

ABBREVIATIONS	
ACCU	AIR COOLED CONDENSING UNIT BY OTHERS
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AIG	AMPS INTERRUPTING CURRENT
AHU	AIR HANDLING UNIT BY OTHERS
AL	ALUMINUM
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AFG	ABOVE FINISHED GRADE
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CURRENT LIMITING
CLF	CURRENT LIMITING FUSE
CLG	CEILING
CONTR	CONTRACTOR
CT	CURRENT TRANSFORMER
CAB	CABINET
C, CND	CONDUIT
CU	COPPER
CUH	CABINET UNIT HEATER BY OTHERS
CU-	CONDENSING UNIT BY OTHERS
DISC	DISCONNECT
DIST	DISTRIBUTION
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN BY OTHERS
ELEC	ELECTRICAL
EMERENRG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENC	ELECTRIC WATER COOLER BY OTHERS
FA	FIRE ALARM
FCU	FAN COIL UNIT BY OTHERS
FDR	FEEDER
FDS	FUSIBLE DISCONNECT SWITCH
FU	FUSE
GND	GROUND
GC	GENERAL CONTRACTOR
GF	GROUND FAULT INTERRUPTER
HOA	HAND - OFF - AUTOMATIC SWITCH
HP	HORSEPOWER
HZ	HERTZ
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
MAX	MAXIMUM
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MDF	MAIN DISTRIBUTION FRAME
MFG	MANUFACTURER
MH	MOUNTING HEIGHT
MLO	MAIN LUGS ONLY
MT	MOUNT
N	NEUTRAL
NC	NORMALLY CLOSED
NFDS	NON-FUSIBLE DISCONNECT SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NUMBER
NTS	NOT TO SCALE
PC	PLUMBING CONTRACTOR
PH	PHASE
PHL	RAISE/LOWER SWITCH
PR	PRIMARY
PVC	POLYVINYL CHLORIDE
PKR	POWER
RECEPT	RECEPTACLE
REC	RECESSED
RF	RETURN FAN
RTU	ROOFTOP UNIT BY OTHERS
SEC	SECONDARY
STP	SHIELDED TWISTED PAIR
SF	SUPPLY FAN
S/N	SOLID/NEUTRAL
SH	SWITCH
TDR	TIME DELAY RELAY
TP	TWISTED PAIR
TYP	TYPICAL
UH	UNIT HEATER BY OTHERS
V	VOLT
W	WATT
WP	WEATHERPROOF

POWER DISTRIBUTION	
	NEN PANELBOARD - SURFACE MOUNT
	NEN PANELBOARD - FLUSH MOUNT
	TRANSFORMER - SIZE AS INDICATED
	NON-FUSED DISCONNECT SWITCH (AMPERE RATING SHOWN)
	FUSED DISCONNECT SWITCH (FUSE AMPERE RATING SHOWN)
	ENCLOSED CIRCUIT BREAKER (AMPERE RATING SHOWN)
	MAGNETIC MOTOR STARTER, SIZE 1 UON
	COMBINATION MAGNETIC MOTOR STARTER AND DISCONNECT SWITCH, SIZE 1 UON
	VARIABLE FREQUENCY DRIVE BY MG, EC TO WIRE
	MOTOR - HORSEPOWER AS INDICATED
	JUNCTION BOX OR DIRECT CONNECTION POINT
	EMERGENCY POWER OFF STATION
	EMERGENCY POWER OFF KEY RESET STATION
	CONCEALED WIRING AS SPECIFIED OR AS NOTED - 2#12@18"-3/4" UNO
	HOMERUN TO PANELBOARD, DESIGNATION = PANEL-CKT. NO.
	INDICATES CONDUIT DOWN
	INDICATES CONDUIT UP
	EMERGENCY ONLY CIRCUIT
	NORMAL EMERGENCY CIRCUIT WIRING
	CONNECTED TO SAME CIRCUIT, CONTROLLED SEPARATELY
	GROUND ROD - 3/4" X 10'-0" COPPERCLAD

OUTLETS	
	DUPLEX RECEPTACLE OUTLET - 18" AFF UNO - COORDINATE COLOR WITH ARCHITECT
	DUPLEX RECEPTACLE SHOWN WITH SPECIAL DESIGNATIONS: GF - DENOTES GROUND FAULT INTERRUPTER TP - TAMPERPROOF WP - WEATHERPROOF C - DENOTES MOUNTED ABOVE COUNTERTOP OR CASEWORK (THESE DESIGNATIONS TYPICAL FOR ALL RECEPTACLES)
	QUADRUPLEX RECEPTACLE OUTLET
	SIMPLEX (SINGLE) RECEPTACLE
	SPECIAL PURPOSE RECEPTACLE OUTLET - NEMA CONFIGURATION AS INDICATED ON DRAWINGS
	TELEPHONE OUTLET (N DENOTES WALL PHONE)
	DATA OUTLET - FLUSH MOUNTED SINGLE GANG BOX 18" AFF WITH 1" CONDUIT TO ABOVE ACCESSIBLE CEILING FLENUM - NUMBER INDICATES QUANTITY OF DATA PORTS
	DATA OUTLET ABOVE CEILING - MOUNT IN WIREMOLD V700 SERIES SURFACE BOX - NUMBER INDICATES QUANTITY OF DATA PORTS
	COMBINATION TELEPHONE /DATA OUTLET
	AUDIO VISUAL INPUT PLATE WITH COMPONENTS AS DETAILED IN INSTRUCTIONS COMMUNICATION STATION DETAIL. WHERE INDICATED, INSTALL IN SURFACE RACEWAY. IN NEW CONSTRUCTION FLUSH MOUNT IN 2-GANG BOX WITH SINGLE GANG TRIM RING AT 18" AFF
	CABLE TV OUTLET - FLUSH MOUNTED EXTRA DEEP SINGLE GANG BOX 18" AFF UNLESS NOTED OTHERWISE WITH 1" CONDUIT AND TO ABOVE ACCESSIBLE CEILING FLENUM
	ABOVE CEILING MOUNTED BOX WITH DUPLEX RECEPTACLE AND DATA, PER CATALOG NUMBER CB-22
	TYPICAL SURFACE MOUNTED RACEWAY - WIREMOLD V700 SERIES (IVORY) UNO
	CORD AND PLUG - COORDINATE EXACT TYPE WITH EQUIPMENT RECEPTACLE
	CORD/REEL - HUBBELL HBL451232C0 PROVIDE RECEPTACLE IN CEILING TO CONNECT CORD REEL. MOUNT TO STRUCTURAL STEEL OR DECK.

SWITCHES	
	SINGLE POLE SWITCH
	KEY OPERATED WALL SWITCH
	RAISE/LOWER SWITCH
	THREE-WAY SWITCH
	4-WAY SWITCH
	LINE VOLTAGE DIMMER SWITCH
	LOW VOLTAGE DIMMER SWITCH
	LINE VOLTAGE PASSIVE INFRARED OCCUPANCY SENSOR WALL SWITCH - SENSOR SWITCH. COLOR TO MATCH OTHER WIRING DEVICES
	PHOTO CONTROL SWITCH (WEATHERPROOF FOR OUTDOOR INSTALLATION)
	SWITCH WITH PILOT LIGHT
	LIGHTING CONTROL SWITCH (LOW VOLTAGE OVERRIDE SWITCH)
	CEILING MOUNTED OCCUPANCY SENSOR P - PASSIVE INFRARED U - ULTRASONIC D - DUAL TECHNOLOGY - ALL ION LOW VOLTAGE
	DAYLIGHT SENSOR UNIT - SEE SPECIFICATIONS
	MANUAL MOTOR STARTER
	THERMAL SWITCH (MANUAL STARTER WITH THERMAL PROTECTION) SQUARE D CLASS 2500 SERIES WITH HANDLE GUARD/LOCK OFF ATTACHMENT. MOUNT ON OR ADJACENT TO EQUIPMENT.
	THERMAL SWITCH (MANUAL STARTER) LEVITON CAT NO. N302 DOUBLE POLE SINGLE THROW 30A, 208VOLT, SINGLE PHASE WITH LOCK OFF ATTACHMENT IN NEMA 1 ENCLOSURE (SIMILAR SQUARE D), MOUNT ON OR ADJACENT TO EQUIPMENT.

LIGHTING FIXTURES	
	2' X 4' FLUORESCENT LIGHT FIXTURE
	1' X 4' FLUORESCENT LIGHT FIXTURE
	2' X 2' FLUORESCENT LIGHT FIXTURE
	INDUSTRIAL FLUORESCENT LIGHT FIXTURE WITH CHAIN KITS AND WIRE GUARD
	FIXTURE CONNECTED TO NORMAL/EMERGENCY POWER (TYPICAL)
	CEILING OR PENDANT MOUNTED LIGHT FIXTURE
	WALL WASHER LIGHT FIXTURE
	WALL MOUNTED LIGHT FIXTURE
	CEILING MOUNTED EXIT SIGN - ARROW AS INDICATED
	EMERGENCY BATTERY LIGHT FIXTURE WITH (2) LIGHTING HEADS (2) REMOTE LIGHTING HEADS CONNECTED TO LOCAL BATTERY UNIT - WP INDICATES WEATHERPROOF
	POLE MOUNTED SITE LIGHTING FIXTURE - ARM MOUNT
	POLE MOUNTED SITE LIGHTING FIXTURE - POST TOP MOUNT

NOTE: 'X' INDICATES FIXTURE TYPE (TYPICAL) - REFER TO LIGHTING FIXTURE SCHEDULE FOR MORE INFORMATION

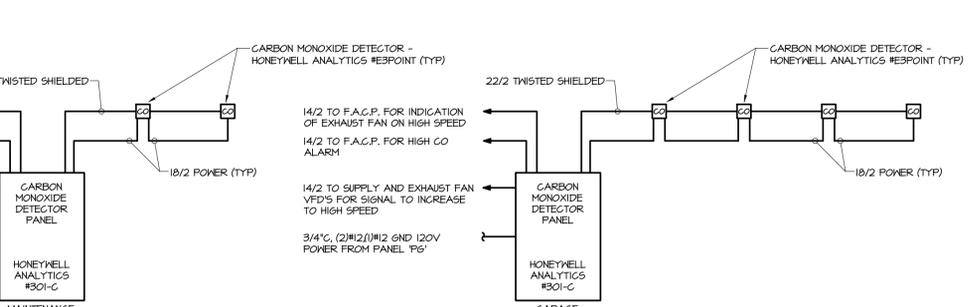
FIRE ALARM AND SAFETY	
	SMOKE DETECTOR
	HEAT DETECTOR
	DUCT SMOKE DETECTOR - SUPPLIED & WIRED BY EC, INSTALLED BY MC
	COMBINATION FIRE/SMOKE DAMPER BY MC, EC TO PROVIDE 120V POWER AND ALL FIRE ALARM WIRING
	FIRE ALARM AUDIBLE DEVICE - FLUSH MT IN CEILING
	FIRE ALARM PULL STATION - PROVIDE PROTECTIVE COVER
	FIRE ALARM AUDIBLE APPLIANCE - WALL
	FIRE ALARM VISUAL APPLIANCE - WALL MT - 15 CANDELA - XX INDICATES CANDELA RATINGS IF OTHER THAN 15
	FIRE ALARM COMBINATION AUDIBLE AND VISUAL APPLIANCE - WALL MT 15 CANDELA - XX INDICATES CANDELA RATINGS IF OTHER THAN 15
	FIRE ALARM COMBINATION AUDIBLE AND VISUAL APPLIANCE - FLUSH MOUNT IN CEILING - 15 CANDELA - XX INDICATES CANDELA RATINGS IF OTHER THAN 15
	SPRINKLER SYSTEM FLOW SWITCH
	SPRINKLER SYSTEM TAMPER SWITCH
	SPRINKLER SYSTEM PRESSURE SWITCH
	DUCT SMOKE DETECTOR REMOTE ALARM/TEST/RESET STATION
	FIRE ALARM CONTROL PANEL
	FIRE ALARM ANNUNCIATOR PANEL
	MAGNETIC DOOR HOLD OPEN - FURNISH AND INSTALLED BY GC, WIRED BY EC
	ELECTRIC GONG FOR SPRINKLER SYSTEM - PROVIDE 120V POWER

SECURITY/PAGING	
	ELECTRIC DOOR STRIKE
	CARD READER
	DURESS BUTTON
	DOOR CONTACT FLUSH IN DOOR FRAME - ROUGH-IN 3/4" CONDUIT AND PULL STRING FROM DOOR FRAME TO POINT ABOVE CEILING SPACE - COORDINATE ROUGH-IN LOCATION WITH GC
	DOOR MAGNETIC LOCK
	DOOR RELEASE BUTTON (REMOTE)
	EXIT BUTTON
	ELECTRIC LOCKSET
	OVERHEAD DOOR CONTACT
	MOTION DETECTOR
	KEY PAD
	REQUEST TO EXIT
	SOUNDER (DOOR ALARM)
	SINGLE MAGNETIC LOCK
	SECURITY CAMERA
	SECURITY CAMERA - PAN/TILT/ZOOM
	SPEAKER - CEILING
	SPEAKER - CEILING - CONNECTED TO LOCAL SOUND SYSTEM
	SPEAKER - SURFACE MOUNTED
	SPEAKER VOLUME CONTROL - WALL
	MICROPHONE OUTLET - WALL - NUMBER INDICATES QUANTITY OF OUTLETS
	STAGE INTERCOM STATION

SINGLE LINE DIAGRAM	
	GENERATOR
	TRANSFORMER
	CIRCUIT BREAKER - AF - INDICATES AMPERE FRAME AS - INDICATES AMPERE TRIP
	NON-FUSED SWITCH
	FUSE
	FUSED SWITCH OR FUSED DISCONNECT
	LIGHTNING ARRESTOR
	CURRENT TRANSFORMER
	DELTA CONNECTION
	GROUNDING WYE CONNECTION
	OVERLOAD RELAY
	CONTACTOR
	RELAY
	TRANSIENT VOLTAGE SURGE SUPPRESSION
	DIGITAL MULTI PURPOSE METER
	GROUND CONNECTION
	BATTERY
	TRANSFER SWITCH

MOUNTING HEIGHTS - ELECTRICAL EQUIP.	
9" BELOW FINISHED CEILING	WALL MOUNTED AUDIBLE APPLIANCE AND FIRE ALARM SOUNDING DEVICE (OR AS SHOWN ON ARCHITECTURAL DETAILS)
8'-0" A.F.F.	TV MONITOR OUTLETS AND SERVICE RECEPTACLES FOR SHELF MOUNTED TV
CENTERED ABOVE DOOR OR WINDOW OPENING	WARNINGS AND SIGNALING FIXTURES/SIGNS
6'-8"	FIRE ALARM VISUAL APPLIANCE MOUNTED AT 6'-8" MEASURED FROM THE FINISHED FLOOR TO THE BOTTOM OF THE DEVICE OR 6" BELOW THE FINISHED CEILING MEASURED FROM THE FINISHED CEILING TO THE TOP OF THE DEVICE, WHICHEVER IS LOWER
6'-6"	FIRE ALARM VISUAL APPLIANCE MOUNTED AT 6'-6" MEASURED FROM THE FINISHED FLOOR TO THE BOTTOM OF THE DEVICE OR 6" BELOW THE FINISHED CEILING MEASURED FROM THE FINISHED CEILING TO THE TOP OF THE DEVICE, WHICHEVER IS LOWER
4'-6"	TOP OF HIGHEST ELECTRICAL SAFETY DISCONNECT SWITCHES, SECURITY SYSTEM KEYPAD
4'-0"	WALL MOUNTED ELECTRICAL DEVICES SUCH AS: LIGHTING SWITCHES, MANUAL MOTOR STARTERS, THERMOSTATS, AND FIRE ALARM PULL STATIONS - TO TOP OF BOX, WALL MOUNTED TELEPHONE AND WALL MOUNTED INTERCOM
1'-3"	ELECTRICAL RECEPTACLES INCLUDING THOSE USED WITH MECHANICAL SPACES AND ELEVATOR ROOMS TELEPHONE, DATA AND COMMUNICATION OUTLETS CATV AND AV JUNCTION BOXES TO BOTTOM OF BOX

MOUNTING HEIGHT NOTES:	
1. MOUNTING HEIGHTS TO CENTER OF OUTLETS UNLESS OTHERWISE NOTED. IN MASONRY CONSTRUCTION THE ABOVE HEIGHTS SHALL BE USED FOR REFERENCE TO NEAREST BLOCK OR BRICK COURSE.	
2. THE ABOVE MOUNTING HEIGHTS SHALL BE ADHERED TO UNLESS SPECIFICALLY NOTED OR DETAILED OTHERWISE ON THE ARCHITECTURAL DRAWINGS OR SPECIFICATIONS.	
3. A 'C' BESIDE A DEVICE INDICATES THAT THE DEVICE IS MOUNTED ABOVE COUNTER OR CASEWORK. COORDINATE WITH ARCHITECTURAL DETAILS AND CASEWORK CONTRACTOR.	



MAINTENANCE BAY CO DETECTION SYSTEM RISER DIAGRAM

GENERAL ELECTRICAL NOTES:			
1. ALL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES, AND REGULATIONS ADOPTED BY MUNICIPAL, COUNTY, STATE, AND FEDERAL AUTHORITIES, INCLUDING THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE (NEC) AND WITH THE REQUIREMENTS/AMENDMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION (AHL).	31. CONTRACTOR SHALL MEET INSTALLATION CRITERIA FOR SEISMIC REQUIREMENTS IN THE PROJECT LOCATION.		
2. CONTRACT DRAWINGS ARE DIAGNOSTIC IN NATURE AND ARE INTENDED TO CONVEY SCOPE, DESIGN INTENT, AND GENERAL ARRANGEMENT ONLY. CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK OF ALL TRADES INCLUDING RESOLUTION OF FIELD CONFLICTS THAT MAY ARISE.	32. ALL SMALL MOTORS UNDER 1 HORSEPOWER SHALL HAVE INTEGRAL OVERLOAD PROTECTION PER NEC 430.32 AND 430.53(A) IF MULTIPLE MOTORS ARE PLANNED TO BE INSTALLED ON THE SAME BRANCH CIRCUIT.		
3. ALL OF THE ELECTRICAL INSTALLATION SHALL BE PERFORMED IN A NEAT, WORKMANLIKE MANNER AND IN ACCORDANCE WITH INDUSTRY STANDARDS.	33. THE EC IS RESPONSIBLE FOR THE CONTRACTIBILITY OF THE DRAWINGS FROM A PRACTICAL AND EXISTING FIELD CONDITIONS PERSPECTIVE.		
4. EACH FEEDER AND BRANCH CIRCUIT SHALL INCLUDE AN INSULATED EQUIPMENT GROUNDING CONDUCTOR PER NEC ARTICLE 250. BOND ALL ELECTRICAL EQUIPMENT, OUTLET BOXES, GROUNDING TYPE RECEPTACLES, ETC. IN ACCORDANCE WITH NEC ARTICLE 250.	34. WITH RESPECT TO THE CONSTRUCTION BASED ON THESE DRAWINGS, THE EC IS ULTIMATELY RESPONSIBLE FOR ALL INSTALLED MEANS AND METHODS MEETING ALL APPLICABLE CODES AND STANDARDS.		
5. MULTI-WIRE BRANCH CIRCUITS SHALL NOT BE PERMITTED. EACH 120V BRANCH CIRCUIT SHALL INCLUDE DEDICATED NEUTRAL AND INSULATED GROUND CONDUCTORS.	35. EACH CONTRACTOR SHALL REVIEW ALL PROJECT DOCUMENTS OF ALL TRADES AND REVIEW ALL PROJECT REQUIREMENTS PRIOR TO BIDDING. DISCREPANCIES BETWEEN DOCUMENTS SHALL BE REPORTED BEFORE BIDS ARE DUE TO ALLOW FOR RESOLUTION AS REQUIRED.		
6. GROUPING OF BRANCH CIRCUITS AND FEEDERS SHALL BE PERMITTED, PROVIDING THAT THE NEC RULES PERTAINING TO MAXIMUM ALLOWABLE PERCENT FILL OF RACEWAYS, AND APPROPRIATE ADJUSTMENT FACTORS FOR MORE THAN THREE (3) CURRENT CARRYING CONDUCTORS IN A RACEWAY ARE STRICTLY COMPLIED WITH. THE CONTRACTOR SHALL EXERCISE CAUTION IN PROVIDING AN EQUAL NUMBER OF A, B, AND C PHASE CONDUCTORS WHEN GROUPING CIRCUITS.	36. THE EC SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT HIS WORK. THE EC SHALL NOT BE ENTITLED TO CHANGE ORDERS DUE TO FAILURE TO COMPLY.		
7. TROUGHS, JUNCTION BOXES, AND PULL BOXES ARE NOT NECESSARILY INDICATED, BUT SHALL BE PROVIDED WHERE REQUIRED BY THE NEC AND AS REQUIRED FOR EASE OF INSTALLATION. BOXES SHALL BE SIZED (MINIMUM) IN ACCORDANCE WITH NEC ARTICLE 314. TROUGHS SHALL BE SIZED PER NEC ARTICLE 366.	37. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT FINAL LOCATION OF ALL CEILING MOUNTED APPURTENANCES INCLUDING BUT NOT LIMITED TO LIGHT FIXTURES, EXIT SIGNAGE, ETC. VERIFY IN FIELD.		
8. INTERIOR WIRING SHALL BE INSTALLED IN EMT OR RIGID GALVANIZED STEEL CONDUIT. 3/4" MINIMUM SIZE FLEXIBLE METAL CONDUIT, LIQUIDTIGHT FLEXIBLE CONDUIT, OR MC CABLE SHALL BE UTILIZED IN LIMITED LENGTHS AS NECESSARY, OR AS REQUIRED/ALLOWED BY CODE AND SPECIFICATIONS.	38. COORDINATE WITH OTHER TRADES FOR ROUGH IN SUPPORT AS REQUIRED.		
9. ALL 600V OVER-CURRENT PROTECTIVE DEVICES SHALL HAVE INTERRUPTING CAPABILITIES OR RATINGS (AIC OR AIR) IN RMS AMPERES SYMMETRICAL. ALL DEVICES SHALL BE FULLY RATED FOR AVAILABLE FAULT CURRENT. ALL PANELBOARDS, DISTRIBUTION BOARDS, DEVICES ETC. SHALL BE FULLY RATED.	39. PRIOR TO ACCEPTANCE OF THE SPACE, ALL SYSTEMS SHALL TESTED, BALANCED AND OPERATED TO DEMONSTRATE TO THE OWNER THAT THE INSTALLATION AND PERFORMANCE OF THE INSTALLED SYSTEMS AND/OR PARTS THEREOF CONFORM TO THE DESIGN INTENT.		
10. ALL BUILDING WIRE SHALL BE TYPE THHN/TWN (DUAL LISTED) COPPER CONDUCTORS, WITH 40% CEILING RATED INSULATION #2 MINIMUM SIZE. UTILIZE #10 WIRE FOR ANY 120V, 15 OR 20A CIRCUIT THAT EXCEEDS 100 FEET TO LAST DEVICE OR OUTLET.	40. THE CONTRACTOR SHALL GUARANTEE THE ENTIRE INSTALLATION FOR A MINIMUM PERIOD OF ONE YEAR (EXCEPT WHERE EXTENSIONS OF THIS PERIOD ARE NOTED) FROM THE DATE OF ACCEPTANCE OF THE SYSTEM AS A WHOLE. ANY DEFECTS IN WORKMANSHIP, MATERIALS, MALFUNCTION OF EQUIPMENT, OR UNSATISFACTORY PERFORMANCE AND ALL OTHER PARTS OF THE BUILDING DAMAGED THEREBY, SHALL BE REPAIRED, REPLACED, OR OTHERWISE REMEDIED WITHOUT EXPENSE TO THE OWNER. SUCH REPAIRS OR REPLACEMENTS SHALL BE MADE IN A TIMELY MANNER AND AT THE CONVENIENCE OF THE OWNER.		
11. DO NOT UTILIZE FEED THRU GFCI RECEPTACLES FOR DOWNSTREAM DEVICE PROTECTION. ALL DEVICES LISTED AS GF SHALL BE SHOWN AS ONE.	41. WIRING DEVICES AND OUTLET BOXES SHALL BE RECESSED IN NEW CONSTRUCTION WITH CONCEALED CONDUIT/WIRING.		
12. CONTRACTOR SHALL PROVIDE AND INSTALL AN APPROVED, UL LISTED, FIRE STOP SEALANT TOTALLY ENCLOSED ALL PENETRATIONS THROUGH RATED WALLS, CEILING, FLOORS, ROOFS, ETC. ALL FLOOR PENETRATIONS SHALL BE CORE DRILLED, SLEEVED, AND SEALED WITH AN APPROVED, FIRE RATED SEALANT. ALL EXISTING PENETRATIONS IN WALLS AND FLOORS MUST BE SEALED TO MAINTAIN FIRE RATING.	42. CONTRACTOR SHALL UPON COMPLETION OF THE WORK SUBMIT A SET OF RECORD DRAWINGS SHOWING ALL BURIED OR CONCEALED EQUIPMENT OF PARTS OF THE WORK.		
13. BRANCH CIRCUIT FOR FACP SHALL MEET THE REQUIREMENT OF SECTION 4.4.1 OF NFPA 72. CONTRACTOR INSTALLING FIRE ALARM SYSTEM SHALL BE NICET II CERTIFIED.	43. EACH TRADE CONTRACTOR SHALL COORDINATE THE ELECTRICAL REQUIREMENTS OF HIS/HER WORK WITH THE PROJECT ELECTRICAL CONTRACTOR PRIOR TO SHOP DRAWING SUBMISSION.		
14. EGRESS AND EMERGENCY LIGHTING SHALL BE CONNECTED AND INSTALLED TO MEET THE REQUIREMENTS OF NEC 700.12(F) AND 700.16. FINAL LOCATIONS SHALL BE APPROVED BY THE LOCAL AHL.	44. COORDINATE INSTALLATION OF PIPING, DUCTWORK, EQUIPMENT, ETC. TO AVOID PASSING OVER ELECTRICAL PANELS, THROUGH ELECTRICAL CLOSETS, ETC. IN COMPLIANCE WITH CODE.		
15. THE CONTRACTOR SHALL PERFORM THE WORK AS INDICATED ON THE DRAWINGS. ANY DEVIATION FROM THE DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL IN WRITING. IF WORKS ARE MADE WITHOUT WRITTEN CONSENT, THE CONTRACTOR SHALL BE LIABLE FOR ANY ISSUES THAT ARISE DUE TO THE CHANGES.	45. ALL COMMUNICATIONS WORK SHALL MEET THE REQUIREMENTS OF CHAPTER 8 OF THE NEC, AND ALL INDUSTRY STANDARDS (BICSI, EIA/TIA, ETC.).		
16. UNLESS NOTED OTHERWISE, ALL WIRE SIZES SHALL BE BASED ON THE FOLLOWING: TABLE 310.15(B)(16) 60° C(140°F) COLUMN FOR #4 THROUGH #1; TABLE 310.15(B)(16) 75° C(165°F) COLUMN FOR #10 AND GREATER, AND OTHER ALLOWANCES OF 101(MG).	46. THE EXACT LOCATIONS OF DEDICATED OUTLETS FOR COPIER, PHONE AND COMPUTER ARE TO BE CONFIRMED WITH THE OWNER PRIOR TO INSTALLATION.		
17. UNLESS OTHERWISE NOTED, FEEDER TAPS AND TRANSFORMER SECONDARY CONDUCTOR TAPS ARE DESIGNED BASED ON THE 1% RULE OF 240.2(D)(1) AND 240.2(C)(2).	47. COORDINATE/UPGRADE ELECTRICAL REQUIREMENTS FOR NEW MECHANICAL SYSTEMS.		
18. UNLESS OTHERWISE NOTED, ALL CONDUIT SIZES ARE BASED ON EMT, RMC, OR RIG (PVC SCHEDULE 40).	48. UPON COMPLETION OF WORK, THOROUGHLY CLEAN ALL SYSTEMS OF OBSTRUCTIONS, DEBRIS, SCALE, DUST, DIRT, ETC. AND PLACE SYSTEMS IN OPERATION.		
19. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES, AND EQUIPMENT SHALL BE NEW, LABELED AND LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY OR AGENCY (E.G. UL) UNLESS OTHERWISE NOTED.	49. UNLESS OTHERWISE NOTED, ALL ELECTRICALLY DRIVEN EQUIPMENT PROVIDED OR FURNISHED BY THE MECHANICAL CONTRACTOR SHALL INCLUDE MOTORS, PUSHBUTTONS, RELAYS, CONTACTORS, DISCONNECTS AND ALL OTHER CONTROLLING DEVICES REQUIRED FOR PROPER AND SATISFACTORY OPERATION OF THE EQUIPMENT. EC SHALL INSTALL EQUIPMENT AS REQUIRED FROM THE LINE SIDE OF THE LAST DISCONNECTING MEANS (INCLUDING SUPPLIED DISCONNECT) BACK TO POWER SOURCE. ALL DDC AND OTHER CONTROL WIRING (INCLUDING VFD'S) SHALL BE SUPPLIED AND INSTALLED BY THE MC.		
20. ELECTRICAL CONTRACTOR SHALL FOLLOW ALL MANUFACTURERS INSTRUCTIONS FOR INSTALLATION OF ALL EQUIPMENT IF NOT INDICATED ON DRAWINGS. IF THERE IS A DISCREPANCY, MANUFACTURERS INSTRUCTIONS TAKE PRECEDENCE.	50. THE CONTRACTOR SHALL APPLY FOR AND PAY FOR ALL REQUIRED PERMITS, INSPECTIONS, ETC.		
21. THE EC SHALL FURNISH ALL EQUIPMENT, LABOR, SERVICES, AND MATERIALS REQUIRED FOR COMPLETE INSTALLATION OF THE WORK INDICATED, UNLESS OTHERWISE NOTED. ALL MATERIALS SHALL BE NEW.	51. RECEPTACLE HEIGHT SHALL BE 18" AFF UNLESS NOTED OTHERWISE.		
22. PROVIDED ACCESS PANELS AS REQUIRED FOR ACCESS TO EQUIPMENT.			
23. ALL WIRING, EQUIPMENT, STARTERS, AND CONTROLS SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE AND TO THE REQUIREMENTS OF THE LOCAL UTILITY COMPANY.			
24. ALL WIRING METHODS SHALL BE NEC COMPLIANT AND MEET THE REQUIREMENTS OF THE SPACE, OCCUPANCY, AND CONDITION OF USE.			
25. DO NOT SCALE DRAWINGS. CONTRACTOR SHALL VERIFY AND CONFIRM ALL DIMENSIONS IN THE FIELD AND NOTIFY THE ENGINEER OF ANY AND ALL DISCREPANCIES ON THE DRAWINGS.			
26. ALL WORK SHALL COMPLY WITH THE LATEST REVISION OF THE LOCAL UTILITY'S ELECTRICAL SERVICE REQUIREMENTS - COORDINATE ALL SERVICE WORK WITH UTILITY PRIOR TO INSTALLATION. OBTAIN UTILITY APPROVAL BEFORE ENERGIZING NEW WORK. OBTAIN MET-RED REQUIREMENTS AND DELINEATION OF RESPONSIBILITIES IN WRITING, ESPECIALLY FOR MEDIUM VOLTAGE WORK AND METERING REQUIREMENTS.			
27. CALL BEFORE YOU DIG (PA ONE CALL SYSTEM 1-800-242-1116 OR DIAL 811). EC TO HIRE AN INDEPENDENT UTILITY LOCATING COMPANY TO MARK OUT CUSTOMER OWNED/PRIVATE PROPERTY FACILITIES BEFORE DIGGING, AT EC'S EXPENSE.			
28. CONTRACTOR TO PLACE NEW EQUIPMENT AS REQUIRED TO COMPLY WITH WORKING CLEARANCE ISSUES, DEDICATED SPACE ISSUES, AND WITH APPLICABLE CODES.			
29. EXACT DIMENSIONS OF BUILDING AND ALL SPACES MUST BE VERIFIED IN THE FIELD. IF DIFFERENCES ARE DISCOVERED, THE EC IS RESPONSIBLE TO NOTIFY THE ENGINEER AND COORDINATE THE NECESSARY CORRECTIONS AS REQUIRED.			
30. FURNISH ALL NECESSARY MATERIALS, TOOLS, AND LABOR AND INSTALL A COMPLETE AND FULLY OPERATIONAL WIRING SYSTEM AS INDICATED OR REASONABLY IMPLIED. ALL OUTLETS SHALL BE FULLY CONNECTED TO SOURCE OF CURRENT SUPPLY AND LEFT READY FOR USE. UNLESS NOTED OTHERWISE ALL MATERIALS SHALL BE NEW FREE OF DEFECTS, AND BE UL LISTED.			

1	10/25/19	ISSUE FOR BID	JMB
NO.	DATE	REVISION	BY
MUHLENBERG TOWNSHIP PROPOSED PUBLIC WORKS BUILDING ELECTRICAL LEGEND AND NOTES			
MUHLENBERG TOWNSHIP		SITUATE IN BERKS COUNTY PENNSYLVANIA	
DRAWN BY: SBG	CHECKED:	APPROVED:	CADD FILE NAME: E001.dwg
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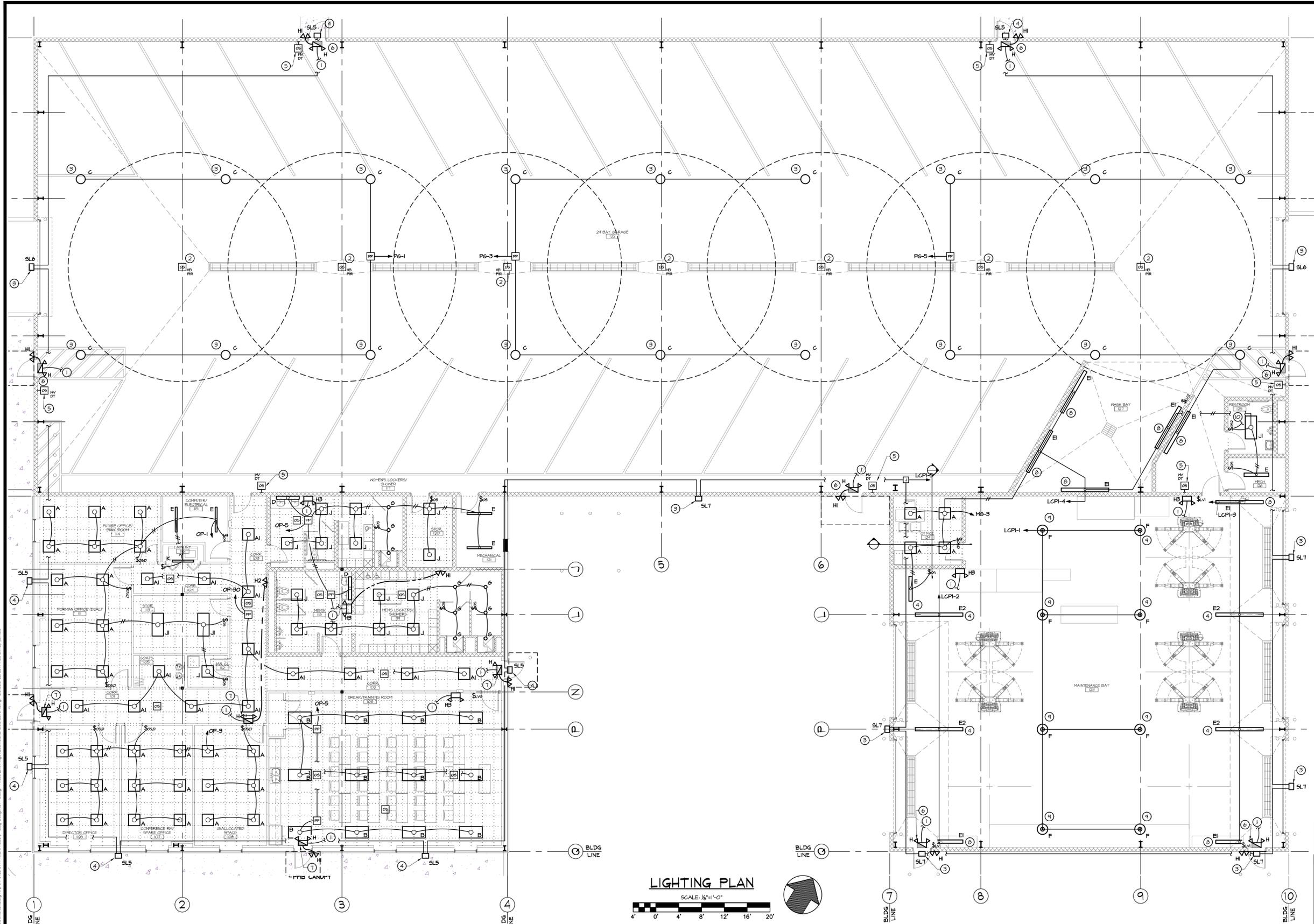
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KEYED DRAWING NOTES

- 1 CONNECT TO UNSWITCHED LEG OF LIGHTING CIRCUIT SERVING THIS AREA.
- 2 MOUNT TO BOTTOM OF STEEL STRUCTURE.
- 3 MOUNT 20" ABOVE FINISHED FLOOR TO CENTER.
- 4 MOUNT 12" ABOVE FINISHED FLOOR TO CENTER.
- 5 MOUNT TO WALL AT APPROXIMATELY 6" ABOVE FINISHED FLOOR TO CENTER. ANGLE SENSOR DOWNWARD TO ALLOW FOR DETECTION OF SOMEONE ENTERING THE SPACE WITHIN 5'.
- 6 MOUNT EXIT SIGN 6" ABOVE TOP OF DOOR FRAME TO BOTTOM OF SIGN.
- 7 CENTER BETWEEN TOP OF DOOR FRAME AND CEILING ABOVE.
- 8 WALL MOUNT AT 12" ABOVE FINISHED FLOOR TO CENTER.
- 9 SUSPEND 18" ABOVE FINISHED FLOOR TO BOTTOM.
- 10 CONNECT TO EXHAUST FAN, REFER TO DRAWING EPIOI.

GENERAL NOTES

1. REFER TO DRAWING EEOI FOR ELECTRICAL LEGEND AND NOTES.
2. REFER TO DRAWING ELSOI FOR LUMINAIRE SCHEDULE AND LIGHTING CONTROL WIRING DIAGRAMS.
3. FOR LIGHTING MOUNTED ON THE BUILDING EXTERIOR CORRUGATED SIDING, THE G.C. WILL PROVIDE A MEANS FROM THE SIDING MANUFACTURER TO ALLOW FOR A FLAT MOUNTING SURFACE. COORDINATE SPECIFIC REQUIREMENTS, LOCATIONS, AND MOUNTING HEIGHTS WITH THE G.C. PRIOR TO ROUGH-IN.
4. REFER TO DRAWING EPIOI FOR ELECTRICAL PANEL LOCATIONS.
5. REFER TO DRAWING EPSOI FOR SINGLE LINE DIAGRAM AND PANEL SCHEDULES.



LIGHTING PLAN

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



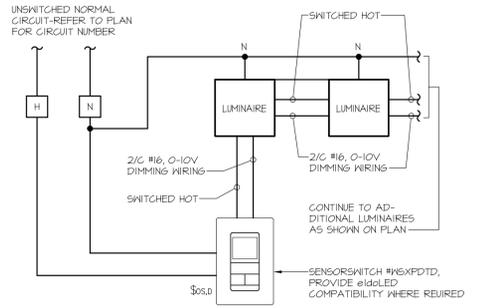
1		10/25/19	ISSUE FOR BID	JMB
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<p>SYSTEMS DESIGN ENGINEERING, INC</p> <p>1032 JAMES DR. LEESPORT, PA 19533 BOYERTOWN, PA 610.369.1310 PHONE: 610.916.8500 FAX: 610.916.8501 SCHUYLKEL HAVEN, PA 570.385.5549</p>				
<p>MUHLENBERG TOWNSHIP PROPOSED PUBLIC WORKS BUILDING INTERIOR LIGHTING PLAN</p>				
<p>MUHLENBERG TOWNSHIP SITUATE IN BERKS COUNTY PENNSYLVANIA</p>				
DRAWN BY	CHECKED	APPROVED	CADD FILE NAME	
SBG			ELI01.dwg	
DATE	SCALE	DRAWING NUMBER		
10/25/2019	1/8" = 1'-0"	D-19-0153-0144-EL101		

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LUMINAIRE SCHEDULE									
TYPE	DESCRIPTION	MANUFACTURER (DESIGN BASE)	CATALOG NO.	LAMPS	BALLAST / DRIVER	VOLTS	MTG	RMK	ACCEPTABLE EQUIVALENT IFRS
A	2x2 RECESSED BACK LIT L.E.D. LUMINAIRE, MEDIUM LAMBERTIAN DISTRIBUTION, POST PAINTED HOUSING, ACRYLIC LENS ALLOWING NO VISIBLE LAMP IMAGE	CURRENT BY G.E.	LIT 22 A 0 40MM 835 VQ LT WHITE	80+ CRI, 3500K, 4000 LUMEN, 32 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	CR		LITHONIA ZTL SERIES, WILLIAMS LPT SERIES, METALUX 22EN SERIES
A1	SIMILAR TO TYPE 'A', EXCEPT WITH 16 WATT, 2000 LUMEN LIGHT ENGINE	CURRENT BY G.E.	LIT 22 A 0 20MM 835 VQ LT WHITE	80+ CRI, 3500K, 2000 LUMEN, 16 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	CR		LITHONIA ZTL SERIES, WILLIAMS LPT SERIES, METALUX 22EN SERIES
B	2x4 RECESSED ARCHITECTURAL L.E.D. LUMINAIRE, MEDIUM LAMBERTIAN DISTRIBUTION, CURVED OPTICAL ASSEMBLY	CURRENT BY G.E.	LIV 24 A 0 60 MM T36 VQ LT WHITE	80+ CRI, 3500K, 6000 LUMEN, 52 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	CR		MARK WRIPR SERIES, COLUMBIA VERITY SERIES, METALUX 24EN SERIES
C	HIGH BAY L.E.D. AREA LUMINAIRE, DAMP WET LOCATION LISTED, CAST ALUMINUM HOUSING CONSTRUCTION, GLASS LENS	DECO LIGHTING	DUFO 240 40 UNV C W D	80+ CRI, 4000K, 31100 LUMEN, 240 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	P		HUBBELL CRN SERIES
D	4 LONG WALL MOUNT L.E.D. LUMINAIRE, 120° FROSTED ACRYLIC LENS WITH UPDOWN DISTRIBUTION	WILLIAMS	WMA 4 L32 835 AF DRIV UNV	80+ CRI, 3500K, 3200 LUMEN, 41 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	WS	1	AXIS AR WALL MOUNT
E	6 LONG VAPOR TIGHT, L.E.D. LUMINAIRE, DIFFUSE ACRYLIC LENS WITH 120 DEG OPTIC, WET LOCATION LISTED, CABLE SUSPENDED	ALBEO	ALR2 0 4N 03 T C8 10 S VQ 51 K Q W	80+ CRI, 3500K, 3000 LUMEN, 20 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	P		WILLIAMS 96 SERIES, LITHONIA VAP SERIES
E1	6 LONG VAPOR TIGHT, L.E.D. LUMINAIRE, DIFFUSE ACRYLIC LENS WITH 120 DEG OPTIC, WET LOCATION LISTED, 45 DEG ANGLE WALL MOUNT	ALBEO	ALR2 0 8T 10 T C8 10 S VQ 45 K Q W	80+ CRI, 3500K, 10000 LUMEN, 41 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	WS		WILLIAMS 96 SERIES, LITHONIA VAP SERIES
E2	6 LONG VAPOR TIGHT, L.E.D. LUMINAIRE, DIFFUSE ACRYLIC LENS WITH 120 DEG OPTIC, WET LOCATION LISTED, THREADED ROD MOUNTING	ALBEO	ALR2 0 8T 10 T C8 10 S VQ 21 K Q W	80+ CRI, 3500K, 10000 LUMEN, 67 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	P		WILLIAMS 96 SERIES, LITHONIA VAP SERIES
F	PSAZON SERIES HIGH BAY, LOW COPPER CAST ALUMINUM HOUSING, POWDER COAT WHITE FINISH, FROSTED GLASS LENS, WIDE OPTICAL DISTRIBUTION	KOLOPHANE	PKZ-12L-35K-80CRI-AS-PW-WFR-D-CB-SSS	80+ CRI, 3500K, 12000 LUMEN, 91 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	P		ALBEO ABR1 SERIES
G	6" DIA. NON-CONDUCTIVE L.E.D. SHOWER LIGHT	GOTHAM	EVO 3515 6 DFR MVOLT G210	80+ CRI, 3500K, 1500 LUMEN, 19 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	CR		WILLIAMS 80R SERIES
H	COMBINATION EXIT SIGN/EMERGENCY LIGHTING BATTERY UNIT, WHITE THERMOPLASTIC HOUSING, RED LETTERS, TWO L.E.D. LIGHTING HEADS, BATTERY CAPACITY FOR TWO ADDITIONAL HEADS	DUAL LITE	EVC U R W D4 1	RED L.E.D.'S AND (2) 1 WATT WHITE L.E.D.'S	N/A	120-277	S		
H1	TVM OUTDOOR RATED EMERGENCY LIGHTING REMOTE HEADS, BLACK FINISH	DUAL LITE	EVO 2 B	(2) 1 WATT WHITE L.E.D.'S	N/A	4.8 VDC	WS		
H2	TVM INDOOR EMERGENCY LIGHTING REMOTE HEADS, WHITE FINISH	DUAL LITE	EVR 2	(2) 1 WATT WHITE L.E.D.'S	N/A	4.6 VDC	WS		
H3	EMERGENCY LIGHTING BATTERY UNIT, WHITE THERMOPLASTIC HOUSING, TWO L.E.D. LIGHTING HEADS, BATTERY CAPACITY FOR TWO ADDITIONAL HEADS	DUAL LITE	EV4 0 1	(2) 1 WATT WHITE L.E.D.'S	N/A	120-277	WS		
J	2x2 RECESSED EDGE LIT FLAT PANEL LUMINAIRE, MEDIUM LAMBERTIAN DISTRIBUTION, EXTRUDED ALUMINUM FRAME, POST PAINTED POWDER COAT FINISH	CURRENT BY G.E.	LPL 22 A 0 20MM 835 VQ LT WHITE	80+ CRI, 3500K, 2000 LUMEN, 32 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	CR		ENVIVO ELEDPNL2X2-FRM CP, LITHONIA EPANL2X2
J1	2x4 RECESSED EDGE LIT FLAT PANEL LUMINAIRE, MEDIUM LAMBERTIAN DISTRIBUTION, EXTRUDED ALUMINUM FRAME, POST PAINTED POWDER COAT FINISH	CURRENT BY G.E.	LPL 24 A 0 30MM 835 VQ LT WHITE	80+ CRI, 3500K, 3000 LUMEN, 30 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	CR		ENVIVO ELEDPNL2X4-35W-FRM, LITHONIA EPANL2X4
K	LINEAR INDUSTRIAL L.E.D. LUMINAIRE WITH 120 DEGREE DIFFUSE LENS	CURRENT BY G.E.	ALC8 0 4T 03TCR 10 Q V Q 8T K Q W	80+ CRI, 3500K, 3000 LUMEN, 20 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	WS		WILLIAMS 75R SERIES, LITHONIA ZL10 SERIES
SL1	ARCHITECTURAL AREA LUMINAIRE, TYPE 2 MEDIUM FULL CUT-OFF OPTICS, INTEGRAL NETWORKED WIRELESS OCCUPANCY / AMBIENT SENSOR, 18" SQUARE, STRAIGHT	LITHONIA	DSX1 LED P2 30K T3M MVCLT SPA NLTA R2 PRPHN H6 DBLXD LUMINAIRE, SSA 18 4G DM19AS-VD-FBC-TC	70+ CRI, 3000K, 8285 LUMEN, 70 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	POLE		BEACON SMALL VIPER WITH STRIKE OPTIC, MCGRAW EDISON GLEON SERIES, GARDOO ASA SERIES
SL2	TWO AREA LUMINAIRES MOUNTED AT 180 DEGREES, TYPE V MEDIUM FULL CUT-OFF OPTICS, NETWORKED WIRELESS OCCUPANCY/AMBIENT SENSOR, 18" SQUARE	LITHONIA	DSX1 LED P2 30K T3M MVCLT SPA NLTA R2 PRPHN H6 DBLXD LUMINAIRE, SSA 18 4G DM19AS-VD-FBC-TC	70+ CRI, 3000K, 8575 LUMEN, 70 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	POLE		BEACON SMALL VIPER WITH STRIKE OPTIC, MCGRAW EDISON GLEON SERIES, GARDOO ASA SERIES
SL3	SIMILAR TO TYPE 'SL1' EXCEPT WITH HOUSE SIDE SHIELD	LITHONIA	DSX1 LED P2 30K T3M MVCLT SPA NLTA R2 PRPHN H6 DBLXD LUMINAIRE, SSA 18 4G DM19AS-VD-FBC-TC DBLXD POLE	70+ CRI, 3000K, 8285 LUMEN, 70 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	POLE		BEACON SMALL VIPER WITH STRIKE OPTIC, MCGRAW EDISON GLEON SERIES, GARDOO ASA SERIES
SL4	SIMILAR TO TYPE 'SL1' EXCEPT WITH TYPE 1 SHORT FULL CUT-OFF OPTICS	LITHONIA	DSX1 LED P2 30K T1S MVCLT SPA NLTA R2 PRPHN H6 DBLXD LUMINAIRE, SSA 18 4G DM19AS-VD-FBC-TC DBLXD POLE	70+ CRI, 3000K, 8285 LUMEN, 70 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	POLE		BEACON SMALL VIPER WITH STRIKE OPTIC, MCGRAW EDISON GLEON SERIES, GARDOO ASA SERIES
SL5	0-SERIES WALL MOUNT L.E.D. LUMINAIRE, TYPE 2 SHORT FULL CUT-OFF OPTICS	LITHONIA	DSXW LED 530 30K T2S MVCLT DMG DBLXD	70+ CRI, 3000K, 2050 LUMEN, 16 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	WS		BEACON TRAVERSE, GARDOO PWS SERIES
SL6	SIMILAR TO TYPE 'SL5', EXCEPT (2) LIGHT ENGINES, 700mA DRIVE CURRENT, AND FORWARD THROW MEDIUM FULL CUT-OFF OPTICS	LITHONIA	DSXW LED 700 30K T1TM MVCLT DMG DBLXD	70+ CRI, 3000K, 5175 LUMEN, 46 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	WS		BEACON TRAVERSE, GARDOO PWS SERIES
SL7	SIMILAR TO TYPE 'SL5' EXCEPT (2) LIGHT ENGINES, 700mA DRIVE CURRENT, AND TYPE 3 MEDIUM FULL CUT-OFF OPTICS	LITHONIA	DSXW LED 700 30K T3M MVCLT DMG DBLXD	70+ CRI, 3000K, 5100 LUMEN, 46 WATT L.E.D. LIGHT ENGINE	MFR'S STANDARD 10%, 0-10V DIMMING DRIVER	120-277	WS		BEACON TRAVERSE, GARDOO PWS SERIES

MOUNTING LEGEND
 C= CEILING
 W= WALL
 S= SURFACE

NOTES
 1. MOUNT BOTTOM OF LUMINAIRE 1" ABOVE TOP OF MIRROR.
 2.
 3.



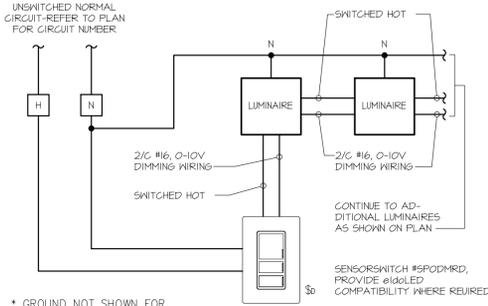
* GROUND NOT SHOWN FOR PURPOSES OF CLARITY.

LIGHTING CONTROL DIAGRAM #?

SINGLE ZONE DIMMING WITH OCCUPANCY OVER RIDE

SEQUENCE OF OPERATION

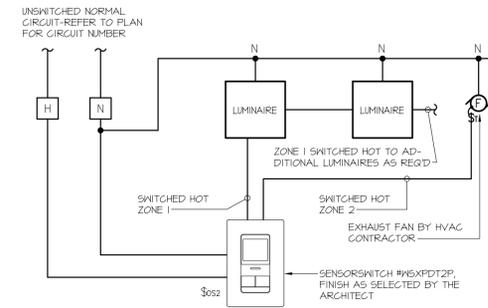
WHEN SOMEONE ENTERS THE SPACE AND OCCUPANCY IS DETECTED, LUMINAIRES ENERGIZE TO 50% BRIGHTNESS. LUMINAIRES MAY BE DIMMED OR BRIGHTENED AT THE WALL SWITCH. LUMINAIRES MAY BE EXTINGUISHED MANUALLY AT THE SWITCH OR AUTOMATICALLY AFTER A 15 MINUTE TIME OUT PERIOD BY THE OCCUPANCY SENSOR.



* GROUND NOT SHOWN FOR PURPOSES OF CLARITY.

LIGHTING CONTROL DIAGRAM

SINGLE ZONE DIMMING WITHOUT OCCUPANCY OVER RIDE



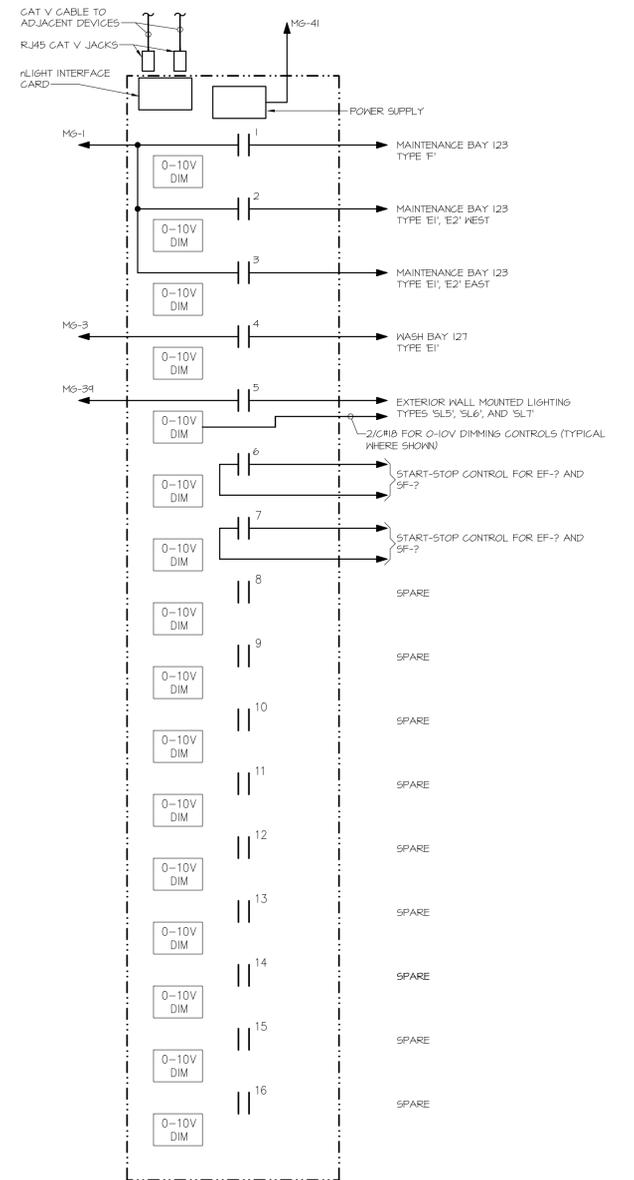
* GROUND NOT SHOWN FOR PURPOSES OF CLARITY.

LIGHTING CONTROL DIAGRAM

TWO ZONE SWITCHING WITH OCCUPANCY OVER RIDE

SEQUENCE OF OPERATION

WHEN SOMEONE ENTERS THE SPACE AND OCCUPANCY IS DETECTED, ZONE 1 AND ZONE 2 ENERGIZE. ZONE 1 MAY BE EXTINGUISHED MANUALLY AT THE SWITCH OR AUTOMATICALLY AFTER A 15 MINUTE TIME OUT PERIOD BY THE OCCUPANCY SENSOR. ZONE 2 (EXHAUST FAN) WILL REMAIN ENERGIZED FOR FULL 15 MINUTE TIME-OUT PERIOD REGARDLESS OF SWITCH INPUT.



LIGHTING CONTROL PANEL 'LCPI'

PROVIDE 4 LIGHT 4 AMP INTENSIFIER ENCLOSURE, #16FC RELAYS-MVOLT-HVB-HLK-SM, 16 RELAY ENCLOSURE WITH 16 FIELD CONFIGURABLE RELAYS, SURFACE MOUNT, WITH LOCKING HINGED COVER.

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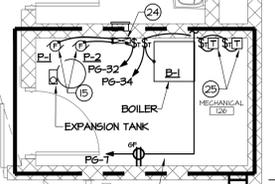
MUHLENBERG TOWNSHIP
 PROPOSED PUBLIC WORKS BUILDING
 SCHEDULES AND DIAGRAMS

MUHLENBERG TOWNSHIP SITUATE IN PENNSYLVANIA
 BERKS COUNTY

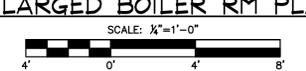
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 DATE: 10/25/2019 SCALE: NONE DRAWING NUMBER: D-19-0153-0144-EL501

KEYED DRAWING NOTES

- 1 30 AMP, 3 POLE, NON-FUSED DISCONNECT SWITCH, NEMA 4X, HUBBELL #HBLD533ACN, OR APPROVED EQUAL. MOUNT ADJACENT TO OVERHEAD DOOR CONTROLLER. COORDINATE FINAL LOCATION AND MOUNTING HEIGHT WITH GENERAL CONTRACTOR.
- 2 OVERHEAD DOOR CONTROLLER FURNISHED AND MOUNTED BY THE GENERAL CONTRACTOR. POWER WIRING BY THE ELECTRICAL CONTRACTOR.
- 3 OVERHEAD DOOR OPERATOR, BY GENERAL CONTRACTOR. POWER WIRING BY ELECTRICAL CONTRACTOR.
- 4 30 AMP, 3 POLE, NON-FUSED DISCONNECT SWITCH, NEMA 4X, HUBBELL #HBLD533ACN, OR APPROVED EQUAL. MOUNT TO UNIT ENCLOSURE PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE WITH MECHANICAL CONTRACTOR.
- 5 EXTEND #2 AWG TAP CONDUCTOR TO MAIN GROUNDING LOOP AND CONNECT WITH EXOTHERMIC WELD.
- 6 BOND #2 AWG TAP CONDUCTOR TO BUILDING STEEL WITH EXOTHERMIC WELD.
- 7 PROVIDE 1" CONDUIT SLEEVE THROUGH FOUNDATION AND STUB UP ADJACENT TO COLUMN FOR TAP CONDUCTOR.
- 8 30 AMP, 3 POLE, NON-FUSED DISCONNECT SWITCH, NEMA 4X, HUBBELL #HBLD53VFD, OR APPROVED EQUAL. MOUNT ADJACENT TO VFD (SUPPLIED BY MECHANICAL CONTRACTOR). WIRE FROM AUX CONTACT TO VFD TO INDICATE SWITCH POSITION TO VFD.
- 9 VFD FURNISHED BY THE MECHANICAL CONTRACTOR. MOUNTING AND WIRING BY ELECTRICAL CONTRACTOR.
- 10 3/4" (2) #14 TO LIGHTING RELAY PANEL FOR START-STOP SIGNAL.
- 11 30 AMP, 3 POLE, NON-FUSED DISCONNECT SWITCH, NEMA 4X, HUBBELL #HBLD533ACN, OR APPROVED EQUAL. COORDINATE FINAL LOCATION WITH THE GENERAL CONTRACTOR.
- 12 MOUNT JUNCTION BOX IN CEILING ABOVE LIFT. MAKE FINAL CONNECTION TO HYDRAULIC POWER UNIT PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 13 60 AMP, 2 POLE, NON-FUSED DISCONNECT SWITCH, NEMA 4X, HUBBELL #HBLD533ACN, OR APPROVED EQUAL.
- 14 CONNECT TO LIGHTING CIRCUIT. REFER TO DRAWING ELOI.
- 15 VERIFY LOCATION OF IN-LINE GFCI PUMPS WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. DELETE IF ALTERNATE D-1 IS ACCEPTED.
- 16 MOUNT DATA JACKS ABOVE CEILING FOR EXTERIOR CCTV CAMERA. PROVIDE 3/4" SCH 40 PVC SLEEVE THROUGH WALL FOR CAMERA WIRING. CAMERA WILL BE FURNISHED AND INSTALLED BY OTHERS. CAMERA INSTALLER WILL SEAL THE SLEEVE TIGHT AFTER WIRING IS INSTALLED.
- 17 MOUNT DATA JACK HIGH ON WALL FOR EXTERIOR CCTV CAMERA. VERIFY MOUNTING HEIGHT WITH CAMERA SUPPLIER PRIOR TO ROUGH-IN. PROVIDE 3/4" SCH 40 PVC SLEEVE THROUGH WALL FOR CAMERA WIRING. CAMERA WILL BE FURNISHED AND INSTALLED BY OTHERS. CAMERA INSTALLER WILL SEAL THE SLEEVE TIGHT AFTER WIRING IS INSTALLED.
- 18 MOUNT DATA JACK APPROX. 10' AFF FOR CARD READER INTERFACE. CONFIRM LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH-IN.
- 19 MOUNT JUNCTION BOX APPROX. 10' AFF FOR CARD READER CONTROLLER POWER SUPPLY. CONFIRM LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH-IN.
- 20 MOUNT DATA JACKS ABOVE CEILING FOR CARD READER INTERFACE.
- 21 MOUNT JUNCTION BOX IN CEILING SPACE FOR CARD READER CONTROLLER POWER SUPPLY. CONFIRM LOCATION AND MOUNTING HEIGHT PRIOR TO ROUGH-IN.
- 22 PROPOSED LOCATION FOR GENERATOR REMOTE ANNUNCIATOR. CONFIRM LOCATION WITH OWNER PRIOR TO START OF WORK.
- 23 REFER TO TRAINING ROOM A / V WIRING DETAIL, DRAWING EP201 FOR ADDITIONAL REQUIREMENTS.
- 24 HEATING ZONE CONTROL PANEL BY MECHANICAL CONTRACTOR. POWER WIRING BY ELECTRICAL CONTRACTOR. VERIFY LOCATION PRIOR TO ROUGH-IN. DELETE IF ALTERNATE D-1 IS ACCEPTED.
- 25 CONTROL POWER TRANSFORMER BY MECHANICAL CONTRACTOR. PRIMARY WIRING BY ELECTRICAL CONTRACTOR. VERIFY LOCATION PRIOR TO ROUGH-IN. DELETE IF ALTERNATE D-1 IS ACCEPTED.
- 26 60 AMP, 3 POLE, FUSED DISCONNECT SWITCH FOR COMPRESSOR. PROVIDE CLASS RK1 FUSES TO MATCH THE COMPRESSOR SELECTED BY THE OWNER.
- 27 MOUNT CO DETECTOR APPROXIMATELY 5'-6" AFF TO CENTER.



ENLARGED BOILER RM PLAN
SCALE: 1/4"=1'-0"

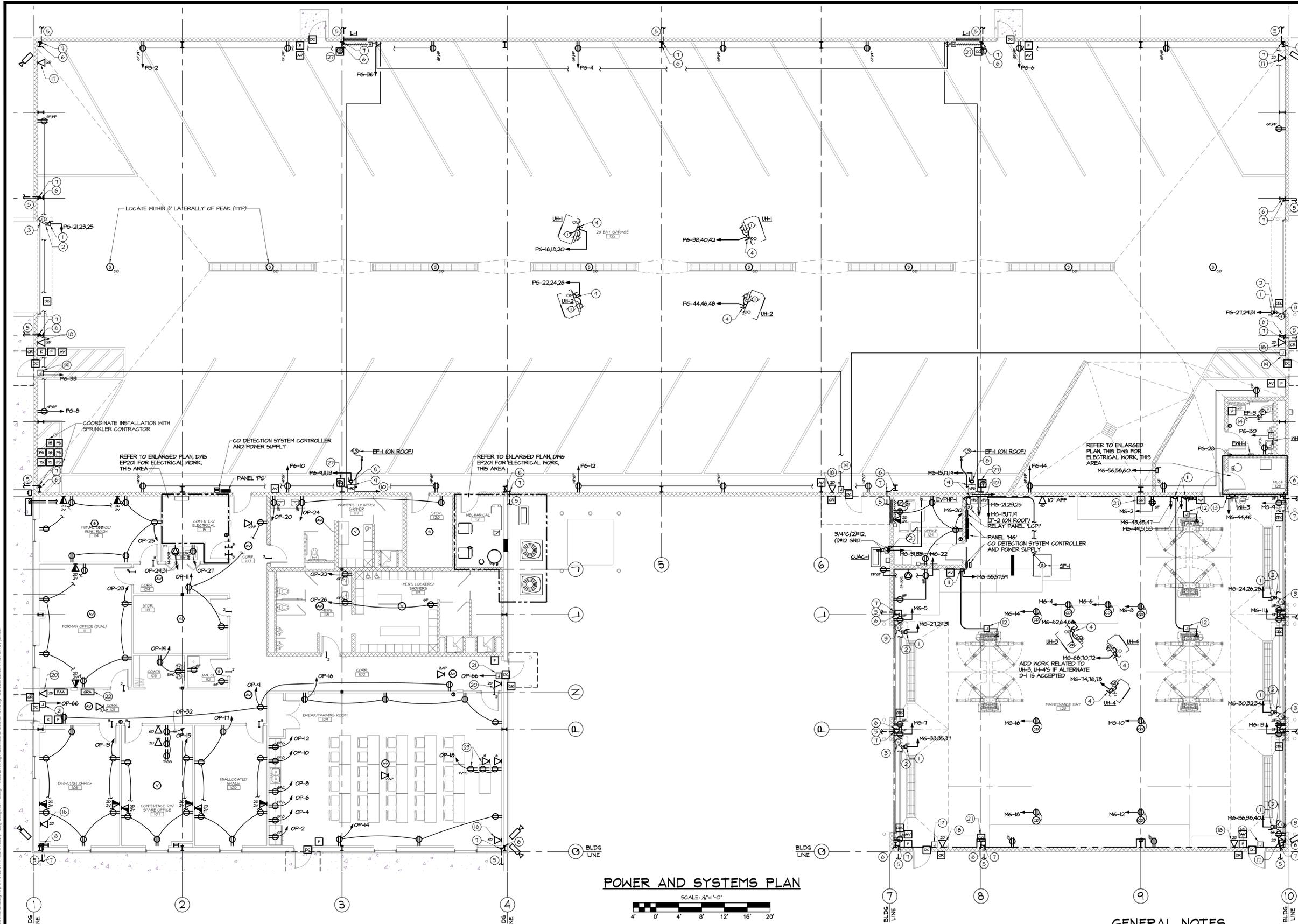


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MUHLENBERG TOWNSHIP PROPOSED PUBLIC WORKS BUILDING POWER AND SYSTEMS PLAN

MUHLENBERG TOWNSHIP		SITUATE IN		BERKS COUNTY		PENNSYLVANIA	
DRAWN BY	CHECKED	APPROVED	CADD FILE NAME				
SBG	SG	TSU	EP101.dwg				
DATE	SCALE	DRAWING NUMBER					
10/25/2019	1/8" = 1'-0"	D-19-0153-0144-EP101					



POWER AND SYSTEMS PLAN
SCALE: 1/8"=1'-0"



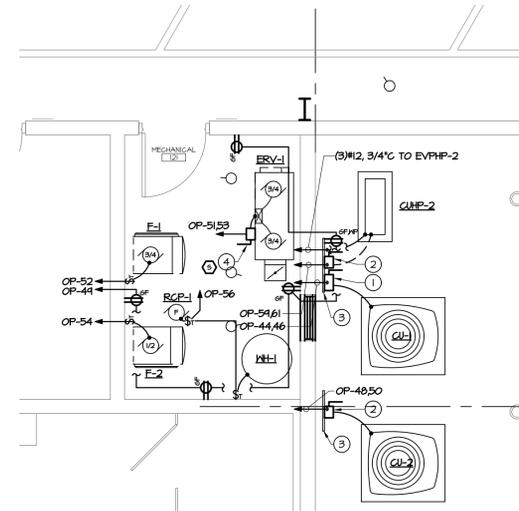
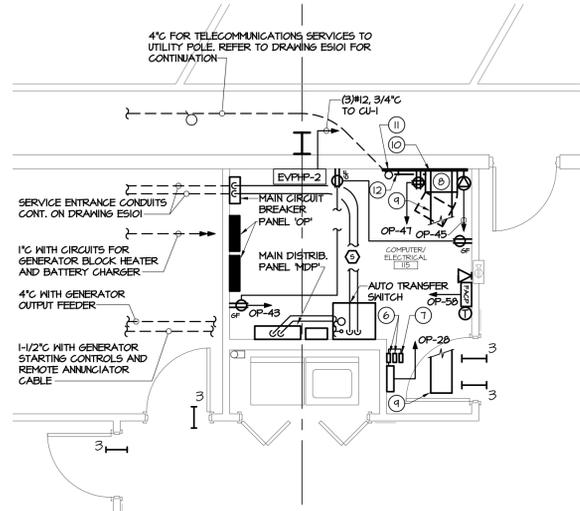
GENERAL NOTES

1. REFER TO DRAWING EEO1 FOR ELECTRICAL LEGEND AND NOTES.
2. REFER TO DRAWING ELS01 FOR LUMINAIRE SCHEDULE AND LIGHTING CONTROL WIRING DIAGRAMS.
3. FOR LIGHTING MOUNTED ON THE BUILDING EXTERIOR CORRUGATED SIDING, THE G.C. WILL PROVIDE A MEANS FROM THE SIDING MANUFACTURERS TO ALLOW FOR A FLAT MOUNTING SURFACE. COORDINATE SPECIFIC REQUIREMENTS, LOCATIONS, AND MOUNTING HEIGHTS WITH THE G.C. PRIOR TO ROUGH-IN.
4. REFER TO DRAWING EPI01 FOR ELECTRICAL PANEL LOCATIONS.
5. REFER TO DRAWING EPS01 FOR SINGLE LINE DIAGRAM AND PANEL SCHEDULES.

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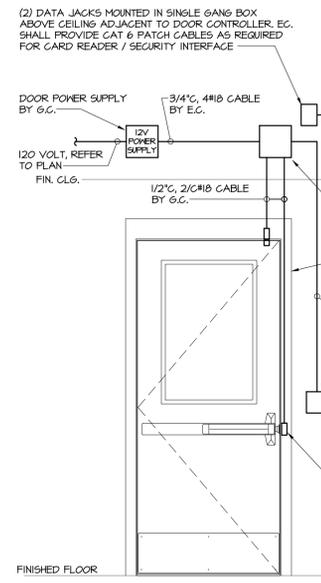
KEYED DRAWING NOTES

- ① 60 AMP, 2 POLE, NEMA 3R, NON-FUSED DISCONNECT SWITCH, PROVIDE EQUIPMENT GROUNDING KIT.
- ② 30 AMP, 2 POLE, NEMA 3R, NON-FUSED DISCONNECT SWITCH, PROVIDE EQUIPMENT GROUNDING KIT.
- ③ PROVIDE STAINLESS STEEL STRUT TO PROVIDE MOUNTING FOR DISCONNECT SWITCHES AND RECEPTACLE ON CORRUGATED METAL SIDING.
- ④ 30 AMP, 2 POLE, NEMA 1, NON-FUSED DISCONNECT SWITCH, PROVIDE EQUIPMENT GROUNDING KIT, MOUNT TO EQUIPMENT ENCLOSURE PER EQUIPMENT MANUFACTURER'S INSTRUCTIONS.
- ⑤ #LIGHT 8 PORT BRIDGE.
- ⑥ #LIGHT GATEWAY AND CONTROLLER.
- ⑦ #LIGHT ECLYPSE CONTROLLER.
- ⑧ NETWORK RACK STRUCTURE, BY E.G. REFER TO SPECIFICATION FOR REQUIREMENTS.
- ⑨ PROVIDE 12" WIDE LADDER TRAY FOR CABLES.
- ⑩ PROVIDE FOR CABLE RADIUS TURNDOWN AT NETWORK RACK.
- ⑪ PROVIDE 4'x8'x3/4" PLYWOOD BACKBOARD, PAINT WHITE.
- ⑫ GROUND BUS, REFER TO DIAGRAM, THIS DRAWING FOR SPECIFICATION.
- ⑬ 18/2 TWISTED SHIELDED NETWORK, 18/2 POWER.
- ⑭ 18/2 TWISTED SHIELDED NETWORK.
- ⑮ 1/4/2 PANEL ACTIVATION.
- ⑯ 1/4/2 SIGNALING DEVICE POWER.

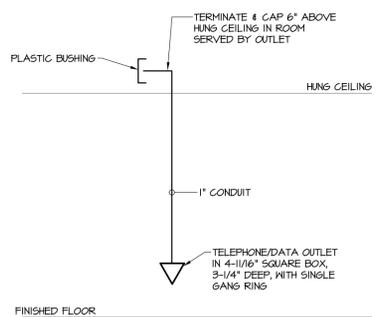


ENLARGED ELECTRICAL ROOM PLAN
SCALE: 1/8"=1'-0"

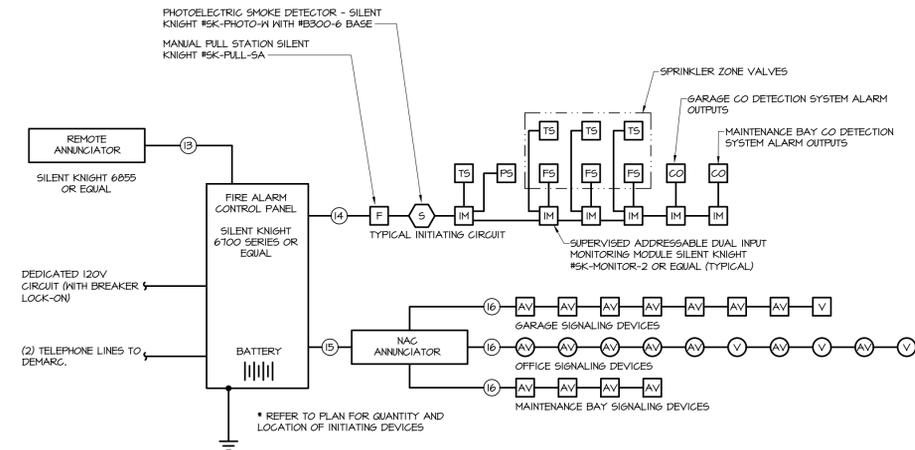
ENLARGED MECHANICAL ROOM PLAN
SCALE: 1/8"=1'-0"



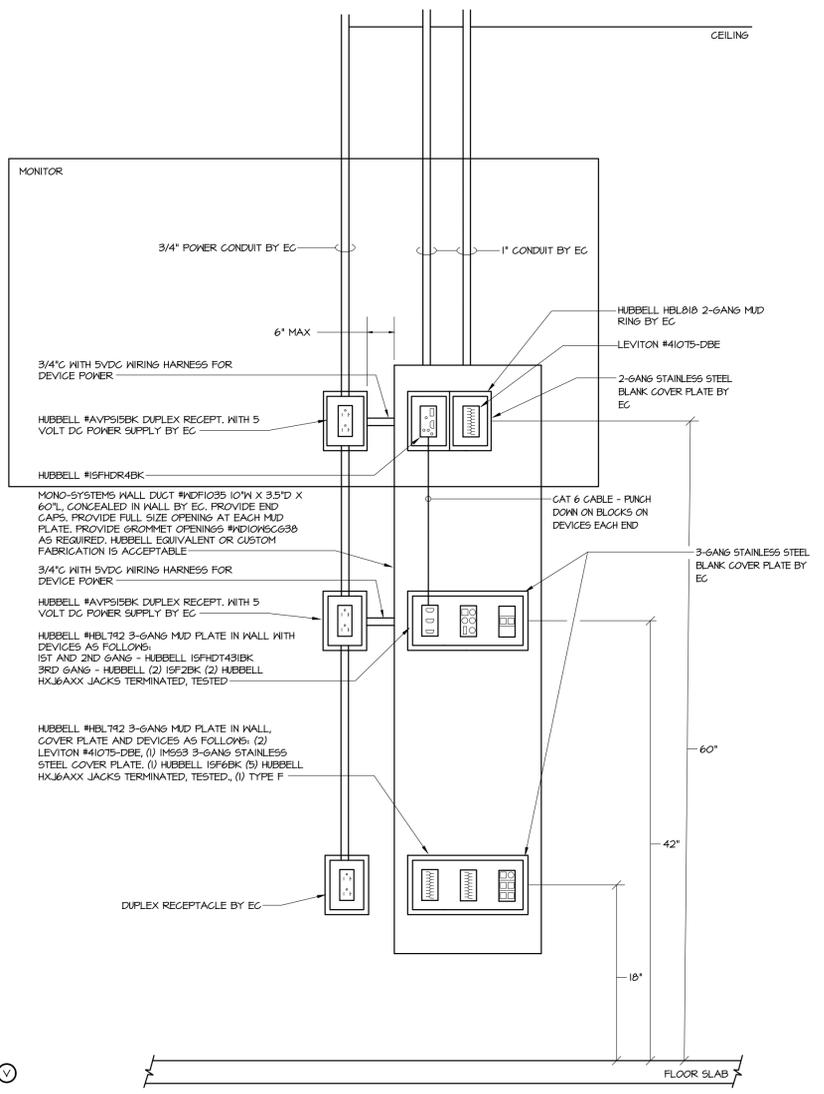
ACCESS CONTROL CONDUIT DETAIL FOR CARD READER SYSTEM
NOT TO SCALE



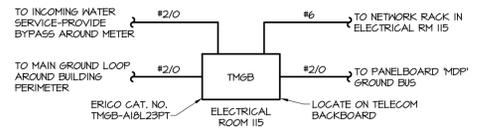
TYPICAL TELEPHONE/DATA OUTLET IN NEW WALLS
NOT TO SCALE



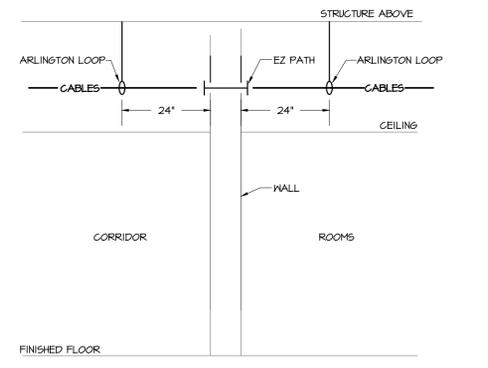
FIRE ALARM RISER DIAGRAM
NOT TO SCALE



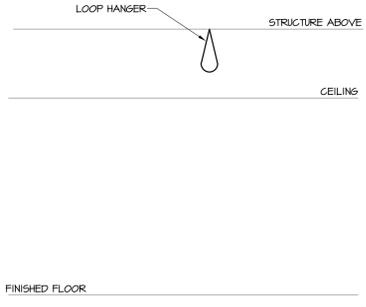
A / V WIRING DETAIL
NOT TO SCALE



GROUNDING RISER
NOT TO SCALE



EZ-PATH CABLE INSTALLATION DETAIL
NOT TO SCALE



LOOP HANGER DETAIL
NOT TO SCALE

QUANTITY OF DATA CABLES IN CONDUIT

CONDUIT SIZE	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"
QUANTITY OF CABLES	1	3	4	8	10	17	31	47	61	78

BASED ON 40% FILL OF CONDUIT USING HITACHI SUPRA 106 PLENM CABLE

QUANTITY OF DATA CABLES IN EZ PATH

EZ PATH SERIES	22	33
QUANTITY OF CABLES - PLENUM	6	32
QUANTITY OF CABLES - RISER	6	48

1	10/25/19	ISSUE FOR BID	JMG
NO.	DATE	REVISION	BY

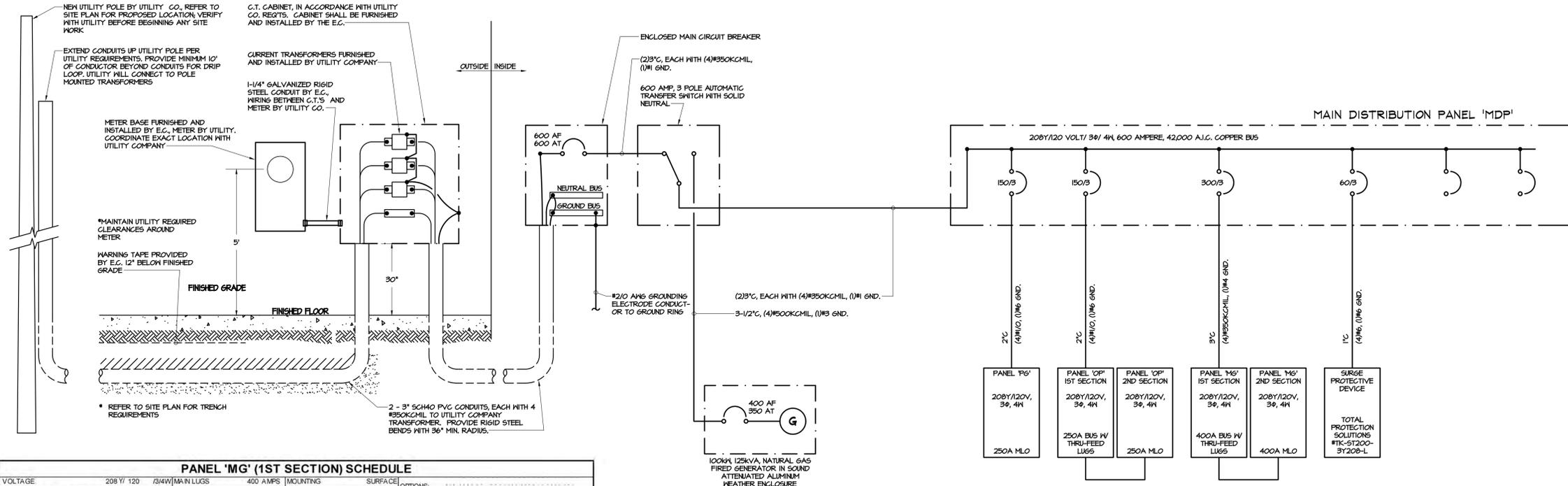
SYSTEMS DESIGN ENGINEERING, INC
1032 JAMES DR. LEESPORT, PA 19533
PHONE: 610.916.8500 FAX: 610.916.8501

MUHLENBERG TOWNSHIP PROPOSED PUBLIC WORKS BUILDING POWER AND SYSTEMS ENLARGED PLANS

MUHLENBERG TOWNSHIP, BERKS COUNTY, PENNSYLVANIA

DATE: 10/25/2019 SCALE: 1/8" = 1'-0" DRAWING NUMBER: D-19-0153-0144-EP201

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SINGLE LINE DIAGRAM

PANEL 'MG' (1ST SECTION) SCHEDULE

CKT #	DESCRIPTION	LOAD TYPE	LOAD (VA)	CONDUCTORS QTY	GND SIZE	COND SIZE	BKR A/P	PHASE			BKR COND A/P	COND SIZE	COND QTY	LOAD (VA)	LOAD TYPE	DESCRIPTION	CKT #
								A	B	C							
1	MAINT. BAY 123	L	1550	2	#12	#12	3/4"	201	1910				2	R	WORK BENCH RECEP	2	
3	OFFICE TLT. WASH BAY	L	600	2	#12	#12	3/4"	201	1780				2	R	DROP CORD DRILL PRESS	4	
5	BAY DOOR RECEP LEFT	R	360	2	#12	#12	3/4"	201		1540			2	R	DROP CORD GRINDER	6	
7	BAY DOOR RECEP LEFT	R	360	2	#12	#12	3/4"	201	540				2	R	DROP CORD RIGHT	8	
9	BAY DOOR RECEP RIGHT	R	360	2	#12	#12	3/4"	201		540			2	R	DROP CORD RIGHT	10	
11	BAY DOOR RECEP RIGHT	R	360	2	#12	#12	3/4"	201			540		2	R	DROP CORD LEFT	12	
13	BAY DOOR RECEP RIGHT	R	360	2	#12	#12	3/4"	201	540				2	R	DROP CORD LEFT	14	
15	SUPPLY FAN - 3HP	M	1325	3	#12	#12	3/4"	203		1565			2	R	DROP CORD LEFT	16	
17	SUPPLY FAN - 3HP	M	1325	3	#12	#12	3/4"	203		1505			2	R	DROP CORD LEFT	18	
19	SF-1	M	1325	3	#12	#12	3/4"	203	2225				2	R	OFFICE 124	20	
21	BREAK ROOM	L	625	2	#12	#12	3/4"	201		1865			2	R	WELDING BOOTH CONVEN	22	
23	EXHAUST FAN - 3HP	M	1325	3	#12	#12	3/4"	203		1905			2	R	1HP	24	
25	EP-2	M	580	3	#12	#12	3/4"	203	1905				3	M	MAINTENANCE BAY DOOR	26	
27	MAINTENANCE BAY DOOR	M	580	3	#12	#12	3/4"	15/3	1160				3	M	1HP	28	
29	MAINTENANCE BAY DOOR	M	580	3	#12	#12	3/4"	15/3	1160				3	M	MAINTENANCE BAY DOOR	30	
31	1HP	M	580	3	#12	#12	3/4"	15/3	1160				3	M	1HP	32	
33	MAINTENANCE BAY DOOR	M	580	3	#12	#12	3/4"	15/3	1160				3	M	1HP	34	
35	MAINTENANCE BAY DOOR	M	580	3	#12	#12	3/4"	15/3	1160				3	M	MAINTENANCE BAY DOOR	36	
37	1HP	M	580	3	#12	#12	3/4"	15/3	1160				3	M	MAINTENANCE BAY DOOR	38	
39	EXT. WALL MOUNTED	SL	500	2	#10	#10	3/4"	201	1080				2	M	1HP	40	
41	LIGHTING CTRL PHL LOPT	L	250	2	#12	#12	3/4"	201		250			2	M		42	
TOTAL CONNECTED LOAD (VA) A, B, C									2510	2580	19370	KVA WITH DIVERSITY APPLIED			70.2	KVA	
TOTAL CONNECTED LOAD (AMP) A, B, C									213.4	210.5	161.4	AMPS WITH DIVERSITY APPLIED			185.2	AMPS	

LOAD BREAKDOWN

HEAT PUMP (HP) KVA	1	LIGHTING (L) KVA	2	DIVERSIFIED	2
KITCHEN EQUIPMENT (K) KVA	0	RECEPTACLE (R) KVA	7		7
SITE LIGHTING (SL) KVA	0	MOTOR (M) KVA	51		51
ELECTRIC WATER HEATING (WH) KVA	8	ELECTRIC HEAT (EH) KVA	0		0
		AIR CONDITIONING (AC) KVA	0		0
		NON-LINEAR (N) KVA	0	DIVERSIFIED	0

PANEL 'OP' (1ST SECTION) SCHEDULE

CKT #	DESCRIPTION	LOAD TYPE	LOAD (VA)	CONDUCTORS QTY	GND SIZE	COND SIZE	BKR A/P	PHASE			BKR COND A/P	COND SIZE	COND QTY	LOAD (VA)	LOAD TYPE	DESCRIPTION	CKT #
								A	B	C							
1	RMS 105-111-115	L	400	2	#12	#12	3/4"	201	1300				2	R	BREAK 109 - REFRIG	2	
3	RMS 106-108	L	580	2	#12	#12	3/4"	201		2080			2	R	BREAK 109 - COUNTER	4	
5	BREAK ROOM	L	625	2	#12	#12	3/4"	201		2125			2	R	BREAK 109 - COUNTER	6	
7	RMS 117-121	L	575	2	#12	#12	3/4"	201	2075				2	R	BREAK 109 - COUNTER	8	
9	CORRIDOR 101, 102	R	540	2	#12	#12	3/4"	201		2040			2	R	BREAK 109 - COUNTER	10	
11	CORR. 103, 104, STOR. 113	R	540	2	#12	#12	3/4"	201		2040			2	R	BREAK 109 - COUNTER	12	
13	DIRECTOR 106	R	1080	2	#12	#12	3/4"	201	1620				2	R	BREAK 109 CONVENIENCE	14	
15	CONFERENCE 107	R	900	2	#12	#12	3/4"	201	1620				2	R	BREAK 109 CONVENIENCE	16	
17	ROOM 108	R	1080	2	#12	#12	3/4"	201	1620				2	R	BREAK 108 A / V	18	
19	COATS 105, EWC	R	780	2	#12	#12	3/4"	201	2280				2	R	WOMEN'S 117	20	
21	JAN 112	R	360	2	#12	#12	3/4"	201		1880			2	R	WOMEN'S 117	22	
23	FOREMAN 111	R	1080	2	#12	#12	3/4"	201		2580			2	R	WOMEN'S 117	24	
25	OFFICE 114	R	1080	2	#12	#12	3/4"	201	2580				2	R	MEN'S 118, 119	26	
27	LAUNDRY 116 WASHER	R	1150	2	#12	#12	3/4"	201	1255				2	L	LIGHTING CONTROL	28	
29	LAUNDRY 116 DRYER	R	2500	3	#10	#10	3/4"	30/2		2700			2	M	RMS 101-105	30	
31	SPARE							201	3440				2	M	CONF. ROOM AV OUTLETS	32	
33	SPARE							201					2	M	SPARE	34	
35	SPARE							201					2	M	SPARE	36	
37	SPARE							201					2	M	SPARE	38	
39	SPARE							201					2	M	SPARE	40	
41	SPARE							201					2	M	SPARE	42	
TOTAL CONNECTED LOAD (VA) A, B, C									21940	19980	15725	KVA WITH DIVERSITY APPLIED			44.1	KVA	
TOTAL CONNECTED LOAD (AMP) A, B, C									182.8	133.2	131.0	AMPS WITH DIVERSITY APPLIED			122.6	AMPS	

LOAD BREAKDOWN

HEAT PUMP (HP) KVA	1	LIGHTING (L) KVA	3	DIVERSIFIED	3
KITCHEN EQUIPMENT (K) KVA	0	RECEPTACLE (R) KVA	33		33
SITE LIGHTING (SL) KVA	0	MOTOR (M) KVA	4		4
ELECTRIC WATER HEATING (WH) KVA	2	ELECTRIC HEAT (EH) KVA	0		0
		AIR CONDITIONING (AC) KVA	0		0
		NON-LINEAR (N) KVA	1	DIVERSIFIED	1

PANEL 'PG' SCHEDULE

CKT #	DESCRIPTION	LOAD TYPE	LOAD (VA)	CONDUCTORS QTY	GND SIZE	COND SIZE	BKR A/P	PHASE			BKR COND A/P	COND SIZE	COND QTY	LOAD (VA)	LOAD TYPE	DESCRIPTION	CKT #
								A	B	C							
1	PARKING GARAGE 122	L	1440	2	#12	#12	3/4"	201	1880				2	R	RECEP TS AT-A4	2	
3	PARKING GARAGE 122	L	1440	2	#12	#12	3/4"	201		1980			2	R	RECEP TS A4 - A8	4	
5	PARKING GARAGE 122	L	1440	2	#12	#12	3/4"	201		1980			2	R	RECEP TS A4 - B10	6	
7	RESTROOM 125	R	180	2	#12	#12	3/4"	201	540				2	R	RECEP TS B1 - E1	8	
9	EXHAUST FAN 1-1/2HP	M	795	3	#12	#12	3/4"	201		1335			2	R	RECEP TS F1 - F4	10	
11	EF-1	M	795	3	#12	#12	3/4"	201		1335			2	R	RECEP TS F4 - F8	12	
13	EF-1	M	795	3	#12	#12	3/4"	201		1335			2	R	RECEP TS F8 - E10	14	
15	EXHAUST FAN 1-1/2HP	M	795	3	#12	#12	3/4"	201		2045			2	M	1250 M	16	
17	EXHAUST FAN 1-1/2HP	M	795	3	#12	#12	3/4"	201		2045			2	M	1250 M	18	
19	EF-1	M	795	3	#12	#12	3/4"	201		2045			2	M	1250 M	20	
21	PARKING BAY DOOR	M	580	3	#12	#12	3/4"	15/3		1830			3	M	GARAGE 122 - UH-2	22	
23	1HP	M	580	3	#12	#12	3/4"	15/3		1830			3	M	1250 M	24	
25	1HP	M	580	3	#12	#12	3/4"	15/3		1830			3	M	1250 M	26	
27	PARKING BAY DOOR	M	580	3	#12	#12	3/4"	15/3		2080			2	M	RESTROOM 125 EWH-1	28	
29	PARKING BAY DOOR	M	580	3	#12	#12	3/4"	15/3		2680			2	M	RESTROOM 125 WH-2	30	
31	1HP	M	580	3	#12	#12	3/4"	15/3		1680			2	M	CIRC PLUMPS P-1, P-2	32	
33	GARAGE CARD READERS	N	50	2	#12	#12	3/4"	201		560			2	M	BOILER CONTROLS	34	
35	SPARE							201		200			2	M	LOUVERS (L-1)	36	
37	SPARE							201		1250			2	M	1250 M	38	
39	SPARE							201		1250			2	M	1250 M	40	
41	SPARE							201		1250			2	M	1250 M	42	
43	SPARE							201		1250			2	M	1250 M	44	
45	SPARE							201		1250			2	M	1250 M	46	
47	SPARE							201		1250			2	M	1250 M	48	
49	SPARE							201		0			-1	M	SPACE	50	
51	SPARE							201		0			-1	M	SPACE	52	
53	SPARE							201		0			-1	M	SPACE	54	
TOTAL CONNECTED LOAD (VA) A, B, C									10660								

GAS FIRED FURNACE W/ DX SPLIT SYSTEM COOLING COIL SCHEDULE														
TAG	CFM	OA CFM	ESP*	HP	COOLING COIL			HEATING			VOLTAGE	BASIS OF DESIGN		NOTES
					TYPE	TOTAL MBH	SENSIBLE MBH	TYPE	INPUT MBH	OUTPUT MBH		MANUFACTURER	MODEL	
F-1/CC-1	1600	450	0.38	0.75	DX	47.5	-	GAS	88.0	85.0	120V-1φ	LENNOX	SLP18UH090XV48C/CX95-60C-6F	1, 3, 5, 6, 7, 8
F-2/CC-1	1050	250	0.25	0.5	DX	35.8	-	GAS	88.0	85.0	120V-1φ	LENNOX	SLP18UH090XV36C/CX-35-48C-6F	2, 4, 5, 6, 7, 8

- NOTES:
- UNIT TO BE PAIRED WITH AIR COOLED CONDENSING UNIT CU-1.
 - UNIT TO BE PAIRED WITH AIR COOLED CONDENSING UNIT CU-2.
 - PROVIDE WITH 1 DAY PER WEEK/24HOUR PER DAY, 2 PROGRAM PER DAY, HEATING/COOLING/DEHUMIDIFYING, PROGRAMMABLE, WALL MOUNTED THERMOSTAT (COMFORT 530). PROVIDE REMOTE TEMPERATURE SENSOR FOR MOUNTING IN RETURN AIR DUCT.
 - PROVIDE WITH 1 DAY PER WEEK/24HOUR PER DAY, 2 PROGRAM PER DAY, HEATING/COOLING/DEHUMIDIFYING, PROGRAMMABLE, WALL MOUNTED THERMOSTAT (COMFORT 530).
 - PROVIDE WITH PVC CONCENTRIC VENT TERMINAL FOR ROOF INSTALLATION, FLUE CONDENSATE TRAP ASSEMBLY, AND ACID NEUTRALIZATION KIT.
 - PROVIDE WITH FLOAT SWITCH FOR SECONDARY DRAIN PAN. SWITCH TO "DIVERSITECH" MODEL 05-3 (OR EQUAL).
 - PROVIDE WITH RETURN AIR BASE FOR UPFLOW FURNACE.
 - PROVIDE WITH SIDE RETURN FILTER AND FILTER RACK.

DUCTLESS SPLIT SYSTEM HEAT PUMP EVAPORATOR SCHEDULE											
TAG	MANUFACTURER	MODEL No.	STYLE	REFRIG. TYPE	COOLING CAPACITY		HEATING CAPACITY @17°F A.M.B.	MCA	MOP	VOLTAGE	NOTES
					TOTAL MBH	SENSIBLE MBH					
EVPH-1	MITSUBISHI/TRANE	MSZ-FH06NA	WALL-MTD DUCTLESS SPLIT	R-410A	6.0	5.8	5.9	1.0	15	208/230V-1φ	1, 3, 4
EVPH-2	MITSUBISHI/TRANE	MSZ-FH06NA	WALL-MTD DUCTLESS SPLIT	R-410A	6.0	5.8	5.9	1.0	15	208/230V-1φ	2, 3, 4

- NOTES:
- UNIT TO BE PAIRED WITH AIR COOLED CONDENSING UNIT CUH-1.
 - UNIT TO BE PAIRED WITH AIR COOLED CONDENSING UNIT CUH-2.
 - PROVIDE WITH 1 DAY PER WEEK/24HOUR PER DAY, 2 PROGRAM PER DAY, HEATING/COOLING/DEHUMIDIFYING, PROGRAMMABLE, WALL MOUNTED THERMOSTAT.
 - PROVIDE WITH FLOAT SWITCH FOR SECONDARY DRAIN PAN TO SHUT UNIT DOWN IF CONDENSATE LEVEL BECOMES TOO HIGH.

FAN SCHEDULE											
TAG	TYPE	MOUNTING	CFM	ESP*	DRIVE	FAN RPM	MOTOR HP	VOLTAGE	BASIS OF DESIGN		NOTES
									MANUFACTURER	MODEL	
EF-1	EXHAUST	ROOF	6600	0.375	BELT	600	1.5	208V-3φ	GREENHECK	6B-260-15	1, 2, 3
EF-2	EXHAUST	ROOF	6850	1.5	BELT	775	3.0	208V-3φ	GREENHECK	6B-300-30	1, 2, 3
EF-3	EXHAUST	CEILING	75	0.125	DIRECT	430	0.1	120V-1φ	GREENHECK	5P-80-V6	2, 4, 5
EF-4	EXHAUST	CEILING	50	0.25	DIRECT	430	0.1	120V-1φ	GREENHECK	5P-80-V6	2, 4, 5
5F-1	SUPPLY	INLINE	6400	1.375	BELT	865	3.0	208V-3φ	GREENHECK	B5Q-300HP-30	3, 6, 7

- NOTES:
- PROVIDE WITH 12" HIGH SLOPED ROOF CURB.
 - PROVIDE WITH GRAVITY BACKDRAFT DAMPER
 - FAN TO BE PROVIDED WITH VFD.
 - PROVIDE WITH VARIABLE SPEED ECM MOTOR WITH ON BOARD POTENTIOMETER FOR SPEED ADJUSTMENT.
 - PROVIDE WITH ALUMINUM HOODED HALL CAP.
 - PROVIDE FAN WITH RIGHT SIDE DISCHARGE ARRANGEMENT.
 - PROVIDE WITH VIBRATION ISOLATION HANGERS.

ENERGY RECOVERY VENTILATOR												
TAG	SUPPLY CFM	SUPPLY ESP*	SUPPLY MOTOR HP	EXHAUST CFM	EXHAUST ESP*	EXHAUST MOTOR HP	WINTER LAT DB/MB	SUMMER LAT DB/MB	VOLTAGE	BASIS OF DESIGN		NOTES
										MANUFACTURER	MODEL	
ERV-1	700	0.5	0.75	700	0.625	0.75	44.7/40.7	71.8/66.8	208/230-3φ	RENEWAIRE	HEIXNH	1, 2, 3, 4, 5, 6
ERV-2	6400	-	-	6850	-	-	47.3/39.7	87.3/74.1	-	RENEWAIRE	(2)GA4XIN	3, 7

- NOTES:
- PROVIDE WITH DISCONNECT SWITCH FOR SINGLE POINT POWER CONNECTION.
 - PROVIDE LOW LEAK ISOLATION DAMPERS ON BOTH AIRSTREAMS.
 - PROVIDE UNIT WITH 2" THICK MERV 1 DISPOSABLE FILTERS.
 - SUPPLY BOTH SUPPLY AND EXHAUST FANS WITH ECM MOTORS FOR SPEED ADJUSTMENT. PROVIDE LOCAL POTENTIOMETER CONTROL OF FAN SPEED.
 - PROVIDE WITH BYPASS ECONOMIZER DAMPER.
 - PROVIDE A LOW VOLTAGE RELAY TO ACCEPT A STOP/START SIGNAL FROM EACH OF THE (2) ASSOCIATED FURNACES.
 - PROVIDE WITH DUCT FLANGES ON EACH AIRSTREAM FOR (2) STACKED UNITS.

GAS FIRED UNIT HEATER SCHEDULE													
TAG	FUEL TYPE	INPUT (MBH)	OUTPUT (MBH)	CFM	O.V.	EAT	LAT	HP	FLA	VOLTAGE	BASIS OF DESIGN		NOTES
											MANUFACTURER	MODEL	
UH-1	NATURAL GAS	400	384	6460	115	50	105	(2) @ 1.0	10.4	208V-3φ	STERLING	H400	1, 2, 3, 4, 5
UH-2	NATURAL GAS	300	285	4850	1100	50	105	(2) @ 1.0	10.4	208V-3φ	STERLING	H400	1, 2, 3, 4, 5
UH-3	NATURAL GAS	150	143	2660	430	65	114	(2) @ 0.5	5.9	208V-3φ	STERLING	HJ150	1, 2, 3, 4, 5, 6
UH-4	NATURAL GAS	100	96	1610	480	65	116	0.5	3.4	208V-3φ	STERLING	HJ100	1, 2, 3, 4, 5, 6

- NOTES:
- PROVIDE FULLY MODULATING GAS BURNER WITH 3:1 TURNDOWN
 - PROVIDE WITH REMOTE MOUNTED 2-STAGE DIGITAL WALL THERMOSTAT.
 - PROVIDE WITH WITH PVC CONCENTRIC VENT TERMINAL FOR ROOF INSTALLATION.
 - PROVIDE ACID NEUTRALIZING KIT FOR UNIT CONDENSATE DRAIN.
 - PROVIDE UNIT WITH VIBRATION ISOLATION HANGERS.
 - UNIT(S) TO BE ADDED UNDER ALTERNATE BID B-1.

BOILER SCHEDULE																		
TAG	MANUFACTURER	MODEL	LOCATION	SERVICE	BOILER TYPE	LIQUID HEATED	ENT TEMP (F)	LEAV TEMP (F)	FLOW (GPM)	PRESS DROP (FT HD)	MAX ALLOW WORKING PRESS PSIG	FUEL	CAPACITY		THERMAL EFF %	BURNER	VOLTAGE	NOTES
													INPUT (MBH)	OUTPUT (MBH)				
B-1	U.S. BOILER COMPANY	ASPN-344	MECH. ROOM	HEATING	SEALED COMBUSTION	WATER	90*	140*	20	0.8	80	NAT. GAS	344	374	95	FULL MODULATION	120V-1φ	1, 2, 3, 4, 5, 6

- NOTES:
- PROVIDE ASME RELIEF VALVE, SET BY FACTORY AT 30 PSI.
 - PROVIDE WITH FACTORY STANDARD "SAGE 2.3" SINGLE ZONE CONTROL SYSTEM.
 - PROVIDE WITH CONDENSATE TRAP, FLOW SWITCH AND ACID NEUTRALIZING KIT.
 - PROVIDE WITH PVC CONCENTRIC VENT TERMINAL FOR ROOF INSTALLATION.
 - PROVIDE WITH AUXILIARY LOW WATER CUT-OFF WITH MANUAL RESET.
 - ELIMINATE UNDER ALTERNATE BID B-1.

EXPANSION TANK SCHEDULE											
TAG	MODEL	LOCATION	DUTY	PRE-CHARGE AIR PRESSURE PSI	TANK VOLUME	ACCEPTANCE VOLUME GAL.	SIZE		SYSTEM CONN. SIZE	RELIEF VALVE SETTING	NOTES
							DIA.	HT.			
ET-1	D-40V	MECH. ROOM	HOT WATER	12	21.7	11.3	16 1/2"	2 1/2"	3/4"	30	1, 2, 3, 4

- NOTES:
- MODEL NUMBERS REFER TO EQUIPMENT AS MANUFACTURED BY BELL AND GOSSETT
 - PROVIDE ASME RATED TANK WITH CHARGING VALVE CONNECTION, TANK PURGE, AND DRAIN VALVE
 - PROVIDE PRESSURE RELIEF VALVE
 - ELIMINATE UNDER ALTERNATE BID B-1

PUMP SCHEDULE											
TAG	MODEL No.	SERVICE	LOCATION	TYPE	LIQUID PUMPED	GPM	HEAD FT H ₂ O	PUMP MOTOR SPEED	HP	VOLTAGE	REMARKS
P-2	ECOCIRC XL 36-45	RADIANT SLAB	MECH. ROOM	INLINE	HOT WATER	10	15	1750 RPM	1/6	120V-1φ	1, 2, 3, 4

- NOTES:
- MODEL NUMBERS REFER TO EQUIPMENT AS MANUFACTURED BY BELL AND GOSSETT
 - PROVIDE PUMP WITH VIBRATION ISOLATION HANGERS
 - PROVIDE WITH ECM MOTOR WITH MANUAL SPEED ADJUSTMENT POTENTIOMETER.
 - ELIMINATE UNDER ALTERNATE BID B-1

AIR COOLED CONDENSING UNIT SCHEDULE (GAS FURNACES)									
TAG	CAPACITY (MBH)	STAGES OF UNLOADING	OA TEMP.	MIN. S.E.E.R.	VOLTAGE	BASIS OF DESIGN		NOTES	
						MANUFACTURER	MODEL		
CU-1	47.5	MODULATING	45	21	208/230-1φ	LENNOX	XG25-048	1	
CU-2	35.8	MODULATING	45	23	208/230-1φ	LENNOX	XG25-036	2	

- NOTES:
- CU-1 TO BE PAIRED WITH FURNACE F-1 AND COOLING COIL CC-1.
 - CU-2 TO BE PAIRED WITH FURNACE F-2 AND COOLING COIL CC-2.

DUCTLESS SPLIT SYSTEM CONDENSING UNIT SCHEDULE											
TAG	MANUFACTURER	MODEL No.	STYLE	REFRIG. TYPE	COOLING CAPACITY		HEATING CAPACITY @17°F A.M.B.	MCA	MOP	VOLTAGE	NOTES
					TOTAL MBH	SENSIBLE MBH					
CUHP-1	MITSUBISHI/TRANE	MUZ-FH06NAH	PAD MOUNTED	R-410A	6.0	5.9	5.9	1.0	15	208/230V-1φ	1, 3
CUHP-2	MITSUBISHI/TRANE	MUZ-FH06NAH	PAD MOUNTED	R-410A	6.0	5.9	5.9	1.0	15	208/230V-1φ	2, 3

- NOTES:
- UNIT TO BE PAIRED WITH EVAPORATOR UNIT EVPH-1.
 - UNIT TO BE PAIRED WITH EVAPORATOR UNIT EVPH-2.
 - PROVIDE UNIT WITH HYPER HEAT OPTION FOR OPERATION DOWN TO -13°F.

REGISTER, DIFFUSER, & GRILLE SCHEDULE											
ITEM NO.	TYPE	NECK SIZE	MODULE SIZE	CFM	BLOW	BASIS OF DESIGN		NOTES			
						MANUFACTURER	MODEL				
D-1	SUPPLY	8"φ	12"x12"	175-220	4-WAY	TITUS	TDV-AA	1			
D-2	SUPPLY	6"φ	6"x6"	55-70	1-WAY	TITUS	TDV-AA	1			
D-3	SUPPLY	8"φ	9"x9"	70-125	4-WAY	TITUS	TDV-AA	1			
D-4	SUPPLY	6"φ	6"x6"	25-60	2-WAY	TITUS	TDV-AA	1			
D-5	SUPPLY	6"φ	9"x9"	70-100	2-WAY	TITUS	TDV-AA	1			
RS-1	RETURN	-	8"x8"	160-200	-	TITUS	350RL				
RS-2	RETURN	-	20"x20"	800	-	TITUS	350RL				
RS-3	RETURN	-	6"x6"	60	-	TITUS	350RL				
EG-1	EXHAUST	-	10"x10"	250	-	TITUS	350RL				
EG-2	EXHAUST	-	6"x6"	25-100	-	TITUS	350RL				

- NOTES:
- ALL DIFFUSERS SHALL BE 24x24 LAY-IN.

GRAVITY VENTILATOR SCHEDULE									
TAG	DUTY	AIRFLOW (CFM)	VELOCITY (FPM)	FREE AREA (SQ. FT.)	SIZE	SERVICE	MANUFACTURER	MODEL	NOTES

- NOTES:
- PROVIDE WITH BIRD SCREEN.
 - PROVIDE WITH 12" HIGH ROOF CURB.
 - PROVIDE WITH GRAVITY OPERATED BACKDRAFT DAMPER

LOUVER SCHEDULE											
TAG	TYPE	CFM	FFM	SIZE	BASIS OF DESIGN		NOTES				
					MANUFACTURER	MODEL					
L-1	INTAKE	6600	680	48"x56"	GREENHECK	ESD-603	1, 2				
L-2	INTAKE	6400	710	48"x56"	GREENHECK	ESD-603	1, 2				
L-2	INTAKE	700	510	24"x16"	GREENHECK	ESD-603	1				

- NOTES:
- PROVIDE LOUVER WITH FLANGED FRAME, ALUMINUM INSECT SCREEN, AND KYNAR 500 FINISH.
 - PROVIDE LOUVER WITH LOW LEAK, FALL CLOSED, 2-POSITION DAMPER WITH 120V ACTUATOR AND AUX. CONTACTS FOR SIGNAL INPUT FROM VFD.

AIR SEPARATOR SCHEDULE									
TAG	MODEL	LOCATION	SERVICE	FLUID	FLOW RATE (GPM)	HPD (FT HD)	VENT CONNECTION SIZE	NOTES	
									AS-1

- NOTES:
- MODEL NUMBERS REFER TO EQUIPMENT AS MANUFACTURED BY BELL AND GOSSETT
 - PROVIDE WITH HIGH CAPACITY AIR VENT.
 - PROVIDE WITH SYSTEM AUTOMATIC FILL VALVE.
 - ELIMINATE UNDER ALTERNATE BID B-1.

DUCT HEATING COIL SCHEDULE																
ITEM NO.	COIL TYPE	CFM	DUCT SIZE	ROWS	TOTAL MBH	EAT	LAT	A.P.D.*	GPM	ENT	LMT	W.P.D.*	BASIS OF DESIGN		PIPING RUN OUTS	NOTE
													MANUFACTURER	MODEL		
HC-1	HOT WATER	6400	42x42	1	164.8	43.7	70.0	0.12	17.02	140	120	0.66	TRANE	5N1	2"	1, 2

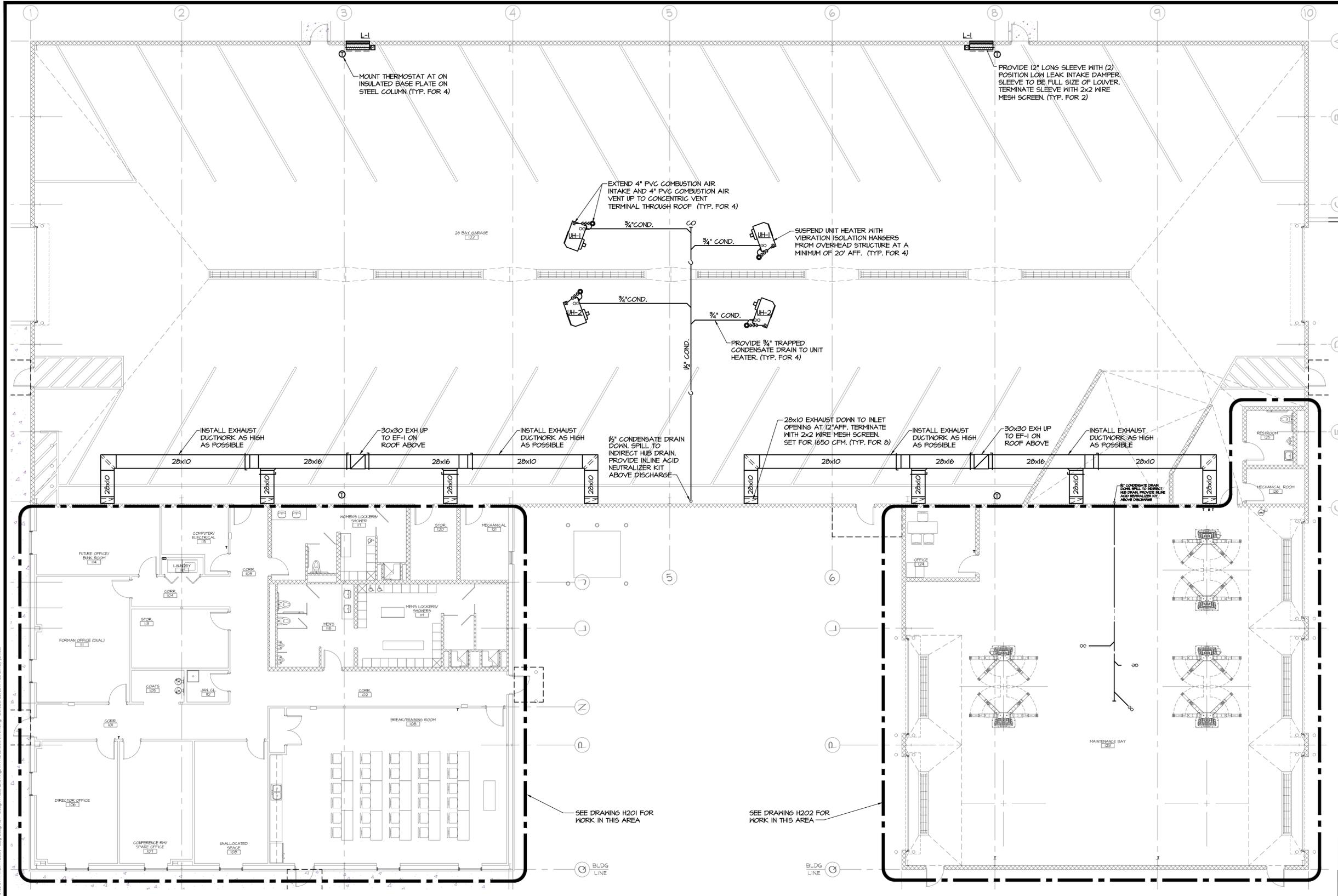
- NOTES:
- COIL TO BE FULLY GASED WITH COMPANION FLANGES FOR MOUNTING IN DUCTWORK
 - ELIMINATE UNDER ALTERNATE BID B-1

GENERAL NOTES

- CONTRACTOR SHALL PROVIDE ALL LABOR AND MATERIALS REQUIRED TO FABRICATE, INSTALL AND PLACE IN WORKING ORDER ALL SYSTEMS SHOWN.
- DRAWINGS INDICATE THE GENERAL LOCATION AND ARRANGEMENT OF THE CONSTRUCTION. SO FAR AS PRACTICAL, INSTALL WORK AS INDICATED.
- CONTRACTOR SHALL THOROUGHLY COORDINATE AND SCHEDULE CONSTRUCTION WITH THE GENERAL CONTRACTOR AND ALL OTHER PROJECT CONTRACTORS PRIOR TO FABRICATION AND INSTALLATION OF SYSTEMS. CONTRACTOR SHALL, AT NO COST TO THE OWNER, RELOCATE INSTALLED ITEMS WHERE FAILURE TO COORDINATE HAS OCCURRED.
- UNLESS ITEMS OF MATERIAL, EQUIPMENT OR WORK ARE SPECIFICALLY NOTED TO BE PROVIDED OR FURNISHED BY OTHERS, THEY SHALL BE PROVIDED BY THIS CONTRACTOR.
- CONTRACTOR SHALL FABRICATE AND INSTALL ALL HVAC SYSTEMS IN STRICT ACCORDANCE WITH THE 2015 INTERNATIONAL MECHANICAL CODE (IMC 2015) AND ALL OTHER APPLICABLE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS, CERTIFICATES AND AGENCY APPROVALS (NOTE: PERMIT FEES WILL BE NEEDED). PROVIDE COPIES OF ALL REQUIRED CERTIFICATIONS AND APPROVALS TO THE OWNER.
- CONTRACTOR SHALL PROVIDE COMPLETE AND OPERATIONAL SYSTEMS AS SHOWN AND INDICATED. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE AND PROFESSIONAL MANNER CONSISTENT WITH ALL APPLICABLE INDUSTRY STANDARDS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING, WITHOUT ADDITIONAL CHARGE, ANY CONSTRUCTION OF OTHER TRADES DAMAGED BY HIM DURING THE COURSE OF THIS CONSTRUCTION.
- THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL MAJOR MANUFACTURED ITEMS REQUIRED ON THIS PROJECT. REFER TO DIVISION 1 SPECIFICATIONS FOR MINIMUM NUMBER OF COPIES TO BE SUBMITTED OR FOR ELECTRONIC SUBMISSION PROCEDURES. APPROVAL OF SHOP DRAWINGS SHALL ONLY BE CONSTRUED TO APPLY TO GENERAL LAYOUT AND CONFORMANCE TO THE DESIGN CONCEPT OF THE PROJECT. THE RESPONSIBILITY FOR ANY DEVIATION FROM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, IN PARTICULAR DEVIATIONS THAT IMPACT THE WORK OF OTHER TRADES, REMAINS WITH THE CONTRACTOR.
- AT THE COMPLETION OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE COMPLETE AND ACCURATE "AS CONSTRUCTED" DOCUMENTATION FOR ALL SYSTEMS INSTALLED OR ALTERED UNDER THIS CONTRACT. PROVIDE COMPUTER DISK TO THE ARCHITECT CONTAINING AUTOCAD DRAWING FILE.
- CONTRACTOR SHALL PROVIDE ALL LABOR, DEVICES, WIRE, CONDUIT, ETC. REQUIRED FOR EQUIPMENT INSTALLATION OF SYSTEM CONTROLS UNLESS SPECIFICALLY INDICATED TO BE BY OTHERS. REQUIRED ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE NEC.
- INSTALL THERMOSTATS WITH TOP OF BOX AT 48" A.F.F. IN ACCORDANCE WITH ANSI A171-2004 SECTION 308.
- UNDER ALTERNATE BID B-1 MODIFY THE HEATING SYSTEM SERVING SERVICE BAY 123 AS FOLLOWS: ELIMINATE THE RADIANT FLOOR SLAB HEATING SYSTEM INCLUDING ELIMINATION OF THE BOILER AND ANCILLARY BOILER EQUIPMENT, ALL HEATING HOT WATER DISTRIBUTION PIPING INCLUDING PUMPS AND TRIM, THE RADIANT FLOOR PANELS, AND ALL ASSOCIATED SYSTEM CONTROLS. PROVIDE 3 GAS FIRED UNITS HEATERS (1) UH-3 AND (2) UH-4 ALONG WITH COMBUSTION VENTS, CONDENSATE DRAINS, AND ASSOCIATED OPERATING CONTROLS. VENTILATION SYSTEM AND CONTROLS SHALL REMAIN EXCEPT THE HOT WATER HEATING COIL HC-1 ALONG WITH ITS OPERATING CONTROLS SHALL BE ELIMINATED.

CONTROLS AND SEQUENCES OF OPERATION:

- THE GAS FURNACES WITH SPLIT SYSTEM AIR CONDITIONING SERVING THE OFFICE AREAS (F-1/CC-1/CU-1) AND TRAINING ROOM (F-2/CC-2/CU-2) SHALL HAVE TEMPERATURE AND VENTILATION CONTROL PROVIDED THROUGH PROGRAMMABLE WALL THERMOSTATS FURNISHED WITH THE EQUIPMENT.
- OCCUPIED/UNOCCUPIED SCHEDULES (FURNISHED BY THE OWNER) SHALL BE PROGRAMMED INTO THE RESPECTIVE THERMOSTAT FOR EACH OF THE SPACES. EACH THERMOSTAT SHALL HAVE AN OVERRIDE BUTTON THAT WILL ALLOW THE UNIT TO OPERATE ON OCCUPIED SETTINGS FOR A TWO HOUR (ADJ.) TIME PERIOD BEFORE REVERTING BACK TO UNOCCUPIED.
- EACH THERMOSTAT SHALL SEND A CONTACT CLOSURE SIGNAL, WHENEVER THE RESPECTIVE SYSTEM IS IN OCCUPIED MODE WHETHER SCHEDULED OR THROUGH THE OVERRIDE, TO THE CONTROL RELAY IN ERV-1 TO ENERGIZE ERV-1. COORDINATE CONTROL SIGNAL WIRING WITH VFD PROVIDED WITH THE ERV.
- UPON RECEIPT OF A CONTACT CLOSURE SIGNAL FROM EITHER OF THE FURNACES, BOTH THE OUTSIDE AIR AND EXHAUST AIR DAMPERS SHALL OPEN AND BOTH FANS SHALL ENERGIZE AND RUN CONTINUOUSLY UNTIL THE CONTACT CLOSE SIGNAL IS BROKEN.
- AT ANYTIME DURING OPERATION OF ERV-1 SHOULD THE OUTSIDE AIR ENTHALPY BECOME LOWER THAN THE EXHAUST AIR ENTHALPY, AS MEASURED BY THE ERV'S INTERNAL CONTROLS, THE EXHAUST AIR DAMPER SHALL CLOSE AND THE BYPASS DAMPER SHALL OPEN ALLOW THE EXHAUST AIR TO BYPASS THE TOTAL ENERGY EXCHANGER.
- DURING OCCUPIED OPERATION THE FURNACE FANS SHALL RUN CONTINUOUSLY. DURING UNOCCUPIED OPERATION THE FANS SHALL CYCLE WITH A CALL FOR EITHER HEATING OR COOLING. NOTE: WHEN THE FAN FOR FURNACE F-1/CC-1 IS ENERGIZED SPACE TEMPERATURE SHALL BE READ AT A REMOTE TEMPERATURE SENSOR LOCATED IN THE COMMON RETURN DUCT FOR THE SYSTEM.
- DURING EITHER OCCUPIED OR UNOCCUPIED MODE, SHOULD THE SPACE TEMPERATURE RISE ABOVE THE COOLING TEMPERATURE SETPOINT THE RESPECTIVE CONDENSING UNIT SHALL ENERGIZE ON ITS LOWEST SPEED AND RAMP UP TOWARDS ITS HIGHEST SPEED UNTIL THE SPACE TEMPERATURE IS RESTORED TO THE SETPOINT. DURING EITHER OCCUPIED OR UNOCCUPIED MODE, SHOULD THE SPACE TEMPERATURE FALL BELOW THE HEATING TEMPERATURE SETPOINT THE RESPECTIVE GAS FURNACE SHALL FIRE ON ITS LOWEST FIRING AND MODULATE TOWARDS HIGH FIRE UNTIL THE SPACE TEMPERATURE IS RESTORED TO THE SETPOINT.
- THE HEAT PUMPS SERVING OFFICE 124 (EVPH-1/CUHP-1) AND COMPUTER/E



MECHANICAL LEGEND

	SHUTOFF VALVE
	CIRCUIT SETTER
	PRESSURE REDUCING VALVE
	MODULATING CONTROL VALVE - 2 WAY
	MODULATING CONTROL VALVE - 3 WAY
	CHECK VALVE
	STRAINER W/ BLOWDOWN
	RELIEF VALVE
	AIR VENT - MANUAL
	AIR VENT - AUTOMATIC
	PRESSURE GAUGE W/ GAUGE COCK
	THERMOMETER
	PIPING FLEXIBLE CONNECTION
	UNION
	REDUCER
	PIPING UP
	PIPING DOWN
	TEE DOWN
	TEE UP
	45 - ELBOW
	CONTINUATION
	FLOW ARROW
	HWS
	HWR
	CONDENSATE
	THERMOSTAT
	DUCT SIZE
	DIRECTION OF FLOW
	DUCT SECTION, RETURN AIR
	DUCT SECTION, SUPPLY AIR
	VOLUME DAMPER
	TRANSITION
	TURNING VANES
	MOTOR OPERATED DAMPER
	ACCESS DOOR
	FIRE DAMPER W/ ACCESS DOOR
	FLEXIBLE CONNECTION
	SUPPLY AIR DIFFUSER
	RETURN AIR DIFFUSER
	FLEX DUCT
	NEW ITEM
	DIA
	SA
	RA
	EA
	OA
	CFM
	GC
	PC
	EC
	AFF
	EF

HVAC FLOOR PLAN
SCALE: 1/8"=1'-0"

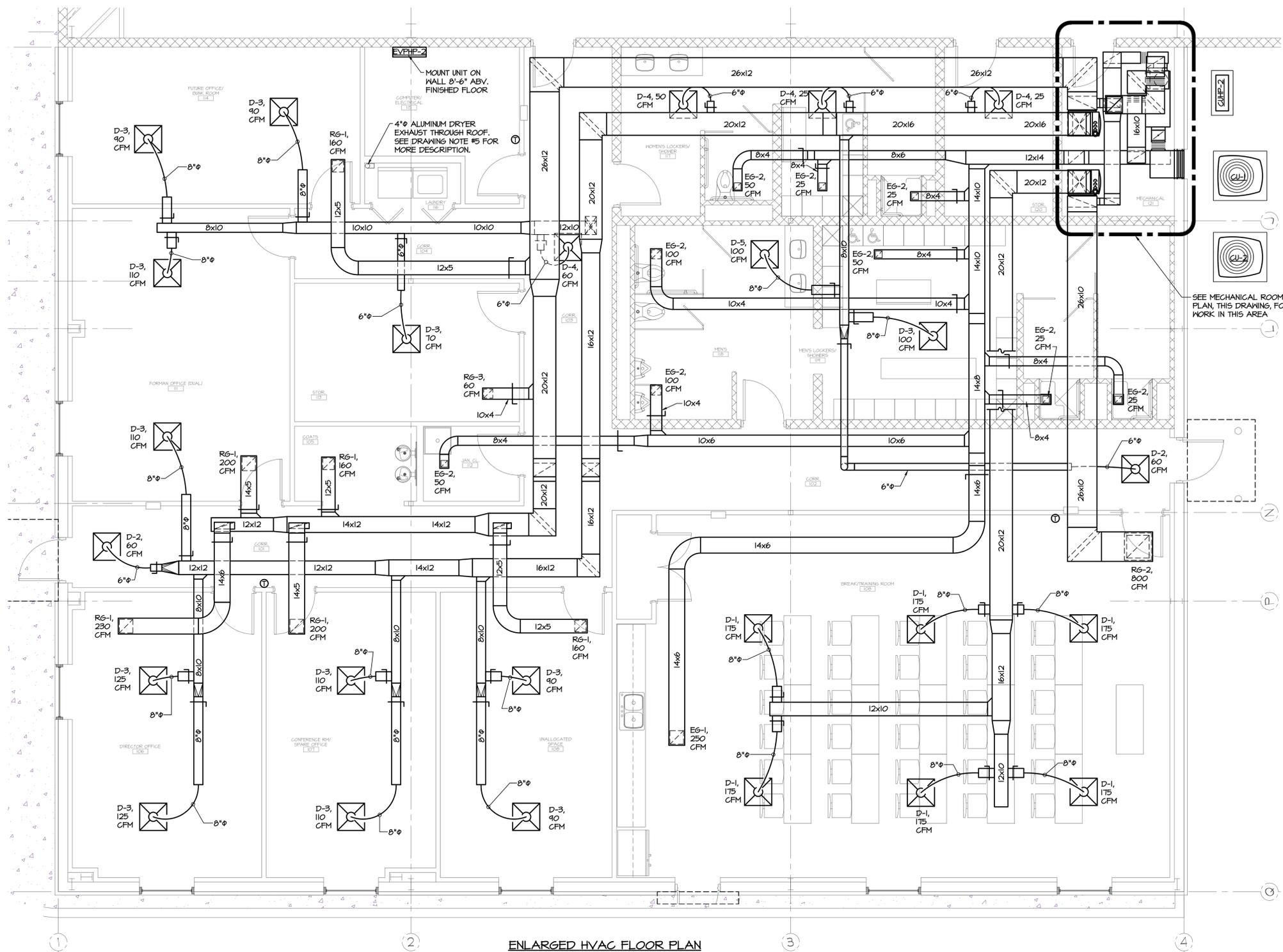
1 10/25/19		ISSUE FOR BID	JMB
NO.	DATE	REVISION	BY

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MUHLENBERG TOWNSHIP
PROPOSED PUBLIC WORKS BUILDING
HVAC FLOOR PLAN

MUHLENBERG TOWNSHIP		SITUATE IN BERKS COUNTY PENNSYLVANIA	
DRAWN BY DTB	CHECKED BY DTB	APPROVED BY TSU	CADD FILE NAME H101.dwg
DATE 08/23/19	SCALE AS NOTED	DRAWING NUMBER D-19-0153-0144-H101	

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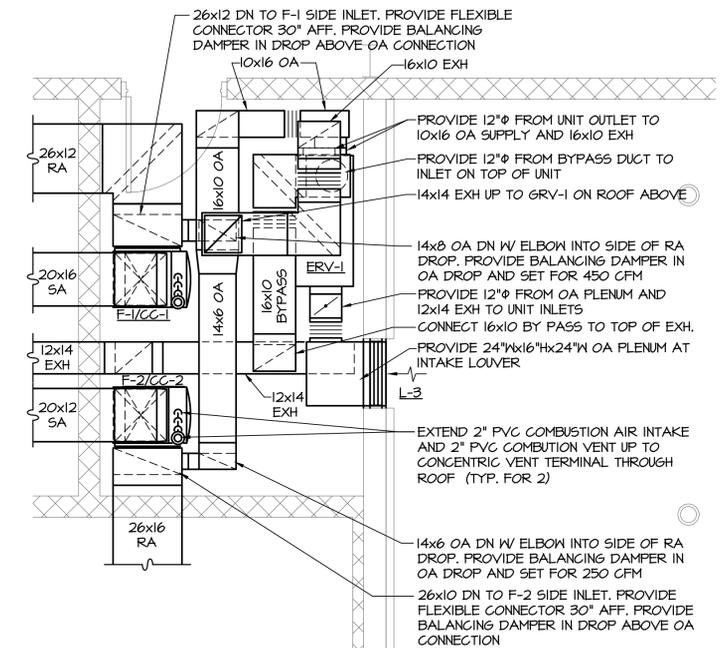


ENLARGED HVAC FLOOR PLAN

SCALE: 1/2"=1'-0"

NOTES:

1. SET OUTDOOR CONDENSING UNITS (CU-1, CU-2, & CUHP-2) ON 6" THICK REINFORCED CONCRETE PAD.
2. PROVIDE 3/4" TRAPPED CONDENSATE DRAIN FROM EVPHP-2 TO INDIRECT HUB DRAIN IN 24 BAY GARAGE. COORDINATE DRAIN LOCATION WITH PLUMBING CONTRACTOR.
3. PROVIDE 1/2" LIQUID AND 3/8" SUCTION REFRIGERANT LINES BETWEEN CUHP-2 AND EVPHP-2. INSTALL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. INSTALL LINES ABOVE DROP CEILING IN FUTURE OFFICE/BUNK ROOM 114. PROVIDE PIPE SLEEVES AND WATERTIGHT SEALS AT EXTERIOR WALL.
4. MOUNT THERMOSTATS AT TOP ELEVATION OF 48" AFF IN ACCORDANCE WITH ADA REQUIREMENTS.
5. TERMINATE DRYER EXHAUST DISCHARGE WITH GOOSENECK FITTING A MINIMUM OF 2 FT. ABOVE ROOF. PROVIDE FLASHING ASSEMBLY AT ROOF PENETRATION TO ASSURE WATER TIGHTNESS. LOCATE INLET AT 18" AFF. INLET SHALL CONSIST OF A 4x4x4 TEE WITH SIDE INLET SUITABLE FOR CONNECTION OF FLEXIBLE EXHAUST HOSE FROM DRYER. BOTTOM OF TEE TO HAVE REMOVABLE CLEANOUT COVER.



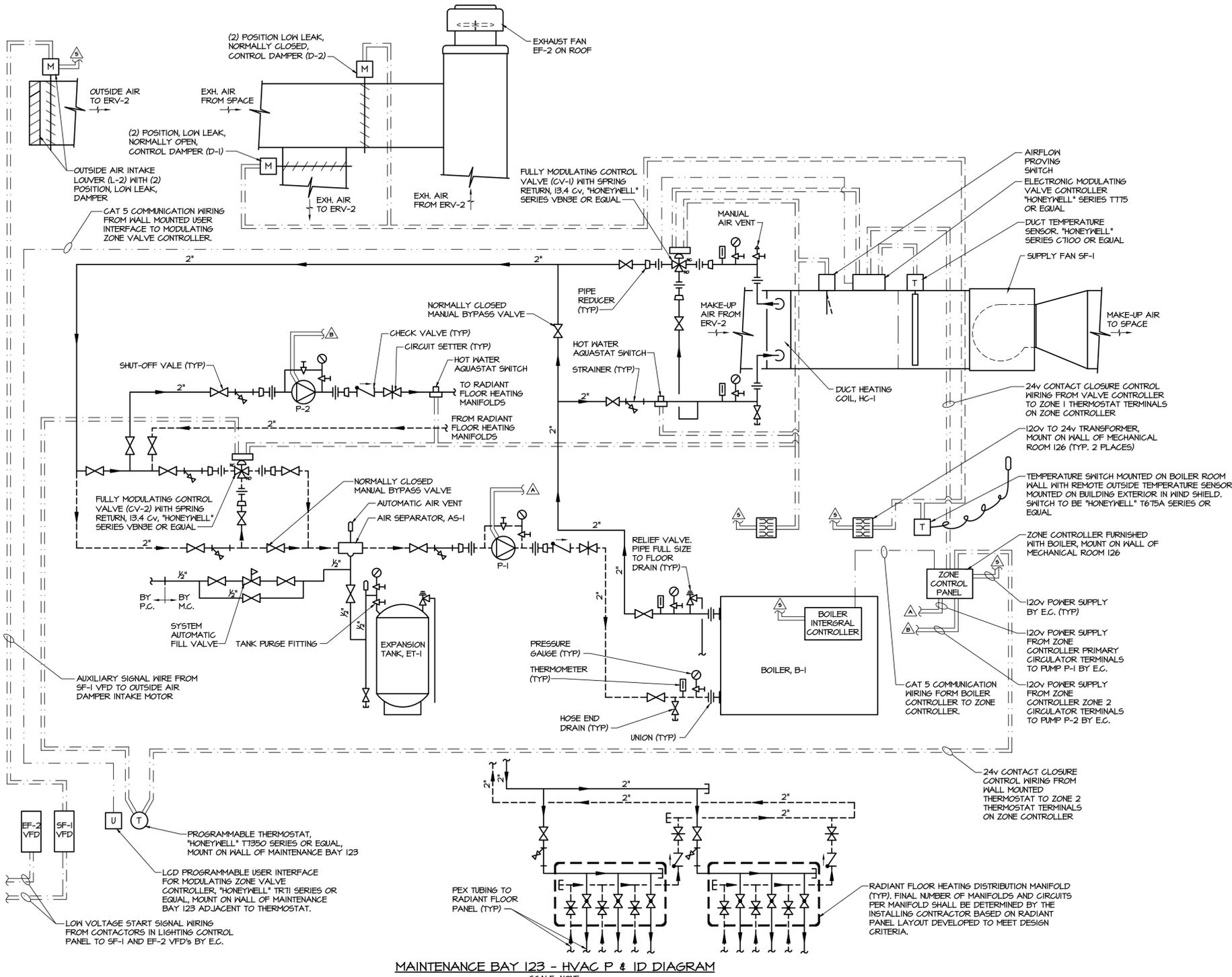
MECHANICAL ROOM PLAN

SCALE: 3/8"=1'-0"

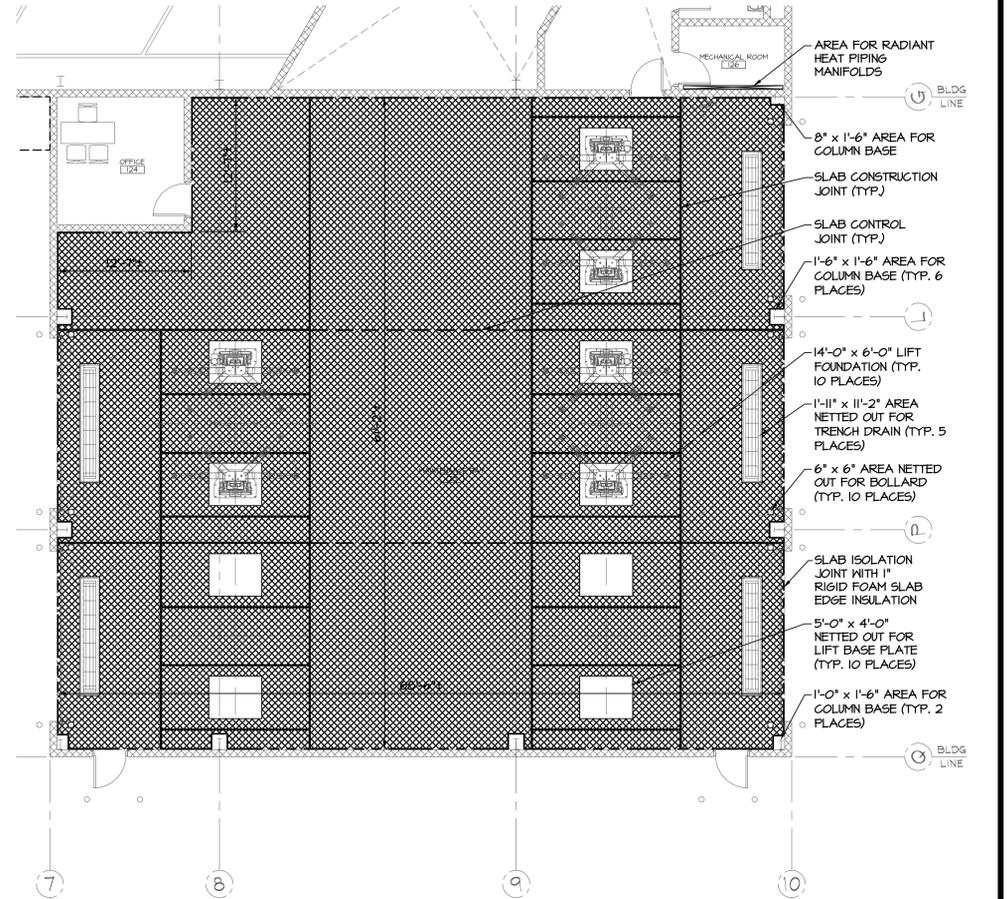
NOTES:

1. SET INDOOR FURNACES ON 4" HIGH CONCRETE PADS.
2. SUSPEND ERV-1 FROM OVERHEAD STRUCTURE WITH VIBRATION ISOLATION HANGERS.
3. PROVIDE 1" TRAPPED CONDENSATE DRAIN FROM EACH COOLING COIL TO NEAREST FLOOR DRAIN. COORDINATE DRAIN LOCATIONS WITH PLUMBING CONTRACTOR.
4. PROVIDE CONDENSATE DRAIN FROM EACH FURNACE AND COMBUSTION VENT TO NEAREST FLOOR DRAIN. PROVIDE WITH MANUFACTURER'S ACID NEUTRALIZER AND INSTALL PER MANUFACTURER'S INSTRUCTIONS. COORDINATE DRAIN LOCATIONS WITH PLUMBING CONTRACTOR.
5. PROVIDE 3/8" LIQUID AND 3/8" SUCTION REFRIGERANT LINES BETWEEN CU-1 AND CC-1. INSTALL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. INSTALL LINES AT A MINIMUM OF 7'-0" WITH THE MECHANICAL ROOM. PROVIDE PIPE SLEEVES AND WATERTIGHT SEALS AT EXTERIOR WALL.
6. PROVIDE 3/8" LIQUID AND 3/8" SUCTION REFRIGERANT LINES BETWEEN CU-2 AND CC-2. INSTALL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. INSTALL LINES AT A MINIMUM OF 7'-0" WITH THE MECHANICAL ROOM. PROVIDE PIPE SLEEVES AND WATERTIGHT SEALS AT EXTERIOR WALL.

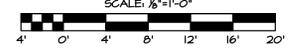
1	10/25/19	ISSUE FOR BID	JMB
NO.	DATE	REVISION	BY
<p>SYSTEMS DESIGN ENGINEERING, INC</p> <p>1032 JAMES DR. LEESPORT, PA 19533 ROYERTOWN, PA 610-369-1310 PHONE: 610-916-8500 FAX: 610-916-8501 SCHUYLKILL HAVEN, PA 570-385-5549</p>			
<p>MUHLENBERG TOWNSHIP PROPOSED PUBLIC WORKS BUILDING ENLARGED HVAC FLOOR PLAN OFFICE AREA</p>			
<p>MUHLENBERG TOWNSHIP STATE IN BERKS COUNTY PENNSYLVANIA</p>			
DRAWN BY DTB	CHECKED DTB	APPROVED TSU	CADD FILE NAME H201.dwg
DATE 08/23/19	SCALE AS NOTED	DRAWING NUMBER D-19-0153-0144-H201	



MAINTENANCE BAY 123 - HVAC P & ID DIAGRAM
SCALE: NONE



RADIANT HEAT SLAB PANEL PLAN



NOTES:

- HATCHED FLOOR SLAB AREA TO BE PANELIZED AS A RADIANT HEAT SLAB. THE HEATING OUTPUT OF THE SLAB SHALL BE 125 MBH.
- 2" RIGID FOAM INSULATION SHALL BE PROVIDED BELOW THE SLAB, BELOW THE LIFT FOUNDATIONS, AND AROUND THE SIDES OF THE LIFT FOUNDATIONS.
- THE FLOOR SLAB IS 1 1/2 INCHES THICK AND THE REINFORCING IS EMBEDDED AT 3 INCHES BELOW THE TOP OF THE SLAB. THE LIFT FOUNDATIONS ARE 12 INCHES THICK AND THE REINFORCING IS EMBEDDED AT 3 INCHES BELOW THE TOP OF THE FOUNDATION.
- THE RADIANT FLOOR PANELS SHALL BE CONSTRUCTED UTILIZING 1/2 INCH OR 3/8 INCH PEX TUBING WITH OXYGEN BARRIER EMBEDDED IN THE FLOOR AND OR THE LIFT FOUNDATIONS AT THE UNDERSIDE OF THE REINFORCING. TUBING SHALL BE SUPPORTED BY HIRE TIES TO THE REINFORCING. SPACING FOR THE HEAT SLAB TUBING SHALL BE DETERMINED BY THE CONTRACTOR BASED ON THE PANELIZED FLOOR AREA AND THE DESIRED MBH OUTPUT.
- THE NUMBER OF RADIANT PANELS, THE TUBING SIZE AND LAYOUT, AND THE MANIFOLD CONFIGURATION SHALL BE DETERMINED BY THE INSTALLING CONTRACTOR. LAYOUT SHALL BE CONFIGURED SUCH THAT THE HEATING WATER FLOW THROUGH ANY INDIVIDUAL LOOP DOES NOT EXCEED 1.0 GPM AND THE PRESSURE DROP THROUGH ANY SINGLE CIRCUIT DOES NOT EXCEED 10 FT. HEAD.
- A LAYOUT DRAWING INDICATING ALL TUBING, FITTINGS, SUPPORTS, AND INSTALLATION DETAILS SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE THE CONTRACTOR CAN RELEASE ANY MATERIAL TO THE JOB SITE AND BEGIN THE INSTALLATION.
- THE INSTALLING CONTRACTOR SHALL FOLLOW THE RADIANT TUBING MANUFACTURER'S WRITTEN GUIDELINES FOR THE DESIGN AND INSTALLATION OF THE RADIANT FLOOR PANELS PAYING PARTICULAR ATTENTION TO THE DETAILS FOR INSTALLATION THROUGH CONSTRUCTION AND CONTROL JOINTS.
- THE INSTALLING CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE INSTALLATION WITH THE GENERAL CONTRACTOR WITH RESPECT TO LAYOUT, INSTALLATION DETAILS, AND INSTALLATION SCHEDULES.

NOTES:

- UNLESS OTHERWISE INDICATED TO BE PROVIDED BY THE E.C. ALL LOW VOLTAGE CONTROL, SIGNAL AND COMMUNICATION WIRING SHALL BE INSTALLED BY THIS CONTRACTOR IN ACCORDANCE WITH THE 2014 NATIONAL ELECTRIC CODE (2014 NEC).
- POWER WIRING TO ALL CONTROL DEVICES SHALL BE PROVIDED BY THE E.C. COORDINATE POWER REQUIREMENTS LOCATIONS OF ALL DEVICES WITH THE E.C.
- POWER WIRING TO SF-1 AND EF-2 VFD'S AND POWER WIRING FROM THE VFD TO THE FAN SHALL BE BY THE E.C.

SEQUENCE OF OPERATION:

- OCCUPIED/UNOCCUPIED TEMPERATURE CONTROL FOR MAINTENANCE BAY 123 HEATING SHALL BE CONTROLLED THROUGH THE PROGRAMMABLE WALL THERMOSTAT. OCCUPIED/UNOCCUPIED TEMPERATURE CONTROL SHALL INCLUDE OCCUPANCY SCHEDULE PROGRAMMING WITH MANUAL OVERRIDE AND TEMPERATURE SETPOINT PROGRAMMING.
- OCCUPIED/UNOCCUPIED VENTILATION CONTROL FOR MAINTENANCE BAY 123 HEATING SHALL BE CONTROLLED THROUGH THE LIGHTING CONTROL PANEL. OCCUPIED/UNOCCUPIED VENTILATION CONTROL SHALL INCLUDE OCCUPANCY SCHEDULE PROGRAMMING WITH MANUAL OVERRIDE, DISCHARGE TEMPERATURE CONTROL OF VENTILATION AIR SHALL BE PROGRAMMED THROUGH THE WALL MOUNTED USER INTERFACE FOR THE MODULATING HC-1 VALVE CONTROLLER.MOD
- OCCUPANCY SCHEDULE FOR MAINTENANCE BAY 123 SHALL BE COORDINATED WITH THE OWNER. SCHEDULES FOR BOTH HEATING AND VENTILATION SHALL BE PROGRAMMED TO BE IDENTICAL. COORDINATE PROGRAMMING OF THE VENTILATION CONTROLS WITH THE E.C.
- THE INTEGRAL BOILER CONTROLLER AND ZONE CONTROLLER SHALL OPERATE THE HEATING SYSTEM AS FOLLOWS REGARDLESS OF OCCUPANCY MODE. THE BOILER SHALL OPERATE AS A COLD START DEVICE.
 - HEATING ZONE 1 SHALL BE HEATING COIL HC-1 TEMPERING THE MAKE-UP AIR. (SEE BELOW FOR MAKE-UP AIR TEMPERATURE CONTROL). IF THE MAKE-UP AIR SYSTEM REQUIRES HEAT A CALL FOR HEAT SHALL BE SIGNALLED ON ZONE 1 IN THE ZONE CONTROL PANEL.
 - HEATING ZONE 2 SHALL BE THE RADIANT HEAT SLAB PROVIDING SPACE TEMPERATURE CONTROL. (SEE BELOW FOR SPACE TEMPERATURE CONTROL). IF THE SPACE REQUIRES HEAT A CALL FOR HEAT SHALL BE SIGNALLED ON ZONE 2 IN THE ZONE CONTROL PANEL.
 - THE ZONE CONTROL PANEL SHALL ENERGIZE THE PRIMARY CIRCULATION PUMP (P-1) AND THE PUMP SHALL RUN CONTINUOUSLY ANY TIME ZONE 1 OR ZONE 2 HAS A CALL FOR HEAT.
 - THE ZONE CONTROL PANEL SHALL ENERGIZE THE RADIANT SLAB CIRCULATION PUMP (P-2) AND THE PUMP SHALL RUN CONTINUOUSLY ANY TIME ZONE 2 HAS A CALL FOR HEAT.
 - ON A CALL FOR HEAT ON ONLY ZONE 1 OR SIMULTANEOUSLY ON ZONE 1 & 2, THE BOILER SHALL BE FIRED THROUGH THE INTEGRAL CONTROLLER TO MAINTAIN A HOT WATER SUPPLY TEMPERATURE OF 140°F (ADJ.).
 - ON A CALL FOR HEAT ON ONLY ZONE 2, THE BOILER SHALL BE FIRED THROUGH THE INTEGRAL CONTROLLER TO MAINTAIN A HOT WATER SUPPLY TEMPERATURE OF 110°F (ADJ.).

THE SPACE VENTILATION SHALL BE CONTROLLED AS FOLLOWS:

- WHEN THE SPACE GOES INTO OCCUPIED MODE (THROUGH SCHEDULE OR OVERRIDE) AT THE LIGHT CONTROL PANEL A CONTACT CLOSURE SIGNAL SHALL BE SENT TO THE VFD'S FOR SUPPLY FAN (SF-1) AND EXHAUST FAN (EF-2) TO START THE FANS. THE FANS SHALL START AT LOW SPEED, RAMP UP TO FULL SPEED AND RUN CONTINUOUSLY UNTIL THE SPACE GOES INTO UNOCCUPIED MODE AND CONTACT CLOSURE SIGNAL IS BROKEN.
- AN AUXILIARY CONTACT CLOSURE SIGNAL SHALL BE SET FROM THE SF-1 VFD TO OUTSIDE AIR INTAKE LOUVER (L-2) MOTOR OPERATED DAMPER TO OPEN THE DAMPER SHALL REMAIN OPEN UNTIL THE SPACE GOES INTO UNOCCUPIED MODE AND CONTACT CLOSURE SIGNAL IS BROKEN.
- THE EXHAUST CONTROL DAMPERS SHALL BE IN THEIR NORMAL POSITION ALLOWING THE EXHAUST AIR TO PASS THROUGH ERV-2 TO PRE-CONDITION THE OUTSIDE AIR THROUGH A TOTAL HEAT EXCHANGE. SHOULD THE OUTSIDE AIR TEMPERATURE RISE ABOVE 70°F (ADJ.), AS SENSED BY THE OUTSIDE AIR TEMPERATURE SWITCH, THE DAMPERS SHALL OPEN OR CLOSE TO THE OPPOSITE POSITION FROM NORMAL TO ALLOW THE EXHAUST AIR TO GO DIRECTLY TO THE EXHAUST FAN (EF-2) WITHOUT PASSING THROUGH ERV-2. THE DAMPERS SHALL REMAIN IN THIS POSITION UNTIL THE OUTSIDE AIR TEMPERATURE DROPS BELOW THE SETPOINT.
- IN OCCUPIED MODE SHOULD THE MAKE-UP AIR SUPPLY TEMPERATURE DROP BELOW 70°F (ADJ.) AS SENSED AT THE MAKE-UP AIR DUCT TEMPERATURE SENSOR A CALL FOR HEAT SHALL BE SENT TO THE ZONE 1 TERMINAL IN THE BOILER ZONE CONTROLLER.
- ONCE THE SUPPLY WATER TEMPERATURE RISES ABOVE 120°F (ADJ.) AT THE HOT WATER AQUASTAT SWITCH AND AIRFLOW IS POSITIVELY PROVEN AT THE AIRFLOW PROVING SWITCH THE MODULATING TEMPERATURE CONTROL VALVE (CV-1) SHALL BE ENABLED.
- THE ELECTRONIC MAKE-UP AIR TEMPERATURE CONTROL VALVE (CV-1) SHALL MODULATE THE THREE WAY CONTROL VALVE (CV-1) OPEN TO THE HEATING COIL (HC-1) TO RESTORE THE MAKE-UP AIR TEMPERATURE TO THE SETPOINT.
- THE SPACE TEMPERATURE SHALL BE CONTROLLED AS FOLLOWS REGARDLESS OF OCCUPIED/UNOCCUPIED OPERATIONAL MODE.
 - SHOULD THE SPACE TEMPERATURE DROP BELOW THE SETPOINT AT THE PROGRAMMABLE WALL THERMOSTAT A CALL FOR HEAT SHALL BE SENT TO THE ZONE 2 TERMINAL IN THE BOILER ZONE CONTROLLER.
 - IF THE SUPPLY WATER TEMPERATURE IS EQUAL TO OR LESS THAN 110°F (ADJ.) AT THE HOT WATER AQUASTAT SWITCH THE MODULATING TEMPERATURE CONTROL VALVE (CV-2) SHALL BE ENABLED.
 - THE THERMOSTAT SHALL MODULATE THE THREE WAY CONTROL VALVE (CV-2) OPEN TO THE RADIANT FLOOR HEATING DISTRIBUTION MANIFOLDS TO RESTORE THE SPACE TEMPERATURE TO THE SETPOINT.

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MUHLLENBERG TOWNSHIP
PROPOSED PUBLIC WORKS BUILDING
HVAC HOT WATER SYSTEM SCHEMATIC
& MAINTENANCE BAY RADIANT SLB PLAN

MUHLLENBERG TOWNSHIP
SITUATE IN
BERKS COUNTY PENNSYLVANIA

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PLUMBING FIXTURE SCHEDULE

SYMBOL	FIXTURE	CM	HM	SAN	VENT	MOUNTING	MANUFACTURER	MODEL	REMARKS
WC-1	WATER CLOSET (ADA)	1"	-	4"	-	WALL	AMERICAN STANDARD	225T.101	PROVIDE WITH SLOAN III-1.28 MANUAL FLUSH VALVE WITH HANDLE TO OPEN SIDE OF TOILET ROOM PER ADA REQUIREMENTS AND AMERICAN STANDARD 5905.100 SEAT
WC-2	WATER CLOSET	1"	-	4"	-	WALL	AMERICAN STANDARD	225T.101	PROVIDE WITH SLOAN III-1.28 MANUAL FLUSH VALVE AND AMERICAN STANDARD 5905.100 SEAT
UR-1	URINAL (ADA)	1/2"	-	2"	1-1/2"	WALL	AMERICAN STANDARD	6540.001EG	PROVIDE WITH SLOAN 186 SMO-O.125-OR BATTERY FLUSH VALVE AND WALL HANGER BRACKETS
UR-2	URINAL (ADA)	1/2"	-	2"	1-1/2"	WALL	AMERICAN STANDARD	6540.001EG	PROVIDE WITH SLOAN 186 SMO-O.125-OR BATTERY FLUSH VALVE AND WALL HANGER BRACKETS
LAV-1	LAVATORY	1/2"	1/2"	1-1/4"	1-1/4"	COUNTER	AMERICAN STANDARD	0419.444EG	PROV. W/ AMERICAN STD. 6114.115.002 FAUCET, WATTS LFMMV BELOW DECK THERMOSTATIC MIXING VALVE, GRID STRAINER WITH OFF-SET TAILPIECE, ANGLE STOPS, WALL HANGER BRACKETS AND 'TRUBRO' PRE-CUT LAV SHIELD
LAV-2	LAVATORY	1/2"	1/2"	1-1/4"	1-1/4"	WALL	AMERICAN STANDARD	0355.012	PROVIDE WITH AMERICAN STANDARD '500.170 FAUCET, GRID STRAINER WITH OFF-SET TAILPIECE, ANGLE STOPS, WALL HANGER BRACKETS AND 'TRUBRO' PRE-CUT LAV SHIELD.
MSB-1	MOP SERVICE BASIN	1/2"	1/2"	3"	2"	FLOOR	FIAT	MSB2424	PROVIDE WITH GRID STRAINER, MODEL 804-CG MOP HANGER, MODEL 830-AA FAUCET WITH INTEGRAL STOPS, VACUUM BREAKER, PAIL HOOK AND THREADED HOSE END FITTING. FOR USE WITH MH-2
SH-1	SHOWER TRIM	1/2"	1/2"	2"	1-1/2"	WALL	AMERICAN STANDARD	TU66256.213	PROVIDE WITH ZURN ZN415B7-Q-4 DRAIN WITH ADJUSTABLE CHROME PLATED TOP AND SEDIMENT BUCKET. PROVIDE FREEDOM SHOWERS MODEL AFFSLR-280225 SHOWER SEAT.
SK-1	SINK	1/2"	1/2"	1-1/2"	1-1/2"	COUNTER	ELKAY	LRADG331465PD	PROVIDE WITH ELKAY FAUCET MODEL LK5000, ELKAY MODEL, LKDS49 DRAIN FITTING, CHROME PLATED P-TRAP W/ OFFSET TAILPIECE, AND CHROME PLATED QUARTER TURN ANGLE STOPS
EW-1	EYE WASH	1/2"	-	-	-	WALL	ACORN	50410	ADA COMPLIANT COMBINATION EMERGENCY EYE WASH SAFETY SHOWER WITH ANSI Z359.1-2014 THERMOSTATIC MIXING VALVE
DF-1	DRINKING FOUNTAIN	1/2"	-	1-1/2"	1-1/4"	WALL	ELKAY	EDFPB17C	PROVIDE WITH WALL CARRIER

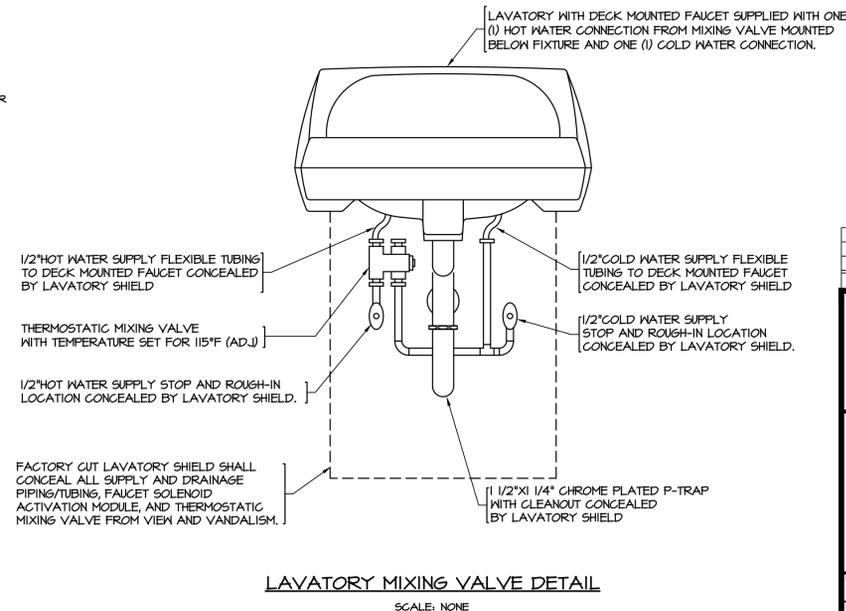
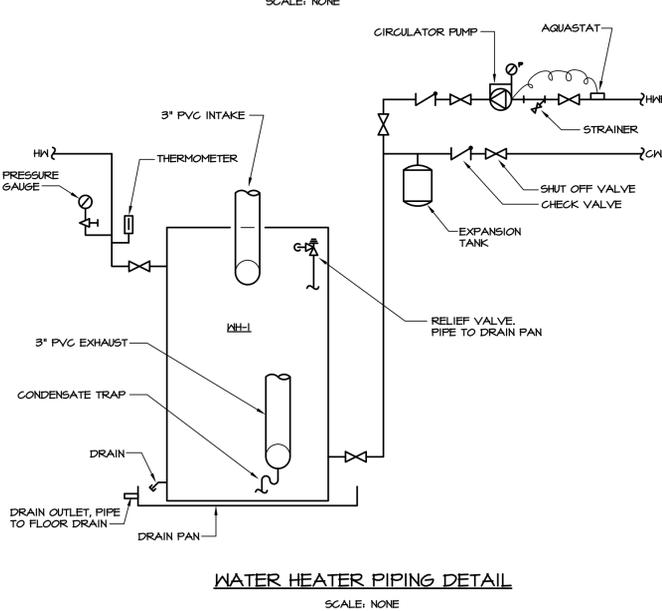
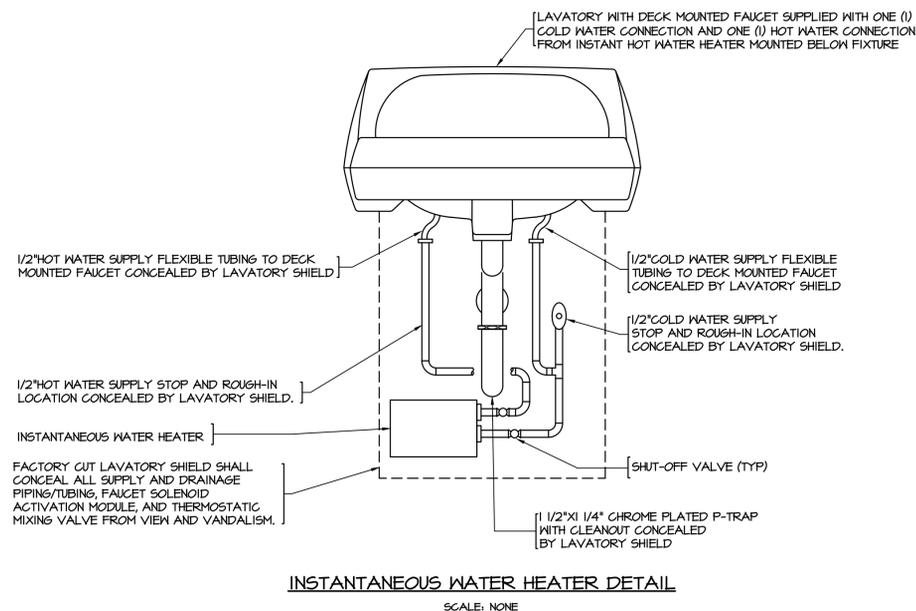
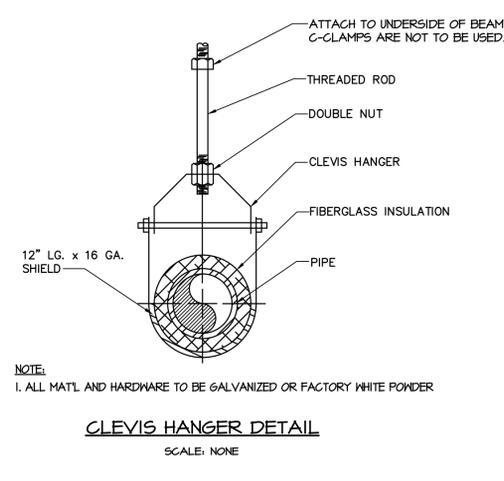
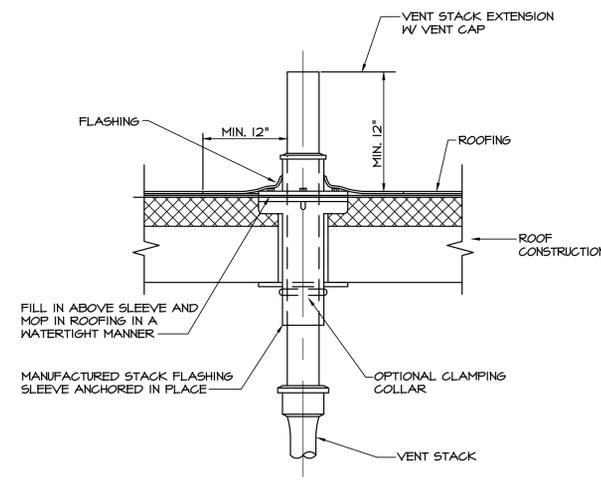
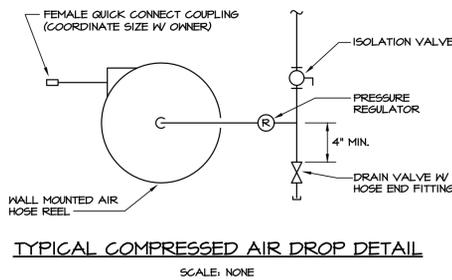
NOTE: ALL FIXTURES FURNISHED BY THE CONTRACTOR.

WATER HEATER SCHEDULE

ITEM NO.	TYPE / FUEL	TANK CAPACITY	INPUT	RECOVERY GPM @ °F	GAS VENT SIZE	VOLTAGE	BASIS OF DESIGN		NOTES
							MANUFACTURER	MODEL	
WH-1	NATURAL GAS	60 GALLONS	125,000	145 @ 100°F	(2) 3"	120-1φ	BRADFORD WHITE	EF-60T-125E-3N(A)	1, 2, 3, 4, 5
WH-2	ELECTRIC	INSTANTANEOUS	4.1 KM	-	-	208-1φ	CHRONOMITE	M-20L/208-MM	6
WH-3	ELECTRIC	INSTANTANEOUS	8.3 KM	N/A	N/A	208-1φ	CHRONOMITE	M-40EN/208	7

NOTES:

- PROVIDE WITH AMTROL MODEL ST-5C EXPANSION TANK.
- PROVIDE DRAIN PAN WITH 3/4" THREADED OUTLET FITTING. PAN TO HAVE MINIMUM DIAMETER EQUAL TO HEATER TANK DIAMETER +10" AND A MINIMUM DEPTH OF 3".
- PROVIDE WITH BELL AND GOSSETT ECOCIRC 14-16 SERIES, MODEL 6050B2004LF RECIRC. PUMP. 0.5 GPM AT 3 FT HD, 120V-1φ, 60 WATTS MAX. PROVIDE W/ AGS-1/2 PIPE MOUNTED AQUASTAT.
- PROVIDE WITH 3" PVC CONCENTRIC VENT TERMINATION KIT.
- PROVIDE ACID NEUTRALIZER FOR FLUE GAS CONDENSATE.
- FOR USE WITH FIXTURE LAV-2. CONCEAL WITH LAV SHIELD.
- FOR USE WITH EYE WASH, EW-1.



MISCELLANEOUS EQUIPMENT

ED-1: 2" FLOOR DRAIN. ZURN MODEL ZN-415B W/ ZURN MODEL Z1072-2 TRAP SEAL DEVICE.

ED-2: 4" FLOOR DRAIN. ZURN MODEL ZN-415B W/ ZURN MODEL Z1072-4 TRAP SEAL DEVICE.

IND-1: 2" INDIRECT WASTE DRAIN. ZURN MODEL ZN-415B W/ INDIRECT WASTE FUNNEL AND ZURN MODEL Z1072-2 TRAP SEAL DEVICE.

EQO: FLOOR CLEAN OUT (FULL LINE SIZE). ZURN MODEL ZN-1400.

WCO: WALL CLEAN OUT (FULL LINE SIZE). ZURN MODEL Z-1446 W/ BRONZE PLUG AND POLISHED S.S. COVER.

HB-1: 3/4" COLD WATER HOSE BIBB. WOODFORD MODEL 21-CP.

HB-2: 3/4" NON-FREEZE WALL HYDRANT. WOODFORD MODEL 6T.

HB-3: 1/2" HOT AND COLD WATER MIXING HOSE BIBB. WOODFORD MODEL 122C

IDM-1: TRENCH DRAIN MODULE. ZURN MODEL Z882-8201-EI-DGC W/ CLOSED END CAP AND CLASS 'C' DUCTILE IRON GRATE.

CB-1: 24x12 TRENCH DRAIN CATCH BASIN. ZURN MODEL Z887-12-U4-1A (Z882) DGC-4 W/ CLASS 'C' DUCTILE IRON GRATE, 4" NO-HUB BOTTOM OUTLET ADAPTER, ZURN Z882 INLET ADAPTERS AS REQUIRED AND LIFT OUT SEDIMENT BUCKET.

CB-2: 24x24 TRENCH DRAIN CATCH BASIN. ZURN MODEL Z887-24-U4-DGC-4 W/ CLASS 'C' DUCTILE IRON GRATE, 4" NO-HUB BOTTOM OUTLET ADAPTER AND LIFT OUT SEDIMENT BUCKET.

WB-1: WASHING MACHINE OUTLET BOX. GUY GRAY MODEL DLMBI. DUAL LEVER, 1/2" TOP SUPPLIES, 2" CENTER DRAIN BOTTOM OUTLET.

WHA: WATER HAMMER ARRESTOR (SIZED PER PLUMBING DRAINAGE INSTITUTE WH-201 GUIDELINES). ZURN SERIES 1260XL.

HR-1: SPRING RETRACTABLE WALL MOUNTED AIR HOSE REEL AND HOSE, 1/2" HOSE 100'-0" LONG. REELCRAFT MODEL B2100 OLP.

HR-2: SPRING RETRACTABLE WALL MOUNTED AIR HOSE REEL AND HOSE, 1/2" HOSE 50'-0" LONG. REELCRAFT MODEL B5850 OLP.

OL-1: OIL INTERCEPTOR. ROCKFORD MODEL ROI-1000. PROVIDE WITH HEAVY TRAFFIC REINFORCED COVERS AND INTEGRAL EXTENSION(S) AS REQUIRED.

SL-1: SOLIDS INTERCEPTOR. ROCKFORD MODEL RCB-60. PROVIDE WITH HEAVY TRAFFIC REINFORCED COVERS AND INTEGRAL EXTENSION AS REQUIRED.

NOTE:
1. ALL MATL. AND HARDWARE TO BE GALVANIZED OR FACTORY WHITE POWDER

PLUMBING NOTES

- CONTRACTOR SHALL EXAMINE ALL DRAWINGS AND SPECIFICATIONS AND VISIT THE SITE TO BECOME ACQUAINTED WITH THE CONSTRUCTION AND THE EXTENT OF THE WORK.
- CONTRACTOR SHALL PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE, WHETHER SPECIFIED OR IMPLIED.
- ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2015 INTERNATIONAL MECHANICAL CODE, 2015 INTERNATIONAL FUEL GAS CODE, 2015 INTERNATIONAL PLUMBING CODE AND ALL OTHER REQUIREMENTS OF THE LOCAL AUTHORITIES HAVING JURISDICTION.
- CONTRACTOR SHALL GIVE ALL NOTICES, OBTAIN AND PAY FOR ALL PERMITS, DEPOSITS AND FEES NECESSARY.
- DO NOT SCALE THE DRAWINGS FOR EXACT DIMENSIONS, THE DESIGN DRAWINGS ARE DIAGRAMMATIC AND INDICATED THE GENERAL LAYOUT AND CONNECTIONS, CONTRACTOR SHALL VERIFY ALL CONDITIONS, DIMENSION, ETC AT THE JOB SITE.
- CONTRACTOR SHALL REVIEW THE WORK OF OTHER TRADES TO PREVENT INTERFERENCE BETWEEN BEAMS, STRUCTURES, PIPING, LIGHTING FIXTURES ETC. BEFORE PROCEEDING WITH NEW WORK.
- CONTRACTOR SHALL GUARANTEE THE ENTIRE JOB AGAINST DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE. THIS GUARANTEE SHALL BE BINDING REGARDLESS OF MANUFACTURER'S GUARANTEE AND CONTRACTOR SHALL REMOVE AND REPLACE ALL DEFECTIVE MATERIAL REGARDLESS OF CAUSE (EXCEPT FOR DEFECTS TRACEABLE TO IMPROPER MAINTENANCE OR MALICIOUS DESTRUCTION OCCURRING AFTER THE SYSTEM HAS BEEN TURNED OVER).
- ALL MATERIALS USED ANYWHERE IN THE WORK SHALL HAVE NFPA RATING AS FOLLOWS:
A. FLAME SPREAD- NOT OVER 25
B. SMOKE DEVELOPED- NOTE OVER 50
C. FUEL CONTRIBUTED- NOTE OVER 25
ALL MATERIALS SHALL BE 'SELF EXTINGUISHING'
SUBMIT TO THE ENGINEER FOR APPROVAL, DUPLICATE SPECIFICATION SHEETS OF ALL FIXTURE OR EQUIPMENT SUPPLIED OR INSTALLED
- CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING OR EXCEEDING WALL/CEILING/FLOOR ASSEMBLY RATINGS FOR ALL PENETRATIONS. CONTRACTOR SHALL VERIFY LOCATION AND RATINGS OF ALL FIRE ASSEMBLIES AND PROVIDE INTUMESCENT COLLARS AT ALL PIPE PENETRATIONS FIRE DAMPERS WITH ACCESS PANELS AT ALL DUCT PENETRATION AND FIRE RATED GULKING AS REQUIRED.
- ALL MECHANICAL EQUIPMENT AND APPLIANCES INSTALLED SHALL BEAR THE LABEL OF AN APPROVED AGENCY.
- EQUIPMENT AND MATERIAL ARE SPECIFIED TO ESTABLISH A STANDARD OF QUALITY. ALL MATERIAL AND EQUIPMENT USED FOR THIS CONTRACT SHALL BE NEW AND UNUSED AND OF THE LATEST MODEL OR DESIGN AVAILABLE.
- THE CONTRACTOR SHALL FURNISH AND INSTALL ALL STRUCTURAL STEEL, SUPPORTS, BRACES, HANGERS, ETC. REQUIRED FOR HIS CONTRACT UNLESS OTHERWISE NOTED. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT SUPPORT LOCATION AND INSTALLATION WITH ROOFING AND STRUCTURAL CONTRACTOR.
- CONTRACTOR SHALL INFORM THE ENGINEER OF ANY QUESTIONS OR DISCREPANCIES PRIOR TO PRECUSOR AND/OR FABRICATION OF ANY MATERIAL AND INSTALLATION.
- SUPPORT ALL EQUIPMENT AND PIPING WITH VIBRATION ISOLATION HANGERS AS REQUIRED TO PROVIDE A VIBRATION FREE INSTALLATION.
- UPON COMPLETION OF THE WORK, REMOVE ALL EXCESS MATERIAL, DEBRIS, TOOLS, AND EQUIPMENT FROM THE SITE, AND LEAVE THE PREMISES IN A BROOM CLEAN CONDITION.
- CONTRACTOR SHALL PROVIDE THREE (3) COMPLETE SETS OF BOUND OPERATING AND MAINTENANCE INSTRUCTIONS. CONTRACTOR SHALL INSTRUCT THE OWNER OR HIS AGENT WITH REGARD TO THE PROPER USE OF THE SYSTEM UNTIL SUCH INSTRUCTION IS COMPLETE TO THE OWNER'S SATISFACTION.
- UNDER ALTERNATE BID C-1 ELIMINATE THE GAS BRANCH PIPING FEEDING THE BOILER, ELIMINATE THE DOMESTIC FEED WATER TO THE HOT WATER HEATING SYSTEM AND ELIMINATE THE FLOOR DRAIN IN MECHANICAL ROOM 126 ALONG WITH ALL ASSOCIATED BRANCH PIPING. ADD GAS DISTRIBUTION AND BRANCH PIPING TO (B) UNIT HEATERS IN MAINTENANCE BAY 123 AND PROVIDE AN ADDITION IDH-1 FOR UNIT HEATER CONDENSATE DRAIN DISCHARGE ALONG THE WALL SEPARATING MAINTENANCE BAY 123 AND 26 BAY GARAGE 122 BETWEEN COLUMN LINES 8 AND 9.

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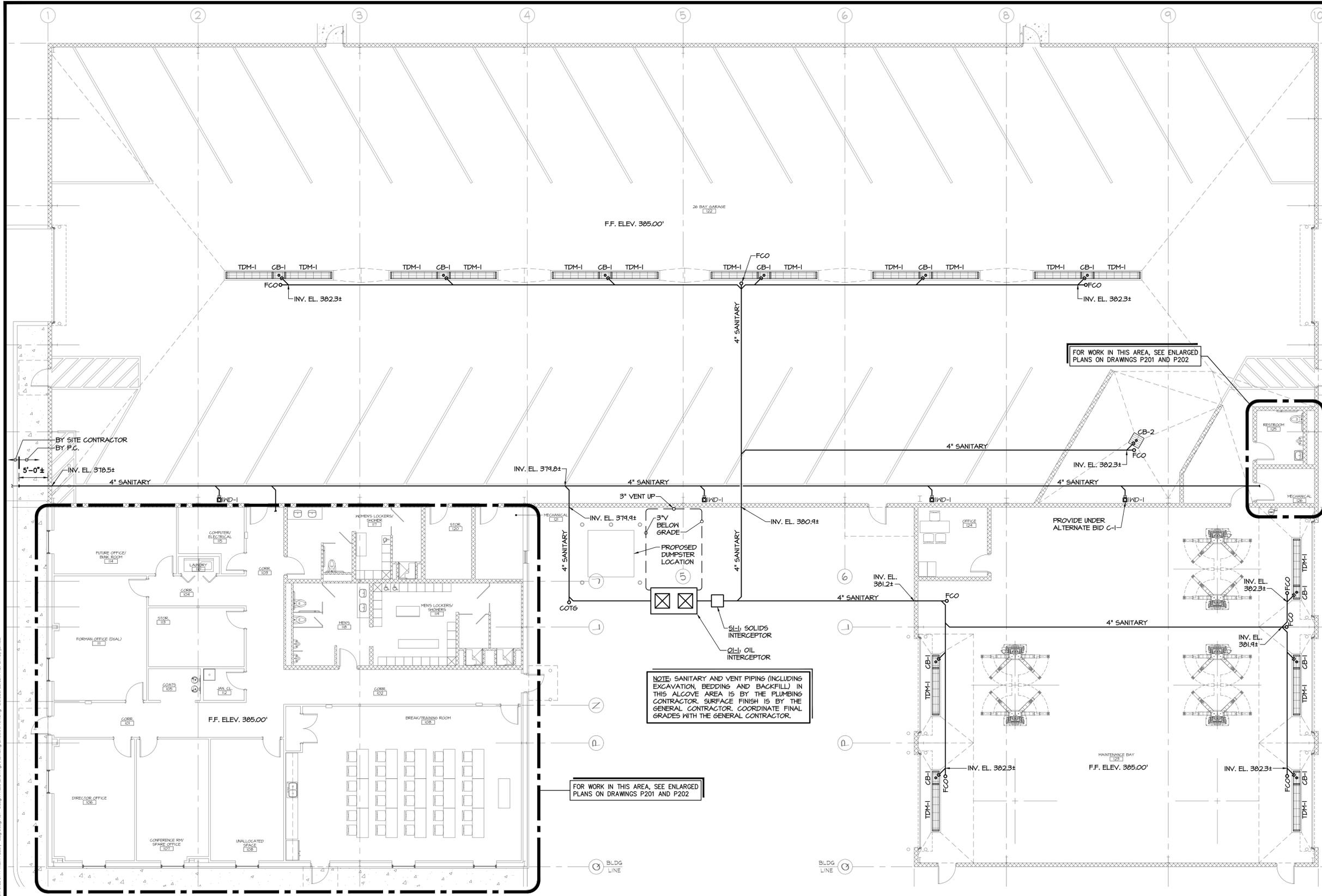
SYSTEMS DESIGN ENGINEERING, INC
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MUHLENBERG TOWNSHIP
 PROPOSED PUBLIC WORKS BUILDING
 PLUMBING SCHEDULES AND DETAILS

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PLUMBING LEGEND

-  SHUTOFF VALVE
-  BALL VALVE
-  BUTTERFLY VALVE
-  GATE VALVE
-  PRESSURE REDUCING VALVE
-  CHECK VALVE
-  REDUCED PRESSURE BACKFLOW PREVENTER
-  STRAINER W/ BLOWDOWN
-  RELIEF VALVE
-  CALIBRATED BALANCING VALVE
-  UNION
-  REDUCER
-  PIPING UP
-  PIPING DOWN
-  TEE DOWN
-  TEE UP
-  45 - ELBOW
-  CONTINUATION
-  FLOW ARROW
-  GAS COCK
-  DOMESTIC COLD WATER PIPING
-  DOMESTIC HOT WATER PIPING
-  DOMESTIC HOT WATER RECIRC.
-  NATURAL GAS PIPING
-  LP GAS PIPING
-  SANITARY PIPING BELOW GRADE
-  VENT PIPING
-  REGULATOR PUMP
-  A.F.G.
-  A.F.F.
-  C/O
-  FCO
-  WCO
-  COTG
-  HB
-  VTR
-  B.O.P.
-  GC
-  MC
-  EC
-  AFF
-  I
-  WHA



PLUMBING FLOOR PLAN - SANITARY
 SCALE: 1/8"=1'-0"

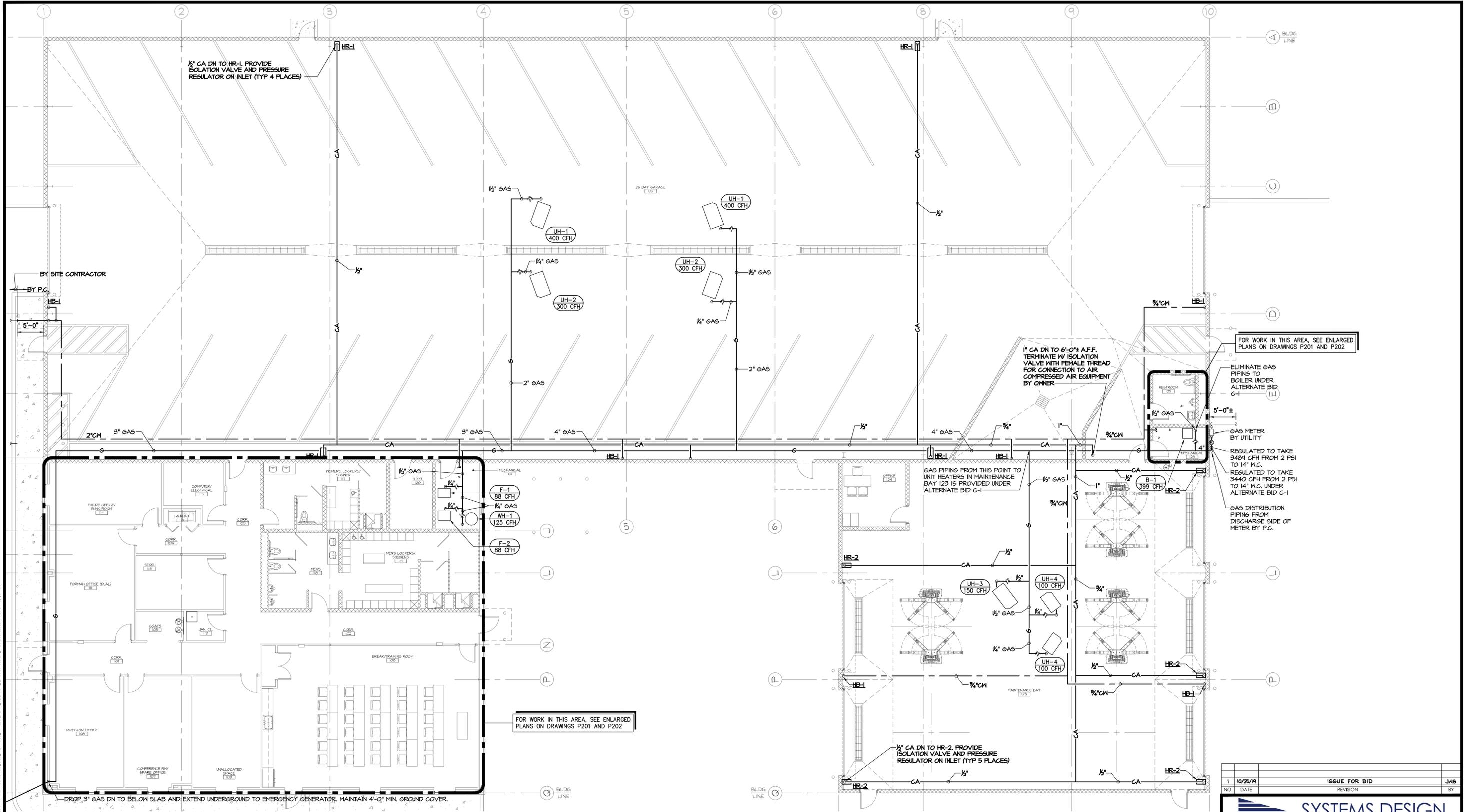

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MUHLENBERG TOWNSHIP
PROPOSED PUBLIC WORKS BUILDING
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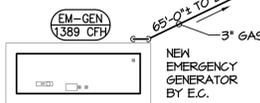
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PLUMBING FLOOR PLAN - DOMESTIC WATER AND GAS



NOTE: GAS LINE INSTALLATION TO EMERGENCY GENERATOR (INCLUDING EXCAVATION, BEDDING AND BACKFILL) IS BY THE PLUMBING CONTRACTOR. SURFACE FINISH IS BY THE GENERAL CONTRACTOR. COORDINATE FINAL GRADES WITH THE GENERAL CONTRACTOR.



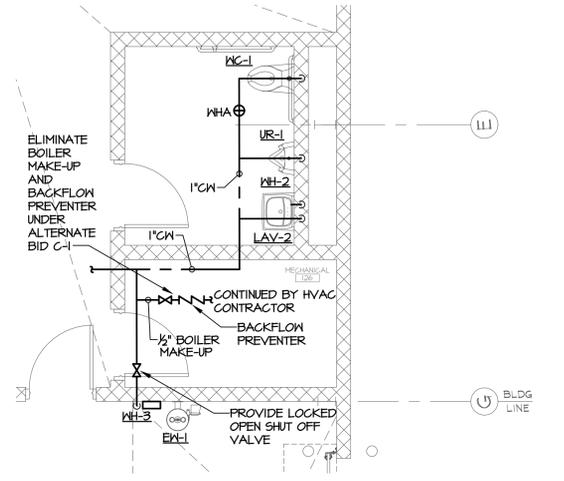
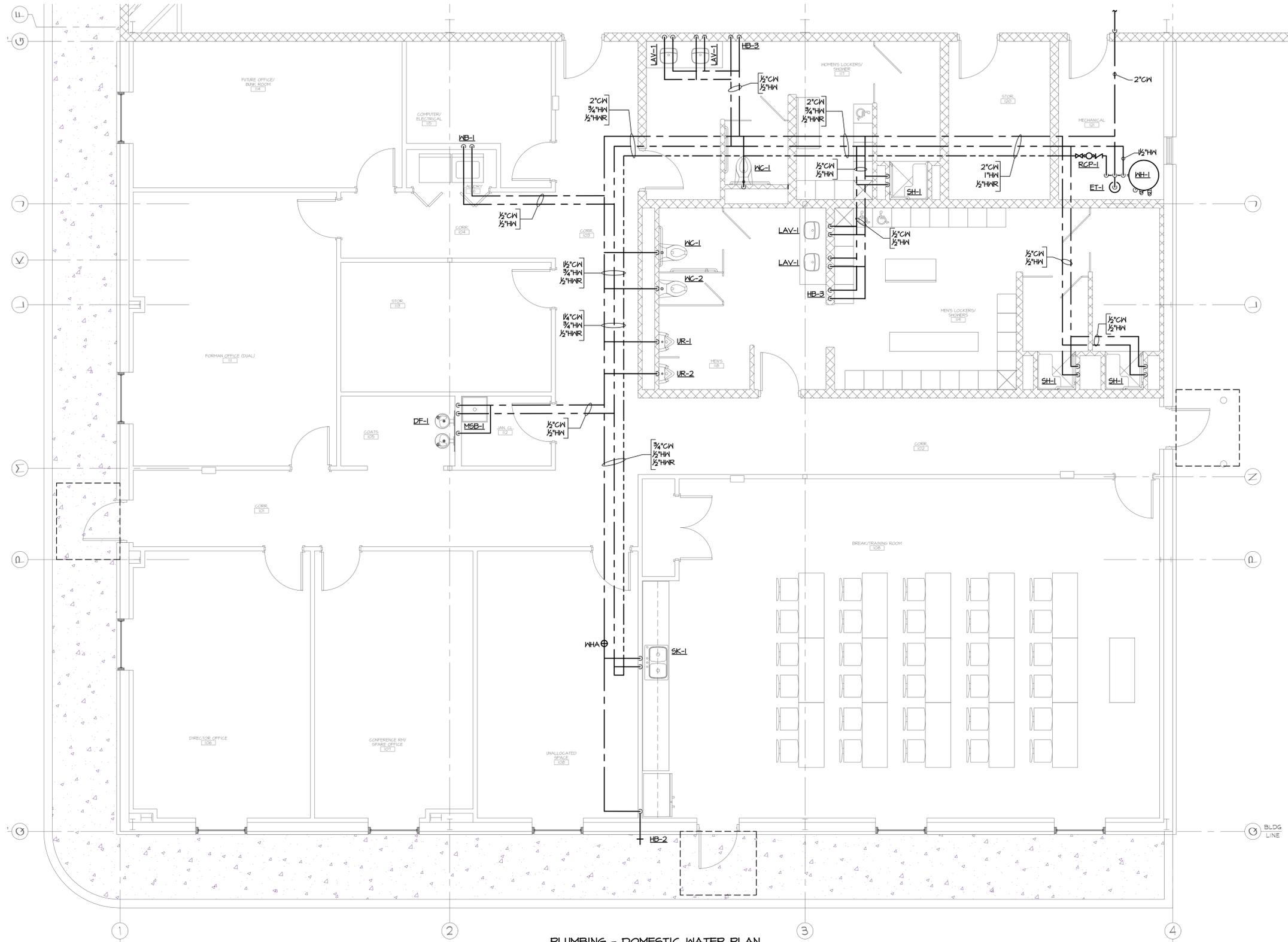
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MUHLENBERG TOWNSHIP
PROPOSED PUBLIC WORKS BUILDING
PLUMBING FLOOR PLAN

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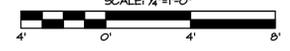
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PLUMBING - DOMESTIC WATER PLAN
SCALE: 1/4"=1'-0"



PLUMBING - DOMESTIC WATER PLAN
SCALE: 1/4"=1'-0"



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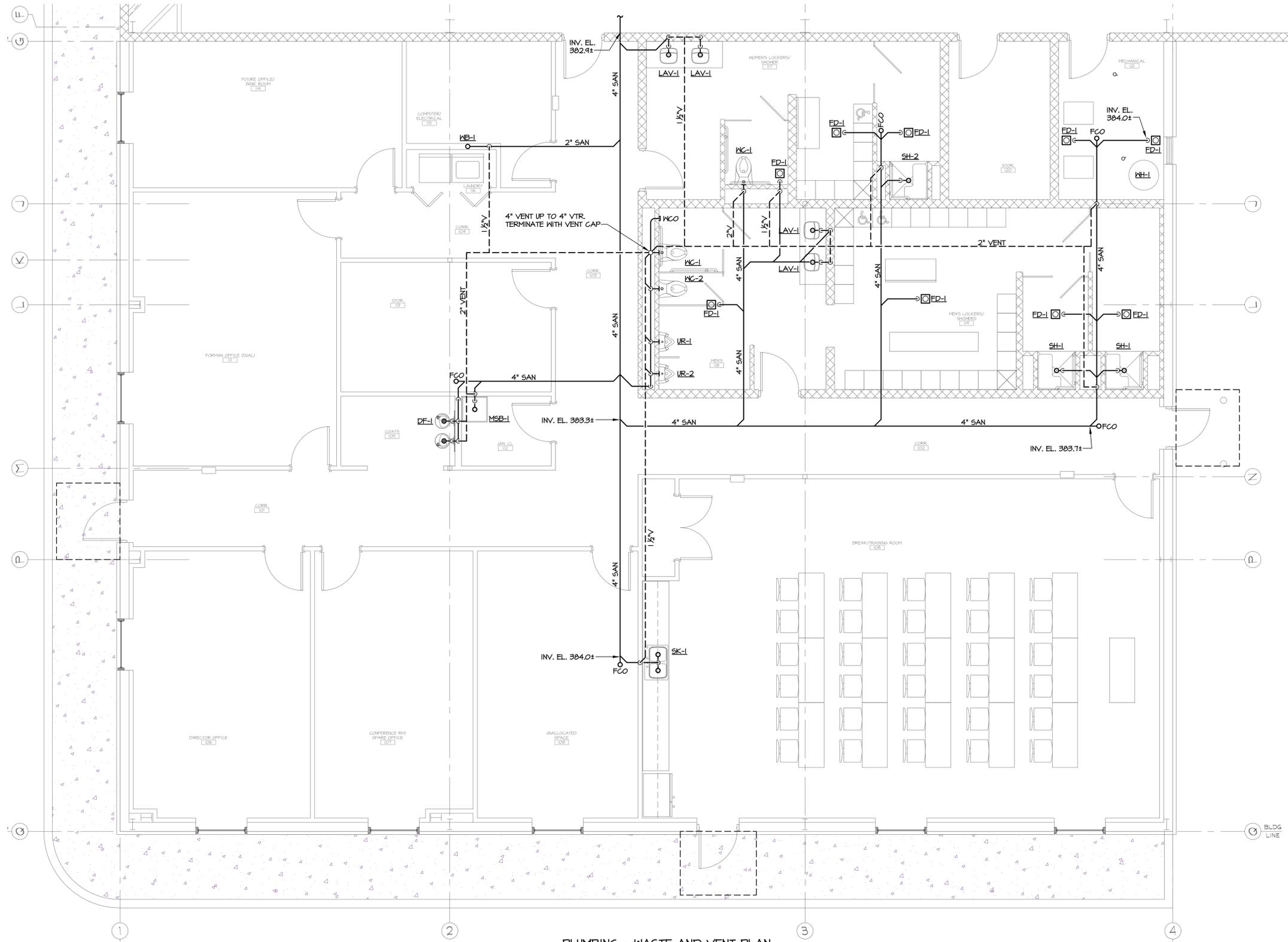
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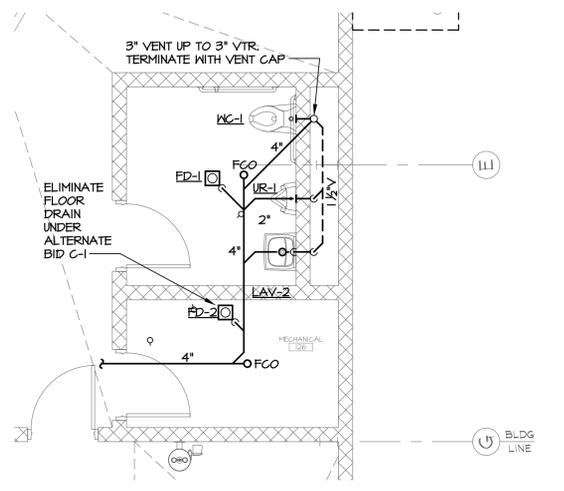
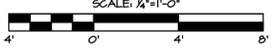
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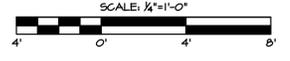
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PLUMBING - WASTE AND VENT PLAN



PLUMBING - WATER AND VENT PLAN



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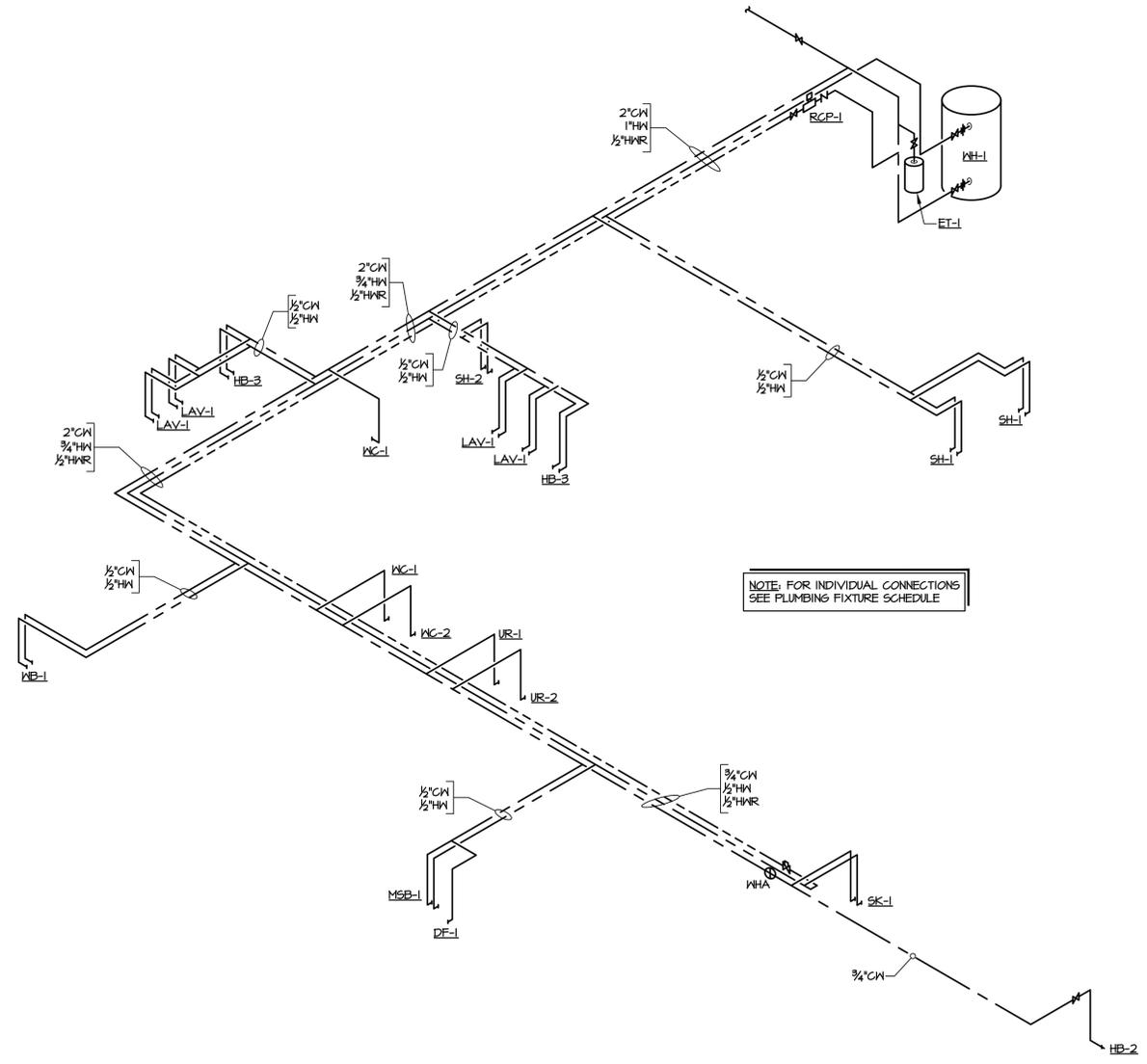
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MUHLENBERG TOWNSHIP
PROPOSED PUBLIC WORKS BUILDING
ENLARGED PLUMBING FLOOR PLAN

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NOTE: FOR INDIVIDUAL CONNECTIONS
SEE PLUMBING FIXTURE SCHEDULE

DOMESTIC WATER RISER DIAGRAM
SCALE: NONE

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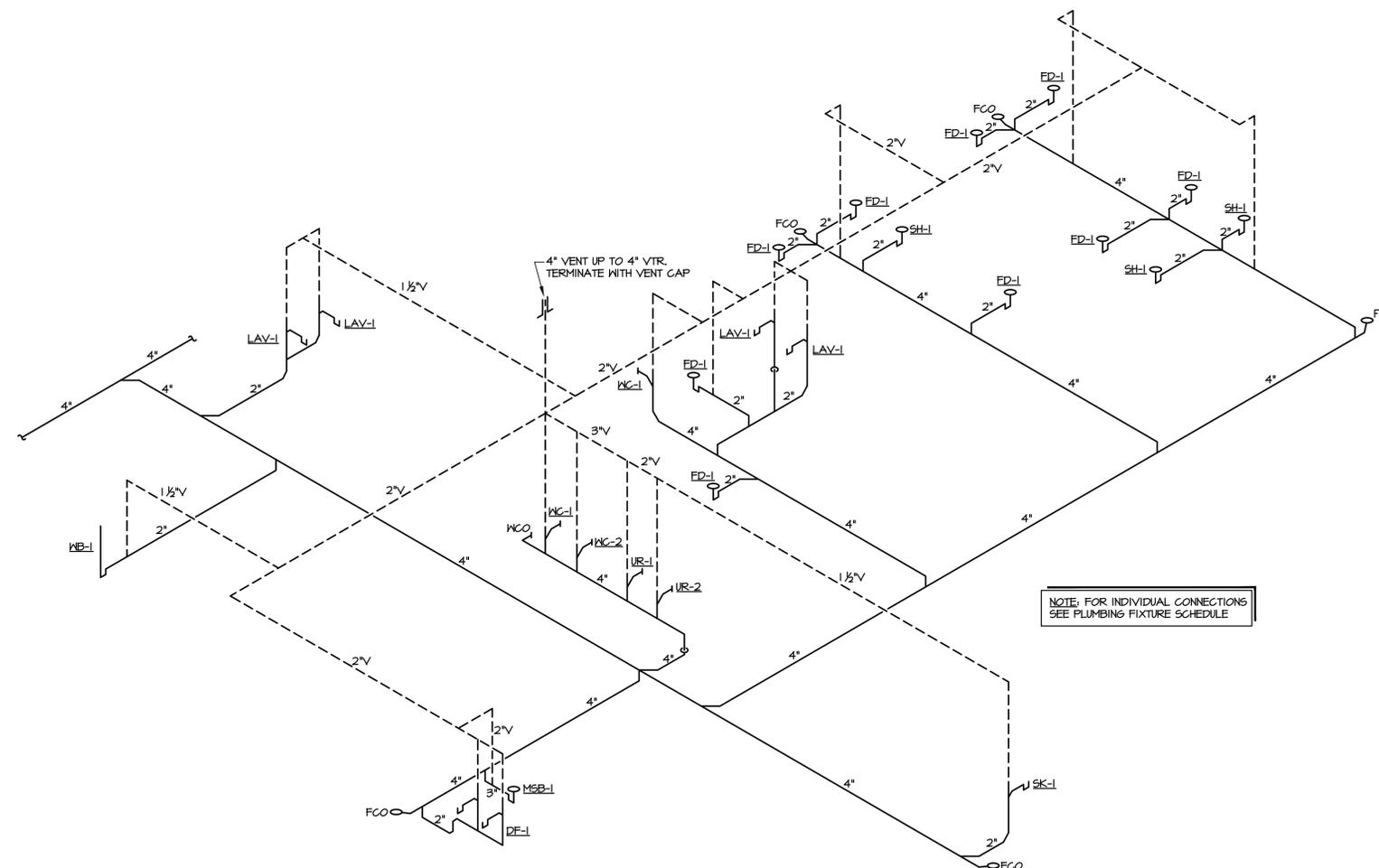


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**MUHLENBERG TOWNSHIP
PROPOSED PUBLIC WORKS BUILDING
DOMESTIC WATER RISER DIAGRAM**

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WASTE AND VENT RISER DIAGRAM
SCALE: NONE

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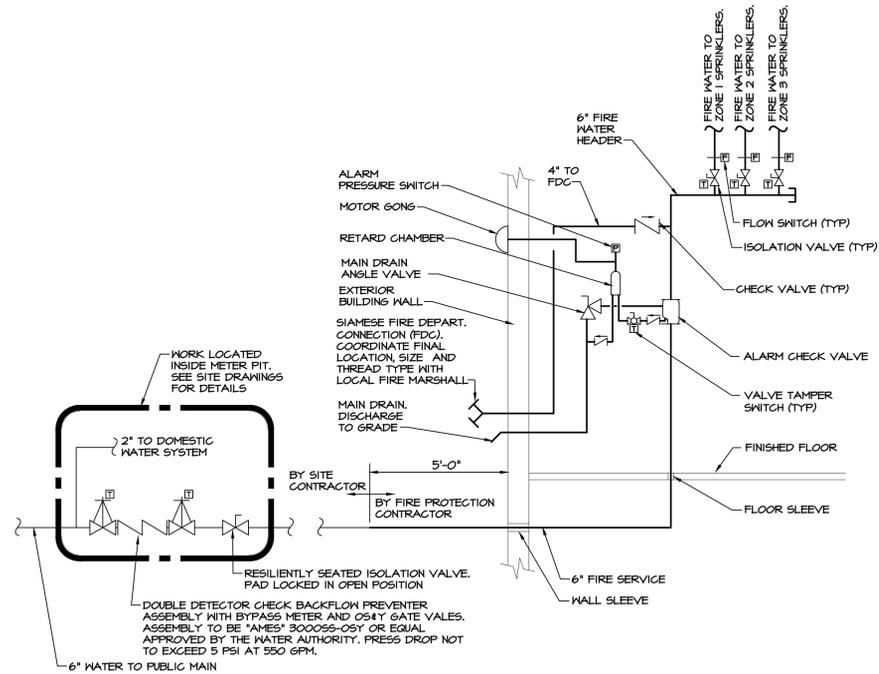
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MUHLENBERG TOWNSHIP
 PROPOSED PUBLIC WORKS BUILDING
 WASTE AND VENT RISER DIAGRAM

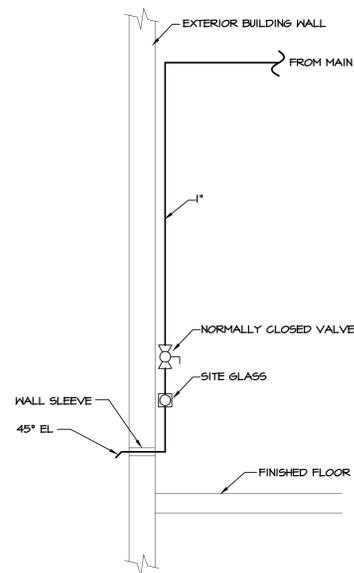
MUHLENBERG TOWNSHIP BERKS COUNTY PENNSYLVANIA

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FIRE PROTECTION RISER DETAIL

SCALE: NONE



INSPECTOR TEST DRAIN DETAIL

SCALE: NONE

GENERAL NOTES:

1. THE FIRE PROTECTION WORK IS TO BE A DESIGN BUILD, HYDRAULICALLY CALCULATED WET SPRINKLER SYSTEM. SYSTEM LAYOUT AND HYDRAULIC CALCULATIONS SHALL BE BASED ON THE FIRE HAZARDS INDICATED ON THE PLAN. THE FIRE PROTECTION CONTRACTOR MUST PROVIDE HYDRAULIC CALCULATIONS BASED ON CURRENT FLOW TEST DATA OBTAINED FROM THE LOCAL WATER AUTHORITY AND HIS/HER PROPOSED SYSTEM LAYOUT. THE SYSTEM SHALL BE DESIGNED TO PROVIDE THE WORST CASE DEMAND BASED ON THE AREA DENSITY CURVE TABLE INDICATED IN FIGURE 14.3.3.1.I OF THE 2014 EDITION OF NFPA 13.
2. SPRINKLER PIPING AND HEADS SHOWN ARE FOR REFERENCE ONLY. CONTRACTOR SHALL FIELD VERIFY DESIGN CONDITIONS AND COORDINATE WITH OTHER PROJECT CONTRACTORS TO DEVELOP THE FINAL SPRINKLER LAYOUT. COMPLETE LAYOUT AND HYDRAULIC CALCULATIONS SHALL BE APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION AND THE OWNER'S INSURANCE CARRIER PRIOR TO STARTING CONSTRUCTION.
3. EACH OF THE PROPOSED AREAS SERVED BY THE WET PIPE SYSTEM SHALL BE DESIGNED AS AN INDEPENDENT FIRE ZONE. EACH ZONE SHALL HAVE ITS OWN SUPERVISED ISOLATION VALVE, ALARM FLOW SWITCH AND INSPECTOR'S TEST DRAIN.
4. SUPERVISORY DEVICES AND ALARM DEVICES INDICATED SHALL BE FURNISHED AND INSTALLED BY THE FIRE PROTECTION CONTRACTOR. ADDRESSABLE FIRE ALARM SYSTEM INTERFACE DEVICES AND FIRE ALARM SYSTEM LOOP WIRING SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. THE FIRE PROTECTION CONTRACTOR SHALL COORDINATE THE NUMBER OF DEVICES, THE LOCATION OF DEVICES, AND FIRE ALARM SYSTEM COMPATIBILITY WITH THE ELECTRICAL CONTRACTOR PROVIDING THE FIRE ALARM SYSTEM.
5. COORDINATION OF NEW HEAD HEAD LOCATIONS SHALL BE THE RESPONSIBILITY OF THE FIRE PROTECTION CONTRACTOR. FINAL LOCATIONS SHALL BE COORDINATED WITH OTHER TRADES. PENDANT SPRINKLER HEADS INSTALLED IN SUSPENDED CEILING SHALL BE INSTALLED AT THE CENTER OF A CEILING TILE BASED ON A 2x2 CEILING GRID (NOTE: THE ACTUAL CEILING GRID MAY BE 2x4 BUT HEAD LAYOUT SHALL BE BASED ON A 2x2 UNLESS INDICATED OR OTHERWISE APPROVED BY THE OWNER OR ARCHITECT).
6. THE CONTRACTOR SHALL EXAMINE ALL DRAWINGS AND SPECIFICATIONS AND VISIT THE SITE TO BECOME ACQUAINTED WITH THE CONSTRUCTION AND THE EXTENT OF THE WORK.
7. CONTRACTOR SHALL PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE FIRE PROTECTION SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE, WHETHER SPECIFIED OR IMPLIED.
8. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE 2015 INTERNATIONAL FIRE CODE (IFC 2015), THE 2019 NFPA 13 STANDARD, AND ALL OTHER REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION. IN ADDITION WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE OWNER'S INSURANCE CARRIER.
9. CONTRACTOR SHALL GIVE ALL NOTICES, OBTAIN AND PAY FOR ALL PERMITS, DEPOSITS AND FEES NECESSARY.
10. DO NOT SCALE THE DRAWINGS. THE DESIGN DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LAYOUT AND CONNECTIONS. CONTRACTOR SHALL VERIFY ALL CONDITIONS, DIMENSIONS, ETC PRIOR TO BEGINNING CONSTRUCTION.
11. CONTRACTOR SHALL REVIEW THE WORK OF OTHER TRADES AND COORDINATE WITH SAID TRADES TO AVOID INTERFERENCE WITH BEAMS, STRUCTURES, PIPING, DUCTWORK, LIGHTING FIXTURES ETC. BEFORE PROCEEDING WITH NEW WORK.
12. CONTRACTOR SHALL GUARANTEE THE ENTIRE JOB AGAINST DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE. THIS GUARANTEE SHALL BE BINDING REGARDLESS OF MANUFACTURER'S GUARANTEE AND CONTRACTOR SHALL REMOVE AND REPLACE ALL DEFECTIVE MATERIAL REGARDLESS OF CAUSE (EXCEPT FOR DEFECTS TRACEABLE TO IMPROPER MAINTENANCE OR MALICIOUS DESTRUCTION OCCURRING AFTER THE SYSTEM HAS BEEN TURNED OVER).
13. ALL EQUIPMENT AND APPLIANCES INSTALLED SHALL BEAR THE LABEL OF AN APPROVED AGENCY.
14. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL STRUCTURAL STEEL, SUPPORTS, BRACES, HANGERS, ETC. REQUIRED FOR HIS CONTRACT UNLESS OTHERWISE NOTED.
15. CONTRACTOR SHALL INFORM THE ENGINEER OF ANY QUESTIONS OR DISCREPANCIES PRIOR TO PURCHASING AND/OR FABRICATION OF ANY MATERIAL AND INSTALLATION.
16. UPON COMPLETION ALL PIPING SHALL BE HYDROSTATICALLY TESTING AT 200 PSI FOR A PERIOD OF TWO HOURS. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH NFPA 13 AND SHALL BE CONDUCTED IN THE PRESENCE OF THE AUTHORITY HAVING JURISDICTION.
17. UPON COMPLETION OF THE WORK, REMOVE ALL EXCESS MATERIAL, DEBRIS, TOOLS, AND EQUIPMENT FROM THE SITE, AND LEAVE THE PREMISES IN A CLEAN CONDITION.
18. FIRE HYDRANT FLOW TEST DATA SHALL BE INCLUDED WITH THE SPECIFICATIONS. CONTRACTOR SHALL BASE HIS/HER HYDRAULIC CALCULATION ON THE WORST CASE RESIDUAL PRESSURE INDICATED IN THE REPORT. CONTRACTOR SHALL COORDINATE INCOMING SERVICE LINE TO 5 FT. OUTSIDE OF THE BUILDING WITH THE SITE OR GENERAL CONTRACTOR. CONTRACTOR SHALL ARRANGE FOR AN ADDITIONAL FLOW TEST TO CONFIRM ADEQUACY OF THE RESIDUAL PRESSURE AT THE POINT OF CONNECTION, 5 FT. OUTSIDE OF THE BUILDING LINE AFTER THE SERVICE HAS BEEN INSTALLED BY THE SITE OR GENERAL CONTRACTOR AND PRIOR TO COMPLETING HYDRAULIC CALCULATIONS AND COMMENCING INSTALLATION WORK INSIDE THE FACILITY.

FIRE PROTECTION LEGEND

	PIPING UP
	PIPING DOWN
	TEE DOWN
	TEE UP
	45° ELBOW
	CONTINUATION
	FIRE SPRINKLER PIPE (WET SYSTEM)
	UPRIGHT SPRINKLER HEAD
	PENDANT SPRINKLER HEAD
	HIGH TEMPERATURE UPRIGHT SPRINKLER HEAD
	TAMPER SWITCH
	FLOW SWITCH
	WATER PRESSURE SWITCH

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<p>MUHLENBERG TOWNSHIP PROPOSED PUBLIC WORKS BUILDING FIRE PROTECTION LEGEND, DETAILS, AND GENERAL NOTES</p>							
<p>SITUATE IN BERKS COUNTY PENNSYLVANIA</p>							
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