sheet / title page: The cover sheet shall include the information identified in the contract documents. It shall be included as the first page of each electronic and/or hardcopy document-based submittal. An editable and printable PDF form created with editable fields and specification compliant appearance is available from KLH upon request. It is also downloadable from the KLH website at: [HYPERLINK "http://www.klhengrs.com"](http://www.klhengrs.com) www.klhengrs.com. Include an index: The index shall enumerate the contents of the submittal. Include checklists: Where checklists are included with the specifications, complete and include them within the appropriate submittal. Supply complete submittals: Complete submittals of each type are required. Partial submittals will be rejected. Where a section requires a product data submittal, all product data for that section shall be supplied together, at one time, as one complete submittal. When resubmittal is required (e.g. Revise and Resubmit) the revised submittal shall be more complete, more accurate and more contract compliant than its rejected predecessor. The submittal number (for each section and type) shall increment for each subsequent submittal (00 – Original submittal, 01 – First Resubmission, 02 – Second Resubmission, etc.). Resubmittals shall include a copy of the reviewers comments supplied with the prior submittal rejection and shall be amended with a description of the specific action taken to comply with the reviewer's comments. The absence of this on resubmittal is cause for rejection. Name electronic files to match the submittal ID and cover sheet: The electronic file name of submittals shall match the submittal ID included on the submittals cover page. For example: The original/first product data submittal for Section 220523 would be labeled as "220523.00-PD-00"; the first resubmittal of same shall be labeled "220523.00-PD-01". The original/first shop drawings submittal file for the same section would be labeled "220523.00-SD-00"; the first resubmittal of same shall be labeled "220523.00-SD-01". If expressly permitted by the Owner and the terms of the Contract, editable electronic drawings may be made available for the creation of shop and as-built drawings upon request. Drawings will be made available at the discretion of the Engineer. "Request Drawings" form can be accessed, filled out and submitted at <http://www.klhengrs.com> (right hand side of page - Contractor Resources). Direct access to this form can be found here: <http://files.klhengrs.com/requestdrawings.html>

22 07 19.00 - PLUMBING SYSTEM INSULATION

**GENERAL**  
Insulation shall be listed and labeled per ASTM E 84 for plenum installations employing slip on techniques. Provide insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application. **PIPING SYSTEMS REQUIRING INSULATION**  
Insulate domestic cold water piping, associated fittings and valves with flexible elastomeric 1/2" wall thickness insulation. Insulate domestic hot water piping, associated fittings and valves with 1" thick flexible elastomeric, 1-1/2" thick fiberglass insulation or per local energy code, whichever greater. Insulate domestic hot water return piping, associated fittings and valves with 1" wall thickness insulation or per local energy code, whichever greater. Insulate waste piping above ceilings that receive condensate with 1/2" wall thickness insulation. Insulate exposed sanitary drains, domestic water, domestic hot water, and stops for plumbing fixtures for people with disabilities. **FLEXIBLE ELASTOMERIC INSULATION**  
Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials. Adhesives, Sealers, and Protective Finishes: As recommended by insulation manufacturer for applications indicated. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the work include, and are limited to, the following: Aeroflex USA, Inc.; Aerocel., Armacel LLC; AP Armaflex, K-Flex USA; **FIBERGLASS INSULATION**  
Fiberglass piping insulation: ASTM C 547, Class 1 Encase pipe fittings insulation with one-piece pre-molded PVC fitting covers. Vapor Barrier Material: Paper-backed aluminum foil, except as otherwise indicated, strength and permeability rating equivalent to adjoining pipe insulation jacketing. Staples, Bands, Wires, and Cement: As recommended by insulation manufacturer for applications indicated. Adhesives, Sealers, and Protective Finishes: As recommended by insulation manufacturer for applications indicated. Manufacturers: Subject to compliance with requirements, available products that may be incorporated into the work include, and are limited to, the following: Armstrong World Industries, Inc., Owens-Corning Fiberglass Corp., Johns Manville.

**ADHESIVES**  
Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated. Insulation for handicap lavatory accessible fixtures All handicap lavatory p-trap and angle stop assemblies shall be insulated with trap wrap protective kit manufactured by Proflo model PF202WH or equal. Abrasion resistant, anti-microbial vinyl exterior cover shall be smooth. For traps, the insulation shall have a cleanout nut cap to allow service to the trap without disassembly. For stops, the insulation shall have a lock lid that prevents tampering but allows access without removal of the insulation. Fasteners shall remain substantially out of sight. Manufacturers: Subject to compliance with requirements: Proflo, Truebro, Plumberex

22 11 16.00 - DOMESTIC WATER PIPING

**SUBMITTAL REQUIREMENTS**  
Product Data: For each type of product indicated. **GENERAL**  
Install piping concealed from view unless noted otherwise, free of sags and bends. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction. Clean and disinfect potable domestic water piping using approved procedures by authorities having jurisdiction or AWWA C651, whichever is more rigorous. Install at right angles; diagonal runs are prohibited unless otherwise shown. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal. Coordinate all piping with all other trades. Provide water pressure regulators where necessary to limit the incoming water pressure to 80 psi inside the building.

**DOMESTIC WATER PIPING ABOVE GROUND**  
Hard copper tube: ASTM B 88, Type L; wrought-copper, solder-joint fittings; and soldered joints. Solder Filler Metals: ASTM B 32, lead-free alloys. Flux: ASTM B 813, water flushable. Type L, copper pressure-seal joint; and pressure-seal joint systems.

**CATHODIC PROTECTION**  
Provide dielectric insulation at points where copper or brass pipe comes in contact with ferrous piping, reinforcing steel or other dissimilar metal in structure.

22 13 16.00 - SANITARY, WASTE AND VENT PIPING SYSTEM

**SUBMITTAL REQUIREMENTS**  
Product Data: For each type of product indicated. **GENERAL**  
Provide a complete soil, waste and vent system in the building and on the site as indicated on the drawings and as specified herein. Above ground soil, waste and vent piping within buildings including soil stacks, vent stacks, horizontal branches, traps, and connections to fixtures and drains. Underground building drain piping including mains, branches, traps, connections to fixtures and drains, and connections to stacks, terminating at connection to existing sanitary sewer.

**INTERIOR PIPING**  
No-Hub cast iron soil, waste, and vent piping and fittings 1-1/2" and larger shall conform to ASTM A-888. Hub and Spigot cast iron soil, waste, and vent piping and fittings 2" and larger shall conform to ASTM A-74 with ASTM C-564 gasketed joints. Soil, waste and vent piping smaller than 1-1/2" shall be Type "M" copper and conform to ASTM B-306. No-hub cast iron pipe and fittings may be used aboveground for soil, waste, and vent piping. Hub and spigot cast iron pipe may be used underground for soil, waste, and vent piping. Piping alignment shall be as indicated on the drawings using approved wye branches or eight bands for direction changes and shall be surely supported or secured to maintain such alignment. Pitch of sanitary piping shall be uniform at a minimum of 1/8" per foot for building drains, drainage piping greater than 2" and as indicated on the drawings. Pitch of sanitary piping shall be uniform at a minimum of 1/4" per foot for drainage piping 2" and smaller and as indicated on the drawings. Protection shall be given all footings, other structural elements during underground work adjacent to such items. Refer to architectural and/or structural drawings for locations. Vent all fixtures, connect branch vents to main vent risers at least six inches above flood rim of fixtures. Pitch vent lines back to soil or waste pipe, free of drops and sags. Cleanouts shall be full size of pipe up to 4", and 4" for larger sizes. For underground and concealed lines, provide cleanouts in accessible positions at each right angle turn and at intervals not to exceed fifty feet. In floors, install flush with finish floor with extension pipe from cleanout wye.

22 30 01.00 - POINT OF USE THERMOSTATIC MIXING VALVES

**SUBMITTAL REQUIREMENTS**  
Product Data: For each type of product indicated. **GENERAL**  
Thermostatic mixing valves shall be provided for all public hand washing sinks and lavatories and shall be ASSE 1070 listed, lead free, sweat connections, 125 psi operating pressure. Mount under lavatory. Set outlet temperature of thermostatic mixing valve to 105 degrees F. Point-of-use thermostatic mixing valves shall be equal to Powers LFG480, Route tempered water to hot water side of sink and lavatories. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, and are limited to, the following: Symmons, Acom Engineering, Powers, Bradley

22 40 00.00 - PLUMBING FIXTURES

**SUBMITTAL REQUIREMENTS**  
Product Data: For each type of product indicated. **GENERAL**  
Refer to plumbing fixture schedule and install per the manufacturer's installation and operation manual. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, and are limited to, the following: American Standard, Kohler Co., Zum Industries, LLC.

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Dayton Independent Schools

Mr. Jay Brewer - Superintendent

REVISIONS


DWN: DMR    CHK: RAL

DATE: 10/27/2021

BG #:                    BG#

REH #:                    168-221

PLUMBING SPECIFICATIONS

P2-103

1" REFERENCE  
KLH PROJECT # 23479