

LEGEND

Table with 2 columns: Symbol and Description. Includes symbols for lighting fixtures, emergency lighting, wall-wash lighting, track lighting, exit signs, switches, receptacles, and various electrical components.

Table with 2 columns: Symbol and Description. Includes symbols for single receptacles, duplex receptacles, split-wired duplex receptacles, quad receptacles, floor boxes, ground fault interrupting duplex receptacles, electric water cooler duplex receptacles, UL listed weatherproof enclosures, tamper resistant duplex receptacles, isolated ground duplex receptacles, emergency circuit duplex receptacles, explosion proof duplex receptacles, USB duplex receptacles, single receptacle drop cords, specialty receptacles, clock receptacles, surface mounted raceway with duplex receptacles, motor starter relays, telepower poles, junction boxes, furniture junction boxes, panelboards, fuses, motor or motorized equipment, disconnect switches, combination magnetic motor starters, fused disconnect switches, enclosed molded case circuit breakers, electrical transformers, underground primary electrical service, underground secondary electrical service, underground telephone service, overhead aerial electrical service, existing branch circuitry to remain, branch circuit run below grade, branch circuit run concealed, emergency branch circuit run concealed, #10 AWG bare copper ground conductor run, conduit turning down, and conduit turning up.

ABBREVIATIONS

Table with 2 columns: Symbol and Description. Lists abbreviations for various electrical components and systems, including communication devices, telephone devices, pay-telephone devices, computer/data devices, floor boxes, television cable devices, speakers, microphone jacks, intercom consoles, intercom doors, intercom walls, intercom masters, magnetic door holders, keypad, push-button, door buzzer, card reader, motion detector, nurse call duty station, nurse call dome light, nurse call pull cord, code blue button, code red button, nurse call station with button, combination fixed temperature rate-of-rise thermal detector, photoelectric smoke detector, ionization smoke detector, smoke detector, manual fire alarm pull station, fire alarm bell, fire alarm horn, fire alarm control module, fire alarm monitoring module, firefighter telephone jack, sprinkler system flow switch, sprinkler system tamper switch, thermostat, connect new to existing, refer to indicated demolition note, refer to indicated new work power note, and refer to indicated new work lighting note.

McCarthy Engineering Associates, Inc. logo and contact information: 2300 East High Street, Suite 630, Pittsburgh, PA 15201. Project No. 230004.

McCarthy Engineering Associates, Inc. logo and contact information. Project No. 230004. Client: WYOMISSING BOROUGH, BERKS COUNTY, PENNSYLVANIA. Location: JULY 18, 2023. Date: JULY 18, 2023. Scale: AS NOTED. Drawing No. E-1.0. Issued for Bid July 19, 2023. Not for Construction. Project No. 230004.

DEMOLITION GENERAL NOTES:

- WHERE IT IS INDICATED THAT A CIRCUIT, CONDUIT OR WIRING IS TO BE REMOVED IN ITS ENTIRETY, THIS SHALL MEAN THAT THE WIRE, CONDUIT, HANGERS, CONNECTORS, COUPLINGS, CONTROLS, DISCONNECT SWITCHES, ETC. SHALL BE REMOVED FROM THE DEVICE TO THE SOURCE, EXCEPT THAT CONDUIT EMBEDDED IN WALLS OR FLOORS NOT BEING DEMOLISHED MAY BE ABANDONED IN PLACE AS LONG AS THE WIRE IS REMOVED AND THE CONDUIT ENDS ARE SATISFACTORILY CLOSED.
- CIRCUITS TO EQUIPMENT OR DEVICES INDICATED TO BE REMOVED SHALL BE REMOVED IN THEIR ENTIRETY EVEN IF THE CIRCUIT OR SOURCE IS OUTSIDE THE DEFINED AREA OF DEMOLITION.
- CIRCUITS WHICH ORIGINATE IN OR PASS THROUGH THE AREA OF DEMOLITION BUT WHICH SUPPLY LOADS OUTSIDE OF THE AREA OF DEMOLITION OR WHICH FEED EQUIPMENT IN THE AREA OF DEMOLITION WHICH IS TO REMAIN, SHALL BE RETAINED, UNLESS OTHERWISE NOTED. PORTIONS OF SUCH CIRCUITS WHICH CONFLICT WITH CLEARANCES FOR NEW CONSTRUCTION SHALL BE REMOVED AND WIRE AND CONDUIT (MATCH EXISTING TYPE AND SIZE) SHALL BE PROVIDED TO EXTEND THE CIRCUIT TO ITS ORIGINAL SOURCE AND TO MAINTAIN THE FUNCTIONALITY OF THE CIRCUIT.
- CIRCUITS WHICH SUPPLY DEVICES BOTH INSIDE AND OUTSIDE OF THE AREA OF DEMOLITION SHALL BE REMOVED ONLY WITHIN THE AREA OF DEMOLITION. REMOVE THE CIRCUITS TO THE NEAREST JUNCTION BOX OR DEVICE OUTSIDE THE AREA OF DEMOLITION. PORTIONS OF THE CIRCUITS WHICH SUPPLY DEVICES OUTSIDE THE AREA OF DEMOLITION OR DEVICES TO REMAIN INSIDE THE AREA OF DEMOLITION SHALL REMAIN AND WIRE AND CONDUIT (MATCH EXISTING TYPE AND SIZE) SHALL BE PROVIDED TO EXTEND THE CIRCUIT TO ITS ORIGINAL SOURCE AND TO MAINTAIN THE FUNCTIONALITY OF THE CIRCUIT, UNLESS OTHERWISE NOTED.
- EXISTING PANELBOARDS AND THEIR FEEDER CIRCUITS SHALL BE RETAINED, UNLESS OTHERWISE NOTED.
- DRAWING DEMOLITION NOTES LISTED UNDER THE DEMOLITION AREA IDENTIFICATION SHALL APPLY TO ALL ROOMS/AREAS WITHIN THE AREA OF DEMOLITION. OTHER INDIVIDUAL DRAWING DEMOLITION NOTES ARE IN ADDITION TO THOSE UNDER THE AREA IDENTIFICATION AND APPLY ONLY TO INDIVIDUAL ROOMS OR EQUIPMENT.
- ABANDONED WIRE, CONDUIT, DEVICES AND CIRCUITS IN THE AREA OF DEMOLITION OR INDIVIDUALLY IDENTIFIED SHALL BE REMOVED IN THEIR ENTIRETY.
- OWNER EQUIPMENT SHALL BE RETURNED TO OWNER, UNLESS OTHERWISE DIRECTED.
- CONTRACTOR SHALL FIELD VERIFY QUANTITY AND LOCATION OF ALL WIRING DEVICES PRIOR TO BID. ANY ADDITIONAL DEVICES LOCATED SHALL BE TREATED THE SAME AS OTHER DEVICES IN THE SAME AREA.
- NON-POWER WIRING IN GOOD CONDITION MAY BE PULLED BACK FROM DEVICES BEING REMOVED AND WIRING MAY BE REUSED FOR NEW DEVICES WHERE WIRING LENGTH IS NO LONGER THAN THE ORIGINAL LENGTH. WIRING SHALL NOT BE SPLICED. WIRING WHICH CANNOT BE REUSED SHALL BE REMOVED IN ITS ENTIRETY.
- DEVICE BOXES WITH USABLE CONDUIT TO ACCESSIBLE SPACES LOCATED IN THE SAME LOCATION AS NEW DEVICES MAY BE REUSED WITH NEW WIRING AND DEVICES. DEVICE BOXES NOT BEING USED AND LOCATED IN WALLS NOT BEING REMOVED MAY REMAIN BUT MUST BE CLOSED WITH A BLANK COVERPLATE.
- NOT ALL KEYNOTES ARE BEING USED.

DEMOLITION KEYNOTES:

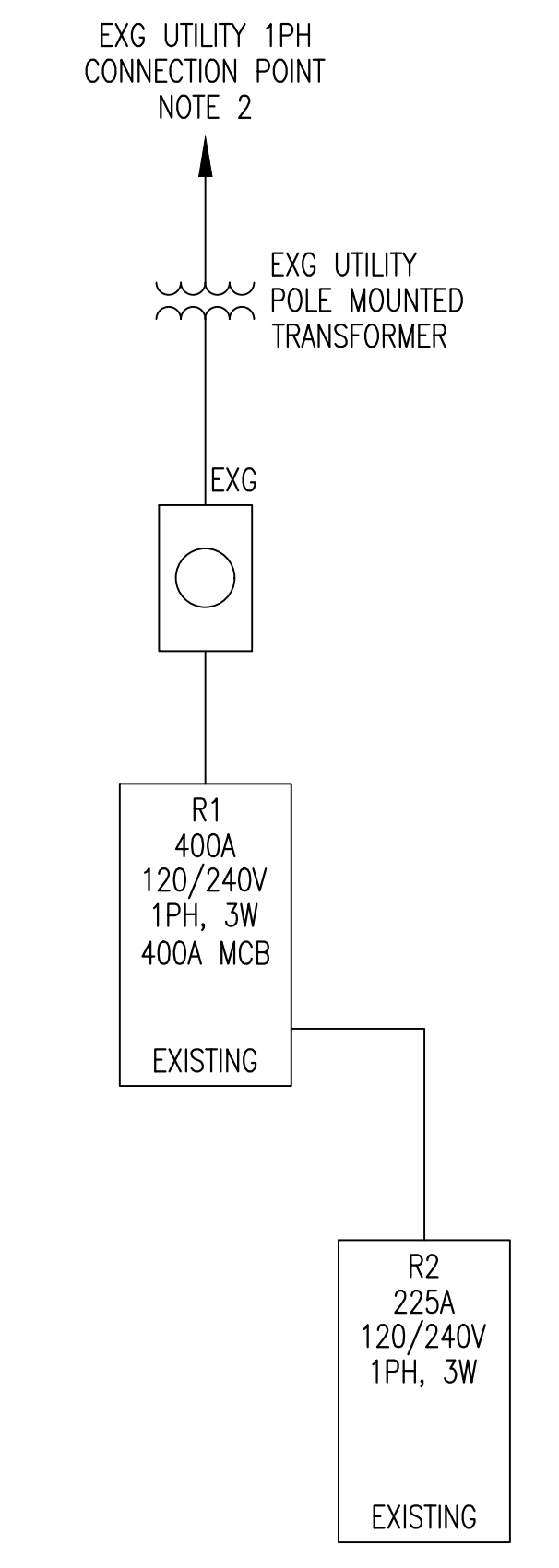
- REMOVE ALL LIGHT FIXTURES, EMERGENCY LIGHT FIXTURES, EXIT SIGNS, LIGHT SWITCHES, LIGHT CONTROLS AND LIGHTING CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
 - LIGHTING AND LIGHT CONTROLS ARE EXISTING TO REMAIN.
 - REMOVE SWITCH AND RELOCATE SWITCH DEVICE BOX TO LOCATION AS SHOWN ON NEW PLAN. RETAIN FIXTURES AND CIRCUIT IN ROOM.
 - REMOVE FIXTURE WHIRLS FROM FIXTURES OUTSIDE OF THIS DASHED BOX.
- REMOVE AND STORE THE LIGHT FIXTURES. REMOVE INTERCONNECTING WIRING AND SWITCH CIRCUITS. RETAIN THE BRANCH CIRCUIT FOR REUSE DURING CONSTRUCTION.
- REMOVE ALL RECEPTACLES, DEVICE BOXES AND RECEPTACLE CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
 - RECEPTACLES ARE EXISTING TO REMAIN.
- REMOVE THE RECEPTACLES, DEVICE BOXES AND RECEPTACLE CIRCUIT TO THE NEXT DEVICE(S) TO REMAIN. FIRE ALARM CIRCUITS MAY BE REUSED AS DESCRIBED BY THE GENERAL DEMOLITION NOTES.
- REMOVE ALL FIRE ALARM SYSTEM DEVICES, DEVICE BOXES AND FIRE ALARM CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
 - ALL FIRE ALARM SYSTEM DEVICES ARE EXISTING TO REMAIN.
- REMOVE AND STORE FIRE ALARM SYSTEM DEVICES(S). REMOVE FIRE ALARM CIRCUITS TO NEXT DEVICES(S) TO REMAIN. FIRE ALARM CIRCUITS MAY BE REUSED AS DESCRIBED BY THE GENERAL DEMOLITION NOTES.
- REMOVE ALL SECURITY DEVICES, DEVICE BOXES AND SECURITY CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- REMOVE ALL TELEPHONE OUTLETS, DEVICE BOXES AND TELEPHONE CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- ALL TELEPHONE OUTLETS, DEVICE BOXES AND TELEPHONE CIRCUITS ARE EXISTING TO REMAIN.
- REMOVE ALL LOCAL AREA NETWORK DEVICES, DEVICE BOXES AND LOCAL AREA NETWORK CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
 - ALL LOCAL AREA NETWORK DEVICES, DEVICE BOXES AND LOCAL AREA NETWORK CIRCUITS ARE EXISTING TO REMAIN.
- REMOVE ALL SOUND SYSTEM SPEAKERS, SPEAKER BOXES, VOLUME CONTROLS AND SOUND SYSTEM CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- REMOVE ALL CATV OUTLETS, DEVICE BOXES AND CATV CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- REMOVE ALL LOCAL AREA NETWORK DEVICES, DEVICE BOXES AND LOCAL AREA NETWORK CIRCUITS ARE EXISTING TO REMAIN.
 - ALL LOCAL AREA NETWORK DEVICES, DEVICE BOXES AND LOCAL AREA NETWORK CIRCUITS ARE EXISTING TO REMAIN.
- REMOVE ALL SOUND SYSTEM SPEAKERS, SPEAKER BOXES, VOLUME CONTROLS AND SOUND SYSTEM CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- REMOVE ALL PROJECTORS, PROJECTOR SCREENS AND THEIR CIRCUITS IN THEIR ENTIRETY, UNLESS OTHERWISE NOTED.
- REMOVE IN THEIR ENTIRETY ALL CIRCUITS AND CONTROLS FOR ELEVATORS TO ALLOW REMOVAL OF THE ELEVATORS.
- REMOVE CIRCUIT FOR EXISTING EQUIPMENT EXCEPT THAT REUSABLE PORTIONS OF CONDUIT IN GOOD CONDITION MAY BE REUSED FOR NEW EQUIPMENT. REMOVE PORTIONS OF CIRCUIT NOT REUSED IN ITS ENTIRETY.
- AFTER OTHER DEMOLITION IS COMPLETE, DISCONNECT THE PANEL FEEDER CIRCUIT AND ALL REMAINING BRANCH CIRCUITS TO AN ACCESSIBLE LOCATION BUT RETAIN FOR EXTENSION TO NEW PANEL LOCATION AS PART OF NEW WORK.
- REMOVE AND/OR RELOCATE DEVICES AND CIRCUITS IN/ON WALL OR NEW DOOR OPENING TO ALLOW WALL REMOVAL.

POWER GENERAL NOTES:

- THIS FACILITY IS BEING CONSTRUCTED WITH OPEN CEILING SPACES IN MANY AREAS. WHILE IT IS UNDERSTOOD THAT CONDUIT, CABLE AND EQUIPMENT WILL BE VISIBLE, IT IS THE INTENT OF THIS DESIGN THAT ALL SUCH EQUIPMENT, MATERIAL, CIRCUITS, CABLES, ETC. BE INSTALLED IN AN AESTHETICALLY PLEASING MANNER. ALL CIRCUITS SHALL BE ROUTED PARALLEL, PERPENDICULAR AND/OR PLUMB TO THE BUILDING STRUCTURE AND SHALL BE TIGHT TO ROOF/FLOOR DECKS, DUCTS, JOISTS, COLUMN, ETC. ALL INSTALLATION TECHNIQUES SHALL BE REVIEWED WITH AND APPROVED BY THE OWNER. THE CONTRACTOR SHALL INCLUDE CONTINGENCY IN HIS BID FOR ANY ADDITIONAL EFFORT OR WORK ABOVE NORMAL.
- BOXES, ENCLOSURES AND EQUIPMENT WHICH ARE NOT AESTHETICALLY PLEASING MAY HAVE TO BE LOCATED ABOVE CEILING OR IN "OUT OF THE AREA" HIDDEN SPACES. THE CONTRACTOR SHALL INCLUDE CONTINGENCY IN HIS BID FOR ANY ADDITIONAL EFFORT OR WORK ABOVE NORMAL.
- INSTALL BACKBOX AND STUB UP 3/4" EMT CONDUIT TO ABOVE CEILING FOR EACH COMMUNICATION / DATA DEVICE.
- INSTALL BACKBOX AND STUB UP 3/4" EMT CONDUIT TO ABOVE DROP CEILING FOR EACH CARD READER DEVICE.
- SEE MECHANICAL DRAWINGS FOR MECHANICAL EQUIPMENT SCHEDULES.

LIGHTING KEY NOTES:

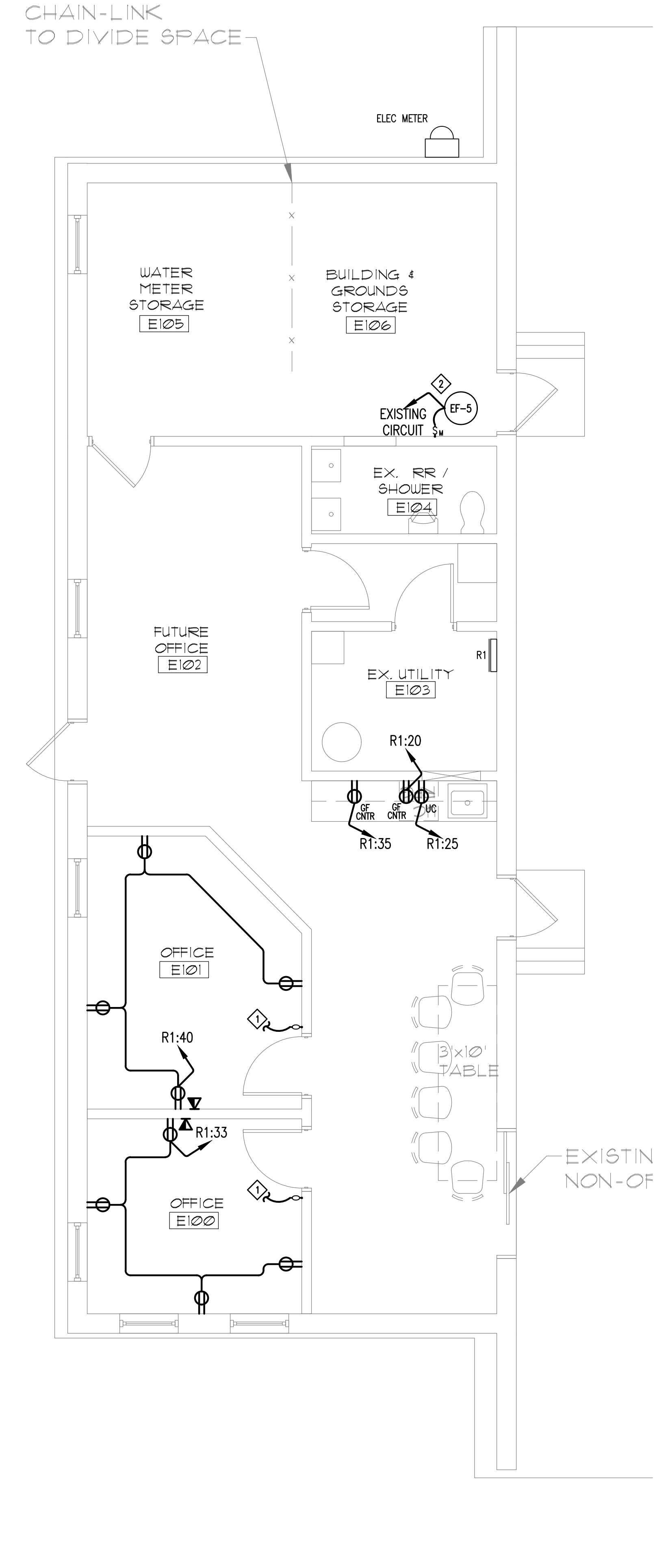
- CONNECT EXISTING FIXTURES TO NEW SWITCH.
- INSTALL SWITCH ACCESSIBLE LOCATION ABOVE DROP CEILING. REUSE CIRCUIT FROM ORIGINAL EXISTING EXHAUST FAN.



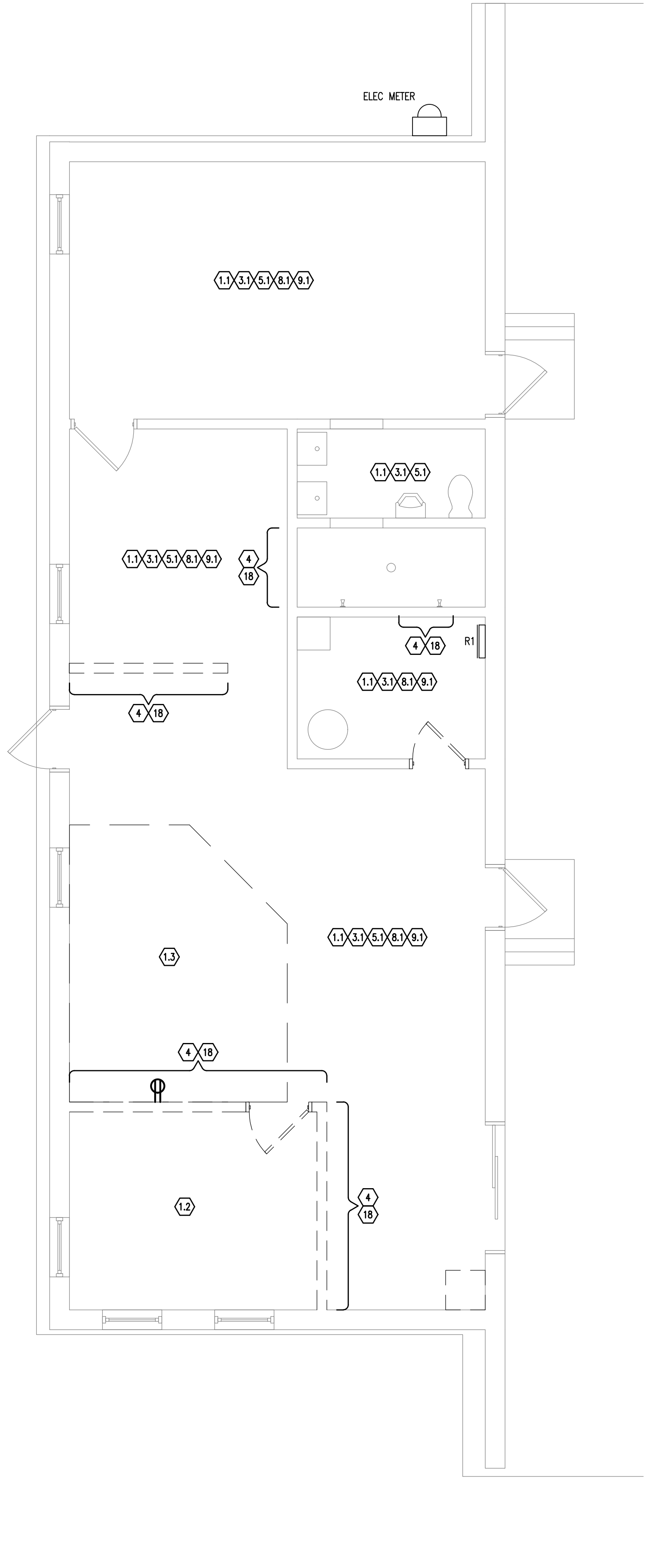
EXISTING SINGLE LINE DIAGRAM
SCALE: NONE

SINGLE LINE/SERVICE NOTES:

- CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR AND WORK REQUIRED FOR A NEW ELECTRICAL SERVICE AS DESCRIBED IN THE LOCAL UTILITY SERVICE AND INSTALLATION REGULATIONS. ANY LOCAL UTILITY COMPANY CHARGES FOR PROVISION OF ELECTRICAL SERVICE SHALL BE INCLUDED IN THE CONTRACTOR'S BASE PRICE. AS A MINIMUM, THE INSTALLATION SHALL MEET THE SERVICE AND INSTALLATION REGULATIONS OF THE LOCAL UTILITY.
- EXISTING SERVICE TO EXISTING BUILDING SHALL BE RETAINED.
- CONDUCTORS OF THIS CIRCUIT ARE OVERSIZED TO COMPENSATE FOR VOLTAGE DROP. PROVIDE INCREASED SIZE LUGS AS POSSIBLE BUT WHERE THE CONDUCTOR SIZE EXCEEDS THE MAXIMUM CAPACITY OF ANY EQUIPMENT TERMINATION LUGS AVAILABLE, PROVIDE A JUNCTION BOX WITH SPLICE WITHIN TEN FEET OF THE TERMINATION AND REDUCE THE CONDUCTOR SIZE TO THE LARGEST SIZE WHICH CAN BE ACCOMMODATED BY THE EQUIPMENT.
- ALL FEEDERS AND SERVICE ENTRANCE CONDUCTORS AND CONDUITS ARE EXISTING TO REMAIN.



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



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

LOCATION: UTILITY E103		PANEL R1 SCHEDULE										22 KAIC	
EXISTING PANEL		PHASE: 1 WIRE: 3 VOLTS: 240/120											
		CURRENT RATING: 400 AMP - MAIN BREAKER											
CKT NO	DESCRIPTION	BREAKER		KVA LOADS		BREAKER		DESCRIPTION	CKT NO				
		TRIP	POLE	A	B	TRIP	POLE						
1	LTS WATER/SEWER 104	20	1	0.72	1.44	0.72	1	20	SUPERVISOR 105 & UTIL 103 LTS	2			
3	SUPERVISOR 105 & UTIL 103 LTS	20	1	0.72	1.44	0.72	1	20	LTS STORAGE 109	4			
5	LTS STORAGE 109	20	1	0.96	1.92	0.96	1	20	RECP - 105 & 103	6			
7	ELEC WATER COOLER	20	1	0.99	1.99	1.00	1	20	VENDING & LUNCH RECP	8			
9	TOILET & SHOWER RECP	20	1	1.00	2.00	1.00	1	20	WTR/SEWER LUNCH EXT RECP	10			
11	WTR/SEWER SUPERVIS RECP	20	1	1.00	2.00	1.00	1	20	SUPERV 105 RECP	12			
13	SOTR 109 RECP	20	1	1.20	2.10	0.90	1	20	LTS STOR 109	14			
15	BASEBOARD HEAT 109	20	-	3.00	4.20	1.20	1	20	BASEB HEAT WTR/SEWR,104,102	16			
17	SPARE	20	2	0.00	0.00	0.00	1	20	SPARE	18			
19	"	-	-	0.00	0.00	0.18	1	20	RECEPT - KITCHENETTE	20			
21	SPARE	20	-	0.00	3.72	3.72	-	30	YARD LTS EAST WALL	22			
23	SECURITY LITE N.S.W. EXT.GATE	30	-	1.44	5.16	3.72	1	20	SPARE	24			
25	REFRIG - KITCHENETTE	20	1	0.50	1.50	1.00	1	20	TELEPH RECP-COFFEE	26			
27	SPARE	20	1	0.00	0.00	1.08	1	20	EXECUTONE SYS	28			
29	SPARE	20	1	0.00	0.00	0.00	1	20	SPARE	30			
31	SPARE	20	1	0.00	0.00	0.00	1	20	SPARE	32			
33	RECEPT - OFFICE E100	20	1	0.36	0.36	0.00	1	15	SPARE	34			
35	RECEPT - KITCHENETTE	20	1	0.18	4.68	4.50	2	30	CONDENS UNIT OUTSIDE	36			
37	PANEL R2	225	2	35.96	40.46	4.50	-	-		38			
39	"	-	-	36.21	36.57	0.36	1	20	RECEPT - OFFICE E101	40			
CIRCUIT TOTALS:				84.24									
PHASE TOTALS:				53.50									
TOTAL CONNECTED LOAD:										111 KVA			
TOTAL CONNECTED LOAD:										462 AMP			

*BREAKER LOCKON DEVICE
**SHUNT TRIP BREAKER
***HACR BREAKER
****BREAKER PADLOCK OFF DEVICE

NOTES:
1) BOLD INDICATES NEW CIRCUIT AND/OR BREAKER

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EXISTING BUILDING
 FIRST FLOOR PLAN
 " PUBLIC WORKS FACILITY "

Client:
 WYOMISSING BOROUGH
 Location:
 BERKS COUNTY, PENNSYLVANIA
 Date:
 JULY 18, 2023

DRAWN BY:
 SW
 PRINCIPAL:
 JCM
 SCALE:
 AS NOTED
 DRAWING NO.
 E-2.0
 PROJECT NO.
 230004

PROJ. MGR:
 NEC
 DATE:
 AS NOTED

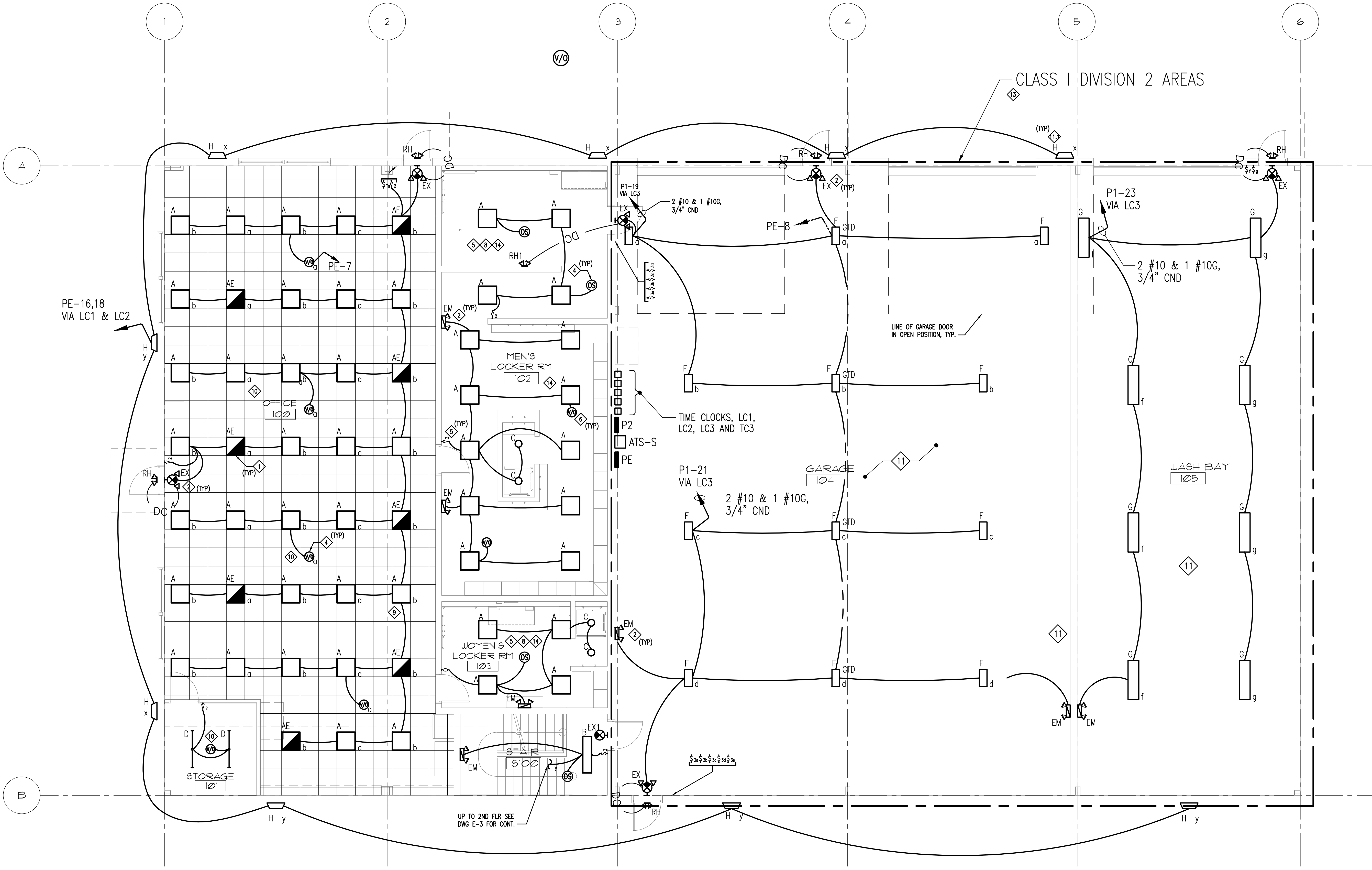
Revision	Date	Description

LIGHTING NOTES:

- FOR NEW WORK LIGHTING NOTES SEE DRAWING E-3.

LIGHTING KEY NOTES:

- CONNECT ALL EMERGENCY LIGHT FIXTURE EMERGENCY BALLASTS TO THE UNSWITCHED HOT LEG OF THE AREA LIGHTING CIRCUIT AND THE NORMAL BALLASTS TO THE SWITCHED HOT LEG SUCH THAT FIXTURES ARE SWITCHED WITH NORMAL FIXTURES BUT ARE ON AT APPROXIMATELY FULL BRIGHTNESS ON LOSS OF POWER.
- CONNECT ALL WALL BATTERY PACKS AND EXIT SIGNS TO AN UNSWITCHED HOT LEG OF THE AREA LIGHTING CIRCUIT.
- CONNECT LIGHT SWITCHES DOWNSTREAM OF OCCUPANCY SENSORS. SEE OCCUPANCY SENSOR SYSTEM ELEMENTARY DIAGRAM (TYPICAL) BELOW.
- LOCATE CEILING OCCUPANCY SENSORS WITHIN 16 FEET OF THE ROOM ENTRANCE(S). COORDINATE SENSOR LOCATION WITH ANY SURFACE OR PENDANT MOUNTED FIXTURES/DEVICES SUCH THAT THE LINE OF SIGHT BETWEEN THE SENSOR AND ENTRANCE IS NOT OBSTRUCTED.
- CONNECT MOMENTARY OCCUPANCY/VACANCY WALL SWITCH TO OCCUPANCY OR VACANCY SENSOR SYSTEM. SEE OCCUPANCY OR VACANCY SENSOR SYSTEM ELEMENTARY DIAGRAM (TYPICAL) ON DRAWING E-6.
- LINK SENSORS WITH THE SAME DESIGNATOR SUCH THAT ANY ONE SENSOR TURNS ON ALL FIXTURES IN THE AREA.
- VACANCY CONTROL WITH DIMMING IS REQUIRED IN THIS CONFERENCE ROOM. PROVIDE OCCUPANCY/VACANCY SENSORS, DIMMERS/SWITCHES AND THREE RELAY DIGITAL ROOM CONTROLLERS AS SHOWN ON THE DRAWINGS. SEE THE DAYLIGHTING/VACANCY CONTROL SYSTEM ELEMENTARY DIAGRAM (TYPICAL) ON DRAWING E-6. THE FIRST TWO RELAYS SHALL CONTROL THE ROOM FIXTURES. THE THIRD RELAY SHALL CONTROL THE FRONT CONFERENCE ROOM FIXTURES WITH ALL FIXTURES BEING MANUAL ON.
- OCCUPANCY CONTROL IS REQUIRED IN RESTROOMS. PROVIDE CEILING SENSOR AS SHOWN ON THE DRAWINGS. ALL LIGHT FIXTURES SHALL BE AUTO ON. SEE THE OCCUPANCY SENSOR SYSTEM ELEMENTARY DIAGRAM (TYPICAL) ON DRAWING E-6.
- ALTERNATE CORRIDOR LIGHTING FIXTURES SUCH THAT ONLY EVERY OTHER FIXTURE IS CONTROLLED (AUTO ON) BY THE OCCUPANCY SENSOR (AUTOMATIC LIGHTING). LOCAL SWITCHES AND THE TIME CLOCK SHALL CONTROL BOTH STANDARD AND AUTOMATIC LIGHTING. SEE TIME CLOCK LIGHTING CONTROL WIRING DIAGRAM (TYPICAL) ON DRAWING E-6.
- PROVIDE DUAL LEVEL SWITCHING BY CONNECTING APPROXIMATELY HALF THE ROOM FIXTURES TO EACH OF THE TWO POLES OF THE AUTOMATIC CEILING SENSOR. ALTERNATE FIXTURES IN BOTH DIRECTIONS UNLESS OTHERWISE NOTED. HALF THE FIXTURES SHALL BE AUTO ON AND HALF THE FIXTURES SHALL BE MANUAL ON. SEE THE DUAL LEVEL VACANCY/OCCUPANCY SENSOR SYSTEM ELEMENTARY DIAGRAM (TYPICAL) ON DRAWING E-6.
- PROVIDE TIME CLOCK CONTROL. REFER TO E-5.0 FOR WIRING DIAGRAMS
 11.1. SEE TIME CLOCK LIGHTING CONTROL WIRING DIAGRAM
 11.2. SEE SITE LIGHTING CONTROL WIRING DIAGRAM
- AIM FLOOD LIGHT TO ILLUMINATE AREA IN FRONT OF SALT SHED.
- ALL REPAIR/SERVICE AREAS PER NEC 511 SHALL BE CLASS 1 DIVISION 2 HAZARDOUS AREAS FROM THE FLOOR TO 18 INCHES ABOVE FLOOR (AND FROM THE CEILING TO 18 INCHES BELOW THE CEILING WHERE LIGHTER-THAN-AIR FUELED VEHICLES ARE REPAIRED/STORED). PITS AND WORK AREAS BELOW THE FLOOR SHALL BE CLASSIFIED AS CLASS 1 DIVISION 1. ALL WIRING AND CIRCUITS IN OR ROUTED THROUGH THESE AREAS SHALL CONFORM TO NEC 501 AND SHALL HAVE MATERIALS AND CONDUIT SEALS PER NEC 501. ALL RECEPTACLES, EQUIPMENT AND DEVICES SHALL BE MOUNTED ABOVE OR BELOW THESE AREAS TO AVOID REQUIREMENT FOR SPECIAL EQUIPMENT. ALL CONDUIT IN THE HAZARDOUS AREAS SHALL BE RGS, MC OR EMT WITH COMPRESSION FITTINGS. CONDUIT ABOVE/BELOW HAZARDOUS AREAS MAY BE EMT WITH COMPRESSION COUPLINGS. ALL 15A AND 20A RECEPTACLES SHALL BE SFCO TYPE RECEPTACLES. ALL RECEPTACLES SHALL BE MOUNTED AT 48" AFF. CIRCUITS FOR OTHER EQUIPMENT MAY BE RUN THROUGH THIS AREA, BUT THEY SHALL MAINTAIN STRICT COMPLIANCE WITH THE METHODS OF NEC 501.
- CEILING GRID ARE NOT SHOWN. LAY FIXTURES ON CEILING GRID NEAR WHERE THEY ARE SHOWN ON PLAN.



LIGHTING PLAN
 SCALE: 3/16" = 1'-0"

FIXTURE SCHEDULE											
ENVIRONMENT: CR - CORROSIVE; DL - DAMP LOCATION; HZ - HAZARDOUS; IN - INDOOR; WL - WET LOCATION											
MOUNTING TYPE/HEIGHT: B - BOLLARD; CH - CHAIN HUNG; P - PENDANT; PL - POLE; R - RECESSED; S - SURFACE; T - TRACK; W - WALL; CLG HT - CEILING HEIGHT											
TYPE	MANUFACTURER	CAT NO	DESCRIPTION	LAMPS			MNTD TYPE	MNTD HEIGHT	VOLTS	LOAD WATTS	REMARKS
				NO	TYPE	ENVIR					
A	COLUMBIA	LCAT22-35LWG-EDU	2X2 TROFFER	-	2,700 LUMEN LED	IN	R	CLG HT	UNV	23	
AE	COLUMBIA	LCAT22-35LWG-EDU-ELL14	2X2 TROFFER w/ BATTERY PACK	-	2,700 LUMEN LED	IN	R	CLG HT	UNV	23	
B	COLUMBIA	LAWA-35XW-EDU	4" WRAPAROUND	-	2,300 LUMEN LED	IN	S	CLG HT	UNV	19	
C	PRESCOLITE	LC45L-4LCSL-10L35KBWT	4" DOWNLIGHT	-	1,000 LUMEN LED	IN	R	CLG HT	UNV	14	
D	COLUMBIA	MPS4-35W-CW-EU	4" STRIP	-	3,200 LUMEN LED	IN	CH	*	UNV	27	NOTE 2
F	COLUMBIA	CLB2-40MM-W-EDU	2" HIGH BAY	-	14,000 LUMEN LED	IN	CH	16' 0"	UNV	100	NOTE 2
G	COLUMBIA	LXEW4-40M-FAW-EU	4" ENCLOSED HIGH BAY	-	16,000 LUMEN LED	WL	CH	16' 0"	UNV	122	NOTE 2
H	HUBBELL	PVL3-180L-604K7-UJ-20F	WALL PACK	-	6,800 LUMEN LED	WL	W	13' 6"	UNV	55	NOTES 1 & 2
J	KIM	KFL3-60L-135-4K7-WF-UNV-Y*	FLOOD LIGHT	-	16,000 LUMEN LED	WL	W	*	UNV	135	NOTES 1 & 2
EX	EMERGO-LITE	ELN400R-250LR-AD	EXIT SIGN W/ HEADS & REMOTE CAPACITY	-	LED	IN	W	7' 6"	UNV	8	
EX1	EMERGO-LITE	WPREMINDR	EXIT SIGN	-	LED	IN	W	7' 6"	UNV	3	
EM	EMERGO-LITE	12SM36-210L-G-AD	BATTERY PACK	-	LG	IN	W	7' 6"	UNV	36	
RH	EMERGO-LITE	EF44D-LEDWP	REMOTE HEADS	-	LED	WL	W	7' 6"	4	4	
RH1	EMERGO-LITE	EF10D(LG)	REMOTE HEADS	-	LG	IN	W	7' 6"	12	4	

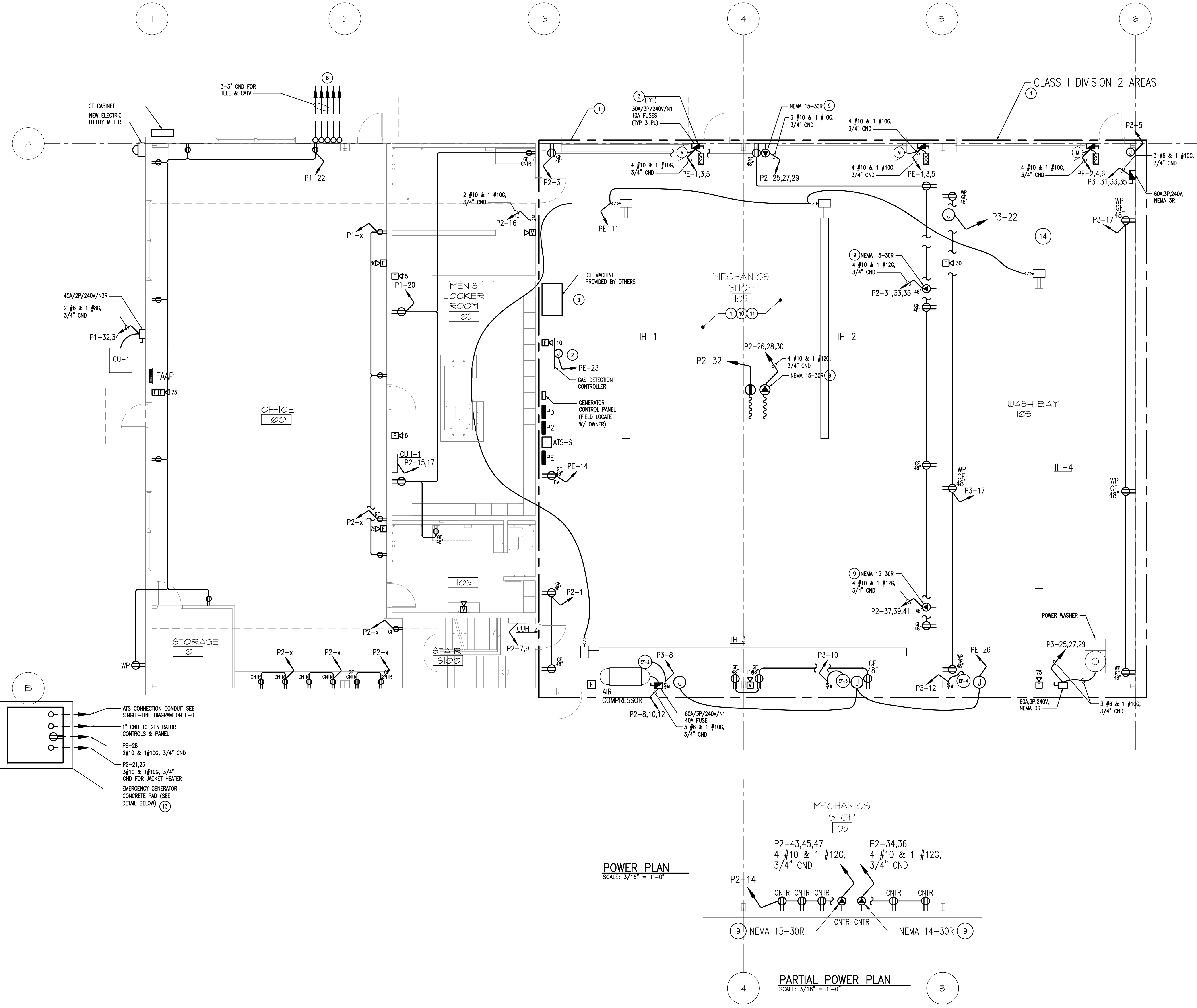
*See REMARKS section.
 NOTES:
 1. VERIFY FIXTURE TRIM, COLOR AND/OR FINISH WITH THE ARCHITECT.
 2. COORDINATE MOUNTING HEIGHT WITH OWNER/ARCHITECT.

ISSUED FOR BID JULY 19, 2023
NOT FOR CONSTRUCTION

EXISTING BUILDING FLOOR PLAN
 " PUBLIC WORKS FACILITY "
 WYOMISSING BOROUGH, BERKS COUNTY, PENNSYLVANIA
 Client: WYOMISSING BOROUGH
 Location: JULY 18, 2023
 Date:

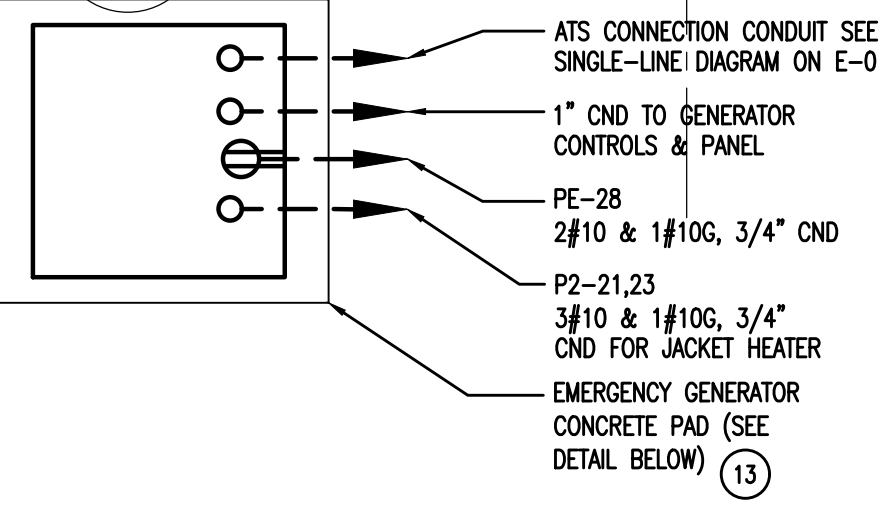
DRAWN BY: SW	PROJ. MANAGER: NEC
PRINCIPAL: JCM	SCALE: AS NOTED
DRAWING NO: E-3.0	
PROJECT NO: 230004	

Revision	Date	Description

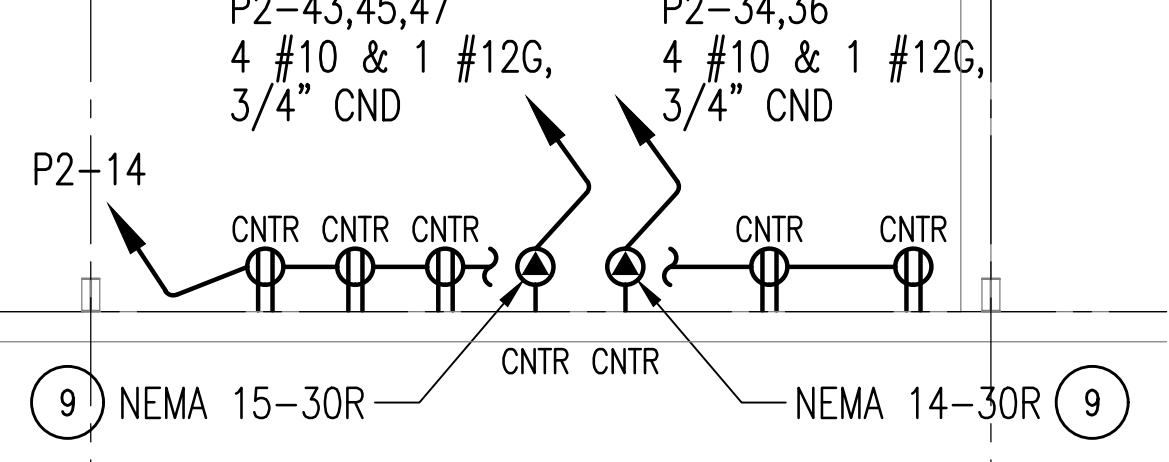


POWER KEY NOTES: ①

- ALL REPAIR/SERVICE AREAS PER NEC 511 SHALL BE CLASS 1 DIVISION 2 HAZARDOUS AREAS FROM THE FLOOR TO 18 INCHES ABOVE FLOOR (AND FROM THE CEILING TO 18 INCHES BELOW THE CEILING WHERE LIGHTER-THAN-AIR FUELED VEHICLES ARE REPAIRED/STORED). PITS AND WORK AREAS BELOW THE FLOOR SHALL BE CLASSIFIED AS CLASS 1 DIVISION 1. ALL WIRING AND CIRCUITS IN OR ROUTED THROUGH THESE AREAS SHALL CONFORM TO NEC 501 AND SHALL HAVE MATERIALS AND CONDUIT SEALS PER NEC 501. ALL RECEPTACLES, EQUIPMENT AND DEVICES SHALL BE MOUNTED ABOVE OR BELOW THESE AREAS TO AVOID REQUIREMENT FOR SPECIAL EQUIPMENT. ALL CONDUIT IN THE HAZARDOUS AREAS SHALL BE RIGID, IMC OR EMT WITH COMPRESSION FITTINGS. CONDUIT ABOVE/BELOW HAZARDOUS AREAS MAY BE EMT WITH COMPRESSION COUPLINGS. ALL 15A AND 20A RECEPTACLES SHALL BE GFCI TYPE RECEPTACLES. ALL RECEPTACLES SHALL BE MOUNTED AT 48" AFF. CIRCUITS FOR OTHER EQUIPMENT MAY BE RUN THROUGH THIS AREA, BUT THEY SHALL MAINTAIN STRICT COMPLIANCE WITH THE METHODS OF NEC 501.
- WIRE AN OUTPUT CONTACT OF THE CO/NO2 DETECTION SYSTEM PROVIDED BY THE MECHANICAL CONTRACTOR IN PARALLEL WITH H.O.A. SWITCH IN THE THREE FAN MOTOR COMBINATION STARTERS HAVING H.O.A. SWITCHES. THE FAN SHALL RUN WHEN EITHER THE H.O.A. SWITCH IS IN HAND OR IN AUTO WITH HIGH TEMPERATURE OR THE CO/NO2 SYSTEM DETECTS GAS OR BOTH. THE H.O.A. SWITCH SHALL NOT BE ABLE TO PROHIBIT OPERATION EVEN IN THE OFF POSITION IF GAS IS DETECTED. AN OUTPUT CONTACT OF THE CO/NO2 SYSTEM SHALL ENERGIZE THE MOTOR STARTER RELAY OF EF-4 AND CAUSE THE FAN TO RUN.
- PROVIDE FUSED DISCONNECT FOR EACH OVERHEAD DOOR MOTOR OPERATOR. PROVIDE FUSES SIZED PER RECOMMENDATION OF MANUFACTURER'S INSTALLATION INSTRUCTIONS. COORDINATE ALL EQUIPMENT LOCATIONS IN THE FIELD. WIRE FISHBOUTS, SENSORS, CARD READERS, KEYPADS, ETC. PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- E.C. SHALL PROVIDE DUCT SMOKE DETECTOR, MONITORING AND CONTROL MODULES, WIRING, MOUNTING AND SAMPLING EQUIPMENT, ETC. FOR HVAC UNITS. M.C. SHALL MOUNT EQUIPMENT AT HVAC UNITS. E.C. SHALL WIRE DETECTORS AND MONITORING AND CONTROL MODULES TO ALARM SYSTEM PER NFPA 72. M.C. SHALL PROVIDE PROTECTED WIRING FROM THE DUCT SMOKE DETECTOR OR CONTROL MODULE TO THE MECHANICAL UNIT MOTOR STARTER AND INTERLOCK THE MOTOR STARTER WITH THE ALARM SYSTEM TO SHUT DOWN THE MECHANICAL UNIT ON DETECTION OF SMOKE.
- PROVIDE A NEMA RECEPTACLE MATCHING THE CORD AND PLUG PROVIDED WITH THE EQUIPMENT.
- ADJUSTAT (PROVIDED BY P.C.) FOR RECIRCULATION PUMP SHALL BE CONNECTED DOWNSTREAM OF THE MANUAL MOTOR STARTER.
- PROVIDE SPECIAL RECEPTACLE FOR EVIDENCE TRUCK. VERIFY NEMA CONFIGURATION WITH POLICE. MATCH EXISTING PLUG. FIELD LOCATE RECEPTACLE WITH POLICE CHIEF.
- 2-3" CONDUIT TO OTHER BUILDING.
- VERIFY NEMA CONFIGURATION AND CIRCUIT SIZE WITH OWNER AND FIELD VERIFY LOCATION PRIOR TO START OF WORK.
- THE SECURITY SYSTEM IS BEING DESIGNED BY A VENDOR WHICH INCLUDES ADDITIONAL CONTRACTOR WORK REQUIRED FOR THIS PROJECT. SEE VENDORS INSTALLATION DRAWINGS AND INSTRUCTIONS. WORK, NOTES, SPECIFICATIONS, DETAILS, ETC. ON THESE DRAWINGS AND INSTRUCTIONS SHALL BE CONSIDERED PART OF THE WORK OF THIS PROJECT JUST AS IF SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL PROVIDE ALL MATERIAL, DEVICES AND COMPONENTS WHICH ARE IDENTIFIED AS FIELD WIRING OR AS BEING THE RESPONSIBILITY OF THE OWNER, CONTRACTOR, OTHERS, ETC. CONTRACTOR SHALL CONFIRM AND/OR COORDINATE FINAL LOCATIONS OF ALL DEVICES, COMPONENTS, RACEWAYS, CIRCUITS, ETC. WITH THE VENDOR PRIOR TO START OF WORK.
- THE TELE/DATA/CATV SYSTEM IS BEING DESIGNED BY A VENDOR WHICH INCLUDES ADDITIONAL CONTRACTOR WORK REQUIRED FOR THIS PROJECT. SEE VENDORS INSTALLATION DRAWINGS AND INSTRUCTIONS. WORK, NOTES, SPECIFICATIONS, DETAILS, ETC. ON THESE DRAWINGS AND INSTRUCTIONS SHALL BE CONSIDERED PART OF THE WORK OF THIS PROJECT JUST AS IF SHOWN ON THESE DRAWINGS. CONTRACTOR SHALL PROVIDE ALL MATERIAL, DEVICES AND COMPONENTS WHICH ARE IDENTIFIED AS FIELD WIRING OR AS BEING THE RESPONSIBILITY OF THE OWNER, CONTRACTOR, OTHERS, ETC. CONTRACTOR SHALL CONFIRM AND/OR COORDINATE FINAL LOCATIONS OF ALL DEVICES, COMPONENTS, RACEWAYS, CIRCUITS, ETC. WITH THE VENDOR PRIOR TO START OF WORK.
- E.C. SHALL INSTALL AND WIRE FAN PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. MECHANICAL/CONTROLS CONTRACTOR SHALL CONNECT MODULE SUCH THAT FAN SHUTS DOWN ON ACTIVATION OF FIRE ALARM.
- PAD DIMENSIONS SHALL BE DETERMINED BY GENERATOR SHOP DRAWINGS AND SHALL EXTEND 4 INCHES (MINIMUM) IN ALL DIRECTIONS AROUND THE GENERATOR.
- HOOK-UP (CIRCUIT BREAKER AND DISCONNECT) FOR EXISTING POWER WASHER IS SIZED FOR FUTURE POWER WASHER SIMILAR TO THE NEW POWER WASHER BUT PROVIDE FUSES TO MATCH OVERLOAD PROTECTION AT EXISTING POWER WASHER IN EXISTING BUILDING TO ALLOW TEMPORARY RELOCATION OF EXISTING UNIT.



POWER PLAN
 SCALE: 3/16" = 1'-0"



PARTIAL POWER PLAN
 SCALE: 3/16" = 1'-0"

ISSUED FOR BID JULY 19, 2023
 NOT FOR CONSTRUCTION

McCarthy
 ENGINEERING ASSOCIATES, INC.
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**ELECTRICAL - NEW BUILDING
 FIRST FLOOR PLAN
 " PUBLIC WORKS FACILITY "**

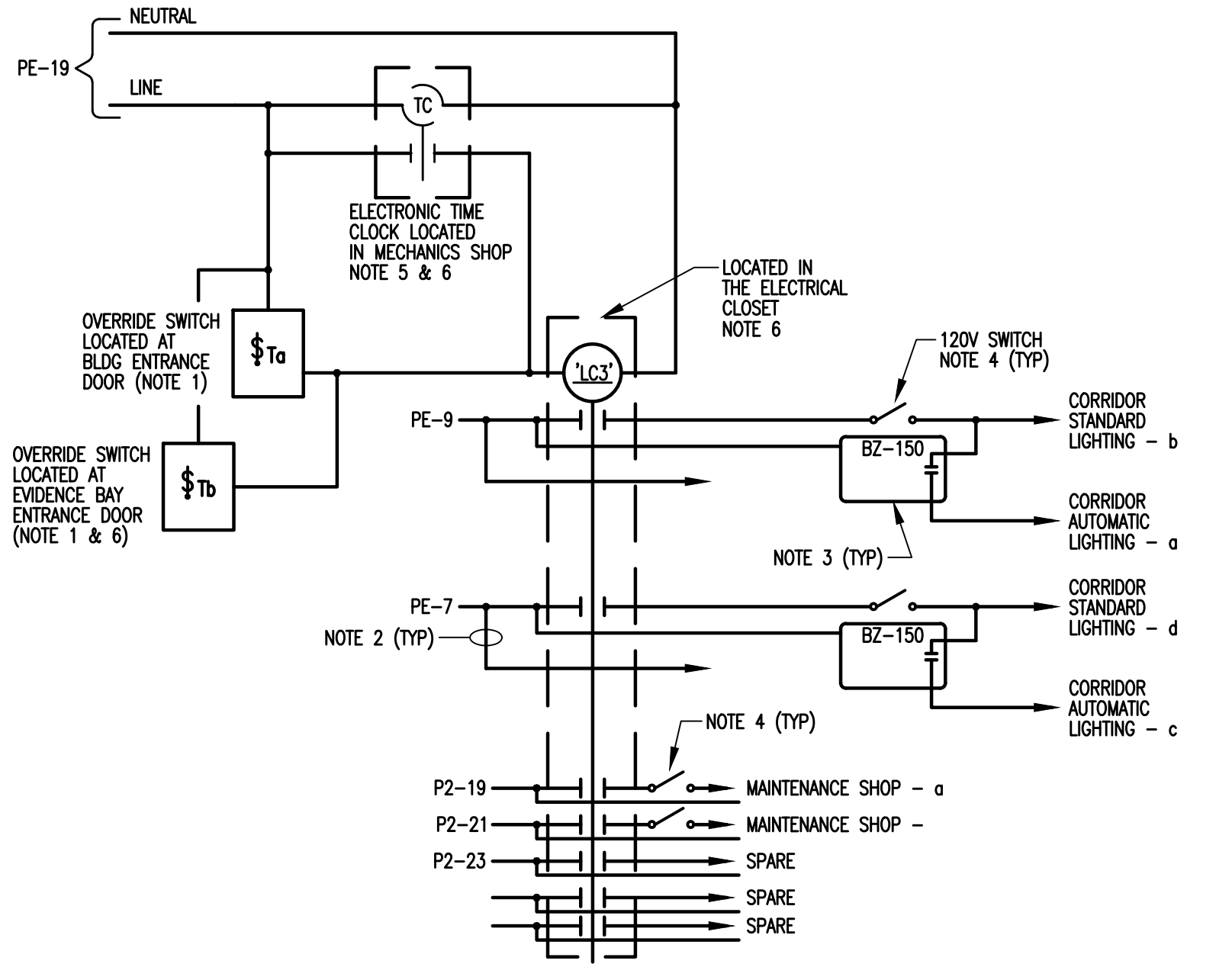
Client: WYOMISSING BOROUGH
 Location: BERKS COUNTY, PENNSYLVANIA
 Date: JULY 18, 2023

PROJ. MANAGER:
 SW NEC

PRINCIPAL:
 JCM SCALE:
 AS NOTED

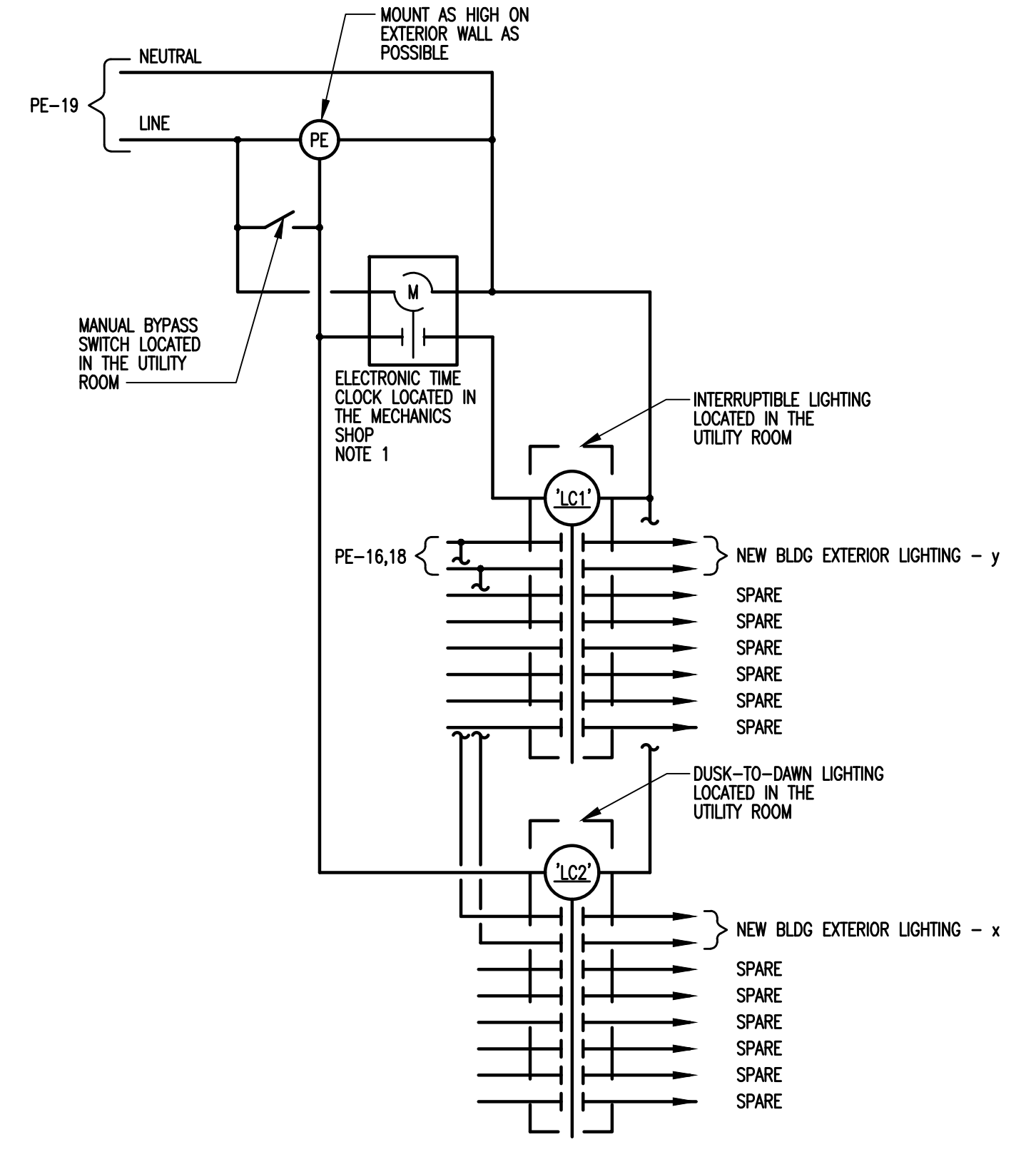
DRAWING NO:
E-4.0

PROJECT NO:
 230004



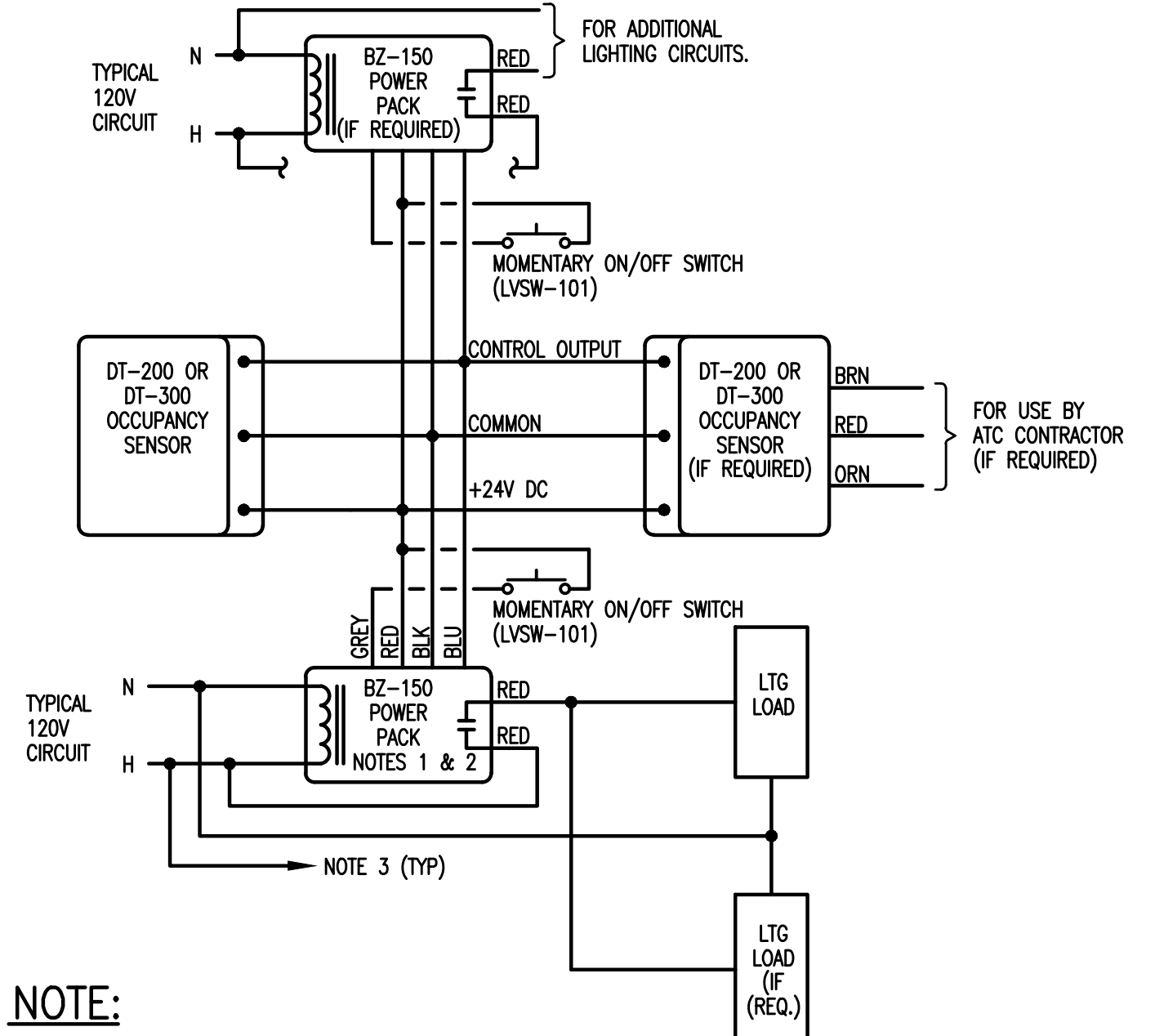
TIME CLOCK LIGHTING CONTROL WIRING DIAGRAM (TYPICAL)

- NO SCALE
- NOTES:
- TWO HOUR OVERRIDE AUTOMATIC TIMER SWITCH. LABEL SWITCH "NIGHT TIME OVERRIDE". SWITCH SHALL BE TORK SSK200 OR EQUAL. VERIFY LOCATION IN THE FIELD WITH THE OWNER.
 - UNSWITCHED HOT LEG FOR NIGHTLIGHTS, OCCUPANCY SENSORS, EMERGENCY BALLASTS, EXIT SIGNS AND OTHER AREA LIGHTING.
 - SEE OCCUPANCY SENSOR SYSTEM ELEMENTARY DIAGRAM (TYPICAL) FOR LOW VOLTAGE CONTROL WIRING OF THE BZ UNITS.
 - PROVIDE STANDARD SINGLE OR THREE-WAY TOGGLE SWITCHING CONTROLS AS SHOWN ON THE LIGHTING PLANS.
 - PROVIDE A FOUR INDEPENDENTLY PROGRAMMABLE CONTACT ELECTRONIC TIME SWITCH (INTERMATIC ET8415C).
 - PROVIDE ADDITIONAL DEVICES AS TC2, LC4 & BYPASS SWITCH Tc IN THE EXISTING BUILDING VEHICLE PARKING EX101. WIRE CIRCUITS R3-5&7 SIMILAR TO MAINTENANCE SHOP.



SITE LIGHTING CONTROL WIRING DIAGRAM

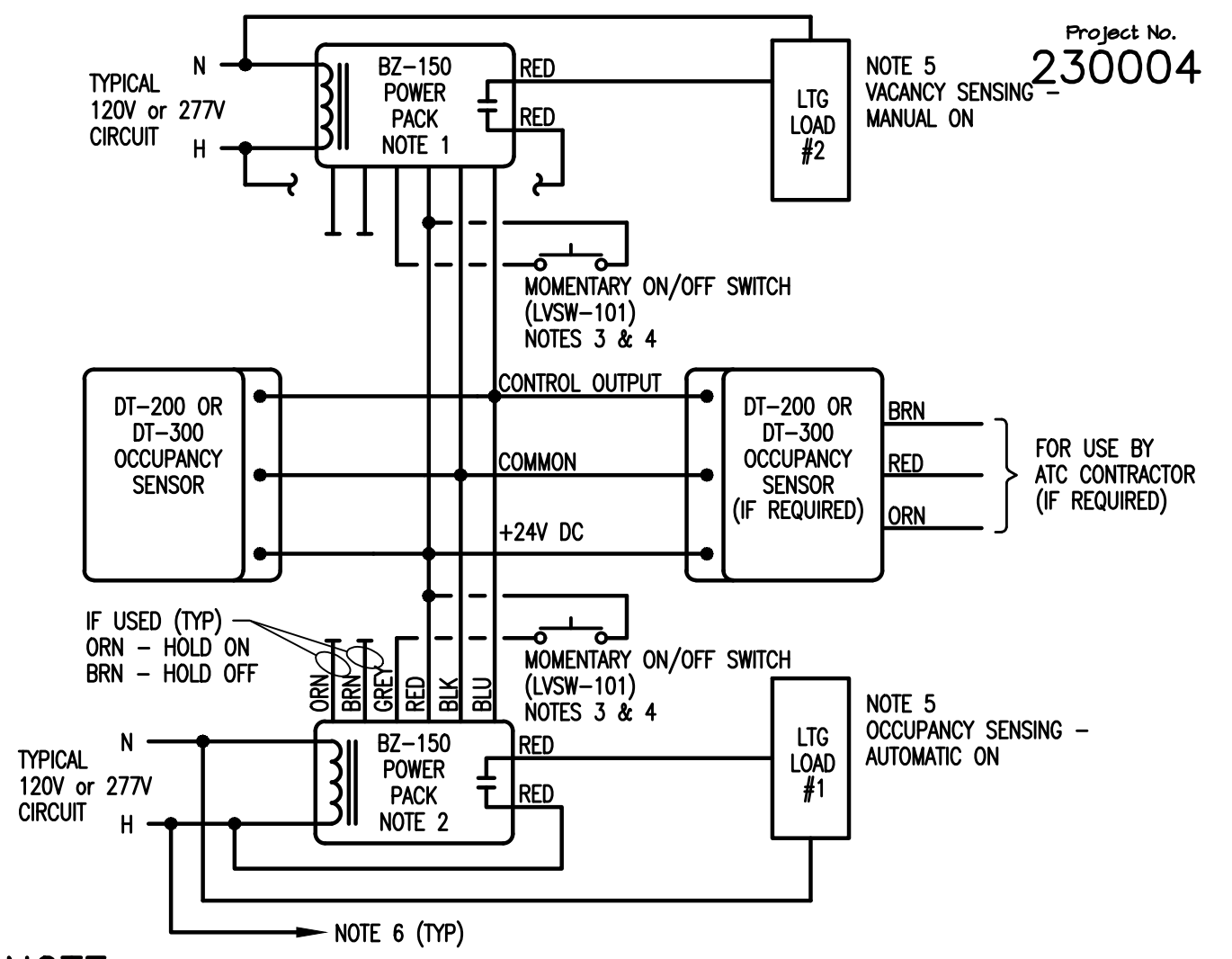
- NO SCALE
- NOTES:
- PROVIDE A FOUR INDEPENDENTLY PROGRAMMABLE CONTACT ASTRONOMICAL ELECTRONIC TIME SWITCH (INTERMATIC ET8415C).



- NOTE:
- PROVIDE ADDITIONAL POWER PACKS WIRED IN PARALLEL FOR EACH GROUP OF THREE OCCUPANCY SENSORS.
 - SET BZ UNIT TO AUTO ON FOR OCCUPANCY SENSING.
 - ROUTE UNSWITCHED HOT LEG TO EMERGENCY FIXTURES, NIGHTLIGHTS, EXIT SIGNS AND ADDITIONAL OCCUPANCY SENSORS.

OCCUPANCY OR VACANCY SENSOR SYSTEM ELEMENTARY DIAGRAM (TYPICAL)

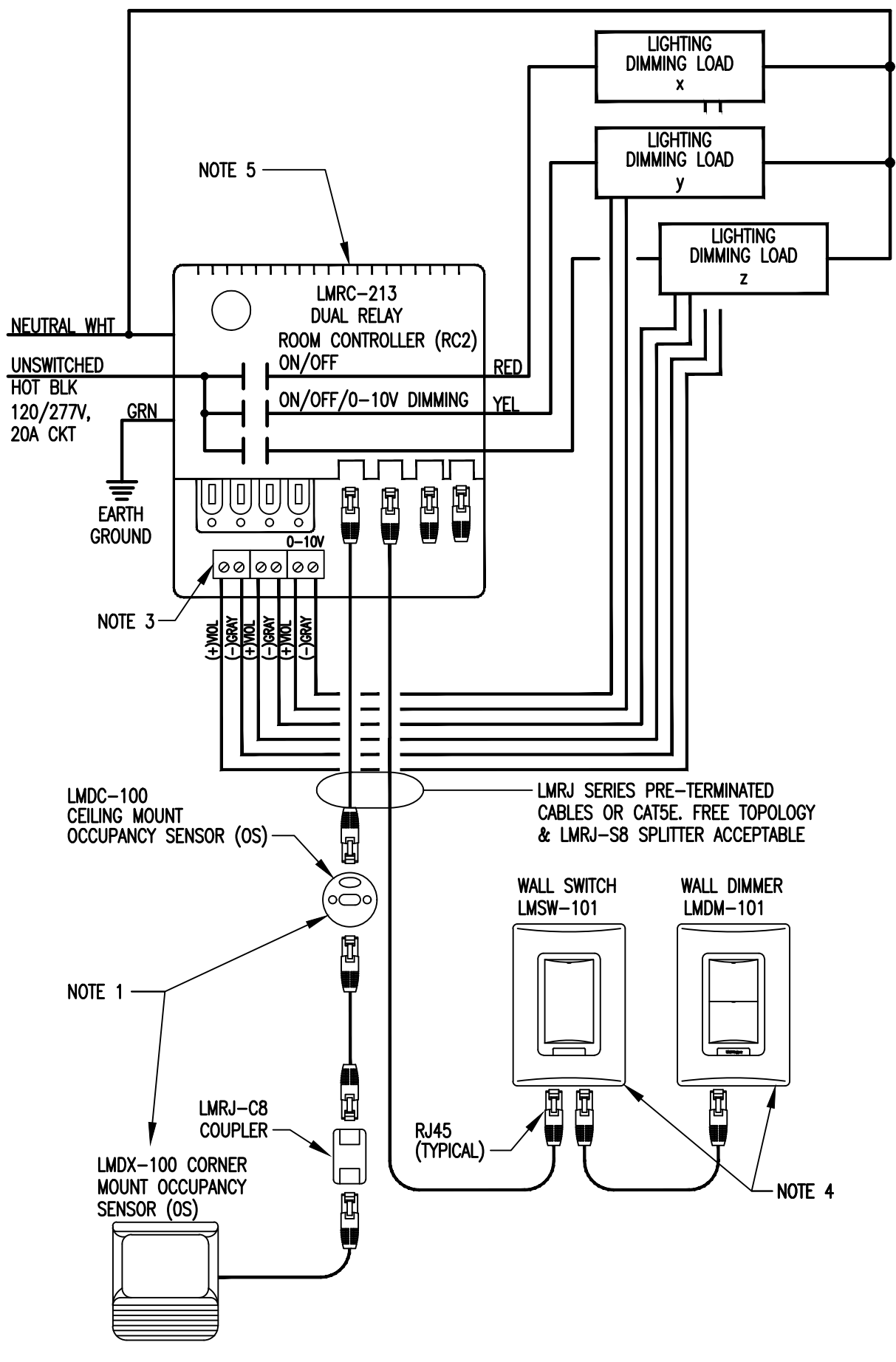
NO SCALE



- NOTE:
- SET BZ UNIT TO MANUAL ON FOR VACANCY SENSING. PROVIDE ADDITIONAL POWER PACKS WIRED IN PARALLEL FOR EACH GROUP OF THREE OCCUPANCY SENSORS.
 - SET ONE BZ UNIT TO AUTO ON FOR OCCUPANCY SENSING. PROVIDE ADDITIONAL POWER PACKS WIRED IN PARALLEL FOR EACH GROUP OF THREE OCCUPANCY SENSORS.
 - PROVIDE ADDITIONAL MOMENTARY SWITCHES IN PARALLEL AS NEEDED FOR ADDITIONAL DOORS.
 - TWO MOMENTARY LVSW-101 ON/OFF SWITCHES MAY BE REPLACED BY ONE LVSW-102 DUAL SWITCH.
 - ALTERNATE FIXTURE MOUNTING IN BOTH DIRECTIONS WHERE POSSIBLE TO PROVIDE A CHECKERBOARD EFFECT UNLESS OTHERWISE NOTED.
 - ROUTE UNSWITCHED HOT LEG TO EMERGENCY FIXTURES, NIGHTLIGHTS, EXIT SIGNS AND ADDITIONAL OCCUPANCY SENSORS.

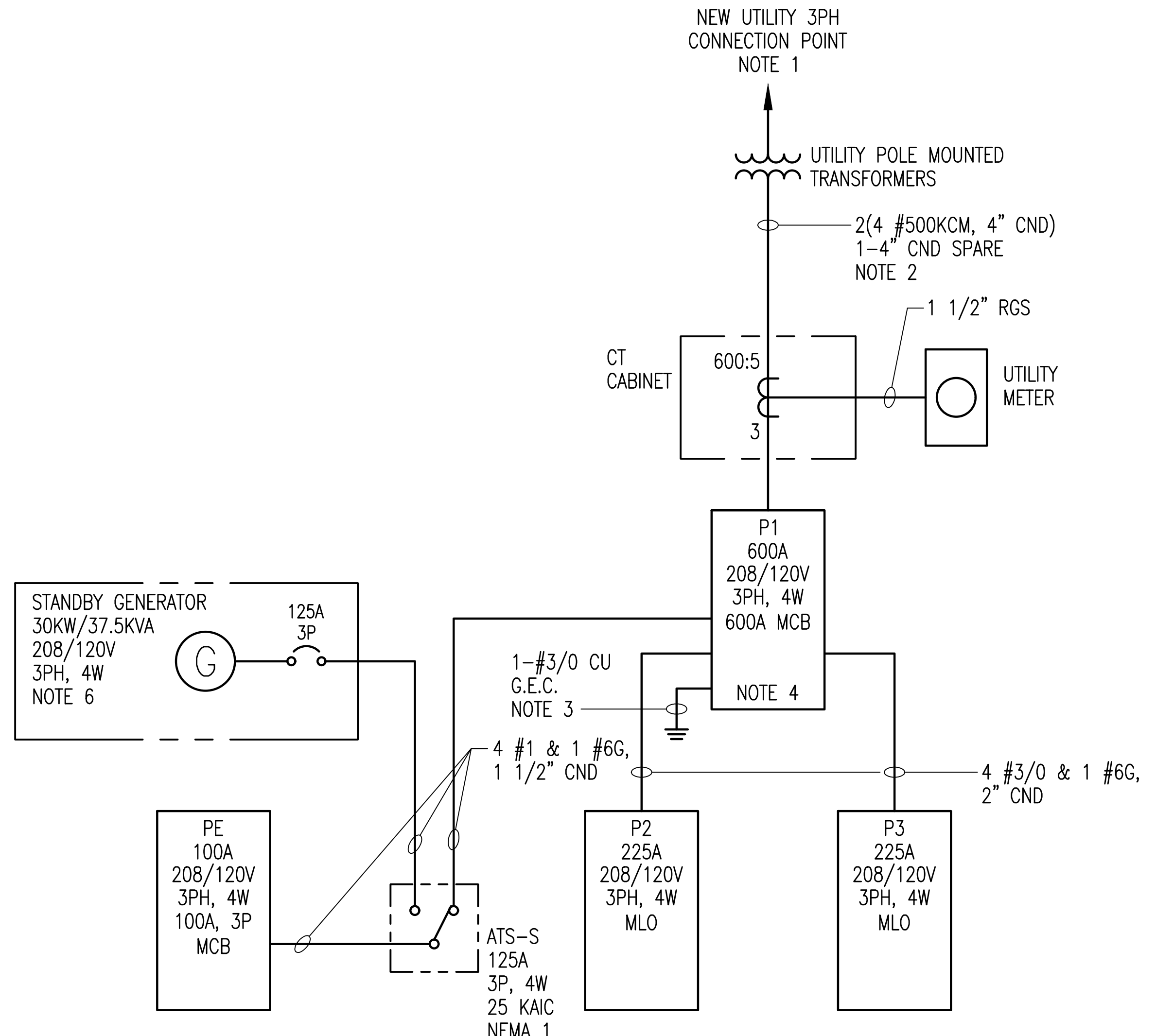
DUAL LEVEL VACANCY/OCCUPANCY SENSOR SYSTEM ELEMENTARY DIAGRAM (TYPICAL)

NO SCALE



DAYLIGHTING/VACANCY CONTROL DIAGRAM (TYP)

- NO SCALE
- PROVIDE OCCUPANCY SENSORS AS SHOWN ON THE PLANS. CEILING MOUNT LMDC-100 DUAL TECHNOLOGY SENSOR HAS TWO RANS PORTS. CORNER MOUNT LMDC-100 HAS PIGTAIL AND SUPPLIED COUPLER. OCCUPANCY SENSORS WITH THE SAME SUBSCRIPT(S) SHALL BE LINKED TOGETHER TO CONTROL THE SAME SWITCHING CIRCUIT(S).
 - USE LMS-500 PHOTOSENSOR MOUNTED 3 FEET FROM THE WINDOW AND AIMED AT THE WINDOW FOR MULTIPLE DAYLIGHTING ZONES. PHOTOSENSOR SHALL CONTROL THE INDICATED DIMMING ZONES (1, 2, ETC.) SHOWN ON THE PLAN. THE LIGHTING OUTPUT FOR THE FIXTURES IN A DIMMING ZONE SHALL BE DECREASED LINEARLY AS THE DAYLIGHT INCREASES IN ORDER TO PROVIDE A CONSTANT AND UNIFORM LIGHT LEVEL IN THE AREA.
 - PROVIDE A SEPARATE 0-10V CONNECTION TO DIMMING BALLASTS OF EACH DIMMING ZONE. LIGHTING LOAD SWITCHING CIRCUITS (a, b, ETC.) AND DIMMING ZONES (1, 2, ETC.) SHALL BE DETERMINED FROM THE LIGHTING FLOOR PLAN. NOTE THAT FIXTURES OF THE SAME DIMMING ZONE MAY BE CONNECTED TO DIFFERENT SWITCHING CIRCUITS.
 - PROVIDE DIMMERS AND/OR SWITCHES FOR THE VARIOUS SWITCHING CIRCUITS (a, b, ETC.) AS SHOWN ON THE LIGHTING FLOOR PLAN. MULTIPLE DIMMERS AND/OR SWITCHES MAY BE SERIES CONNECTED TO PROVIDE CONTROLS AS SHOWN ON THE PLAN.
 - PROVIDE QUANTITY OF LMR-211, LMR-212, AND/OR LMR-213 ROOM CONTROLLERS AS SHOWN ON THE PLAN (NOTE - DIAGRAM ABOVE IS TYPICAL FOR ONE CONTROLLER). EACH CONTROLLER SHALL HAVE ITS OUTPUTS LINKED TO THE CONTROL SWITCHING DIMMING CIRCUIT (a, b, ETC.) AS SHOWN ON THE DIAGRAM ABOVE, AND BY THE LIGHTING FIXTURE SUBSCRIPTS ON THE PLAN. STANDARD SEQUENCE OF OPERATION IS FOR THE FIRST LMR OUTPUT TO DEFAULT TO AUTOMATIC-ON/AUTOMATIC-OFF AND FOR THE SECOND OUTPUT TO DEFAULT TO MANUAL-ON/AUTOMATIC OFF. USE AN LMCT-100 DIGITAL CONFIGURATION TOOL TO PROGRAM THE OPERATION MODE TO BE AS DESCRIBED BY THE DRAWING NOTES.
 - PROVIDE TWO LMCT-100 DIGITAL CONFIGURATION TOOLS TO THE OWNER.



NEW BUILDING SINGLE LINE DIAGRAM

SCALE: NONE

SINGLE LINE/SERVICE NOTES:

- CONTRACTOR SHALL PROVIDE ALL MATERIAL, LABOR AND WORK REQUIRED FOR A NEW ELECTRICAL SERVICE AS DESCRIBED IN THE LOCAL UTILITY SERVICE AND INSTALLATION REGULATIONS. ANY LOCAL UTILITY COMPANY CHARGES FOR PROVISION OF ELECTRICAL SERVICE SHALL BE INCLUDED IN THE CONTRACTOR'S BASE PRICE. AS A MINIMUM, THE INSTALLATION SHALL MEET THE SERVICE AND INSTALLATION REGULATIONS OF THE LOCAL UTILITY.
- PROVIDE BURIED PVC SECONDARY CONDUIT AND SECONDARY CONDUCTORS FROM THE UTILITY TRANSFORMER TO THE MAIN PANELBOARD. CONFIRM CONDUIT AND CONDUCTOR QUANTITIES AND SIZES WITH THE LOCAL UTILITY PRIOR TO START OF WORK. INCREASE QUANTITIES AND SIZES AS REQUIRED TO MEET LOCAL UTILITY SERVICE AND INSTALLATION REGULATIONS.
- PROVIDE A GROUNDING ELECTRODE CONDUCTOR SIZED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND CONNECTED TO THE GROUNDING ELECTRODE SYSTEM INCLUDING FOUNDATION REBAR IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.
- THE SHORT CIRCUIT RATINGS ARE BASED ON AN AVAILABLE SHORT CIRCUIT CURRENT OF 27,800A AT THE UTILITY TRANSFORMER SECONDARY. VERIFY THAT THE UTILITY SHORT CIRCUIT AVAILABLE CURRENT DOES NOT EXCEED THIS VALUE PRIOR TO ORDERING MDP.
- EXISTING SERVICE TO EXISTING BUILDING SHALL BE RETAINED.
- CONNECT THE GENERATOR NEUTRAL TO THE NORMAL SYSTEM NEUTRAL AT THE TRANSFER SWITCH. DO NOT GROUND THE NEUTRAL AT THE GENERATOR. THIS GENERATOR IS NOT A SEPARATELY DERIVED SYSTEM.
- PROVIDE AN 80A, 2P BREAKER FOR FEEDER TO NEW PANEL R3.
- CONDUCTORS OF THIS CIRCUIT ARE OVERSIZED TO COMPENSATE FOR VOLTAGE DROP. PROVIDE INCREASED SIZE LUGS AS POSSIBLE BUT WHERE THE CONDUCTOR SIZE EXCEEDS THE MAXIMUM CAPACITY OF ANY EQUIPMENT TERMINATION LUGS AVAILABLE, PROVIDE A JUNCTION BOX WITH SPLICE WITHIN TEN FEET OF THE TERMINATION AND REDUCE THE CONDUCTOR SIZE TO THE LARGEST SIZE WHICH CAN BE ACCOMMODATED BY THE EQUIPMENT.

<p>2500 East High Street Suite 630 Pottsville, PA 19464 Phone: 610.379.8001</p> <p>955 Van Rensselaer Road Suite 2 Pottsville, PA 19464 Phone: 610.379.8001</p> <p>MCCARTHY ENGINEERING ASSOCIATES, INC.</p> <p>www.McCarthy-Engineering.com Phone: 610.379.8001</p>	<p>Project No. 230004</p> <p>Client: WYOMISSING BOROUGH Location: BERKS COUNTY, PENNSYLVANIA Date: JULY 18, 2023</p> <p>Principal: JCM Scale: AS NOTED</p> <p>Drawn By: SW Project Manager: NEC</p> <p>Project No. 230004</p>
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LOCATION: NEW BLDG 2ND FLR UTILITY RM												
PANEL P1 SCHEDULE												
PHASE: 3			WIRE: 4			VOLTS: 208/120			25 KAIC			
CURRENT RATING: 600 AMP - MAIN BREAKER												
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER		DESCRIPTION	CKT NO		
		TRIP	POLE	CKT	A	B	C	CKT			POLE	TRIP
1	PANEL P2	200	3	17.52	28.93			11.41	3	200	PANEL P3	2
3	"	-	-	22.77		33.61		10.84	-	-	"	4
5	"	-	-	21.23			33.29	12.06	-	-	"	6
7	LTG - STORAGE	20	1	0.22	0.77			0.55	1	20	RECIRC PUMP	8
9	TIMECLOCK & L-12 DAMPER	20	1	0.36		0.36		0.00	1	20	SPARE	10
11	SPARE	20	1	0.00			0.50	0.50	1	20	CONF RM 203 PROJECTOR	12
13	SPARE	20	1	0.00	0.00			0.00	1	20	SPARE	14
15	SPARE	20	1	0.00		1.08		1.08	1	20	RECP - OFFICE AREA 101	16
17	SPARE	20	1	0.00			0.60	0.60	1	20	EWC	18
19	LTG - MECHANICS SHOP 105	20	1	1.80	3.24			1.44	1	20	RECP - MEN'S LOCKER RM 103	20
21	LTG - MECHANICS SHOP 105	20	1	1.50		2.94		1.44	1	20	RECP - BREAK RM 102	22
23	LTG - POLICE DEPT 106	20	1	1.22			2.22	1.00	1	20	VENDING MACHINE	24
25	WATER HEATER	20	1	0.18	1.18			1.00	1	20	VENDING MACHINE	26
27	SPARE	20	1	0.00		0.90		0.90	1	20	RECP-CORR 200, RM 201, RM 202	28
29	MICROWAVE	20	1	1.44			2.52	1.08	1	20	RECP - CONF. RM. 203	30
31	SPARE	20	1	0.00	7.28			7.28	2	60	CU-1	32
33	RECP - TOOL RM 105A	20	1	0.36		7.64		7.28	-	-	"	34
35	RECP - TOOL RM 105A	20	1	0.36			0.36	0.00	1	-	SPACE	36
37	PANEL PE	125A	3	7.49	7.49			0.00	1	-	SPACE	38
39	"	-	-	9.08		9.08		0.00	1	-	SPACE	40
41	"	-	-	9.09		9.09		0.00	1	-	SPACE	42
*BREAKER LOCKON DEVICE		CIRCUIT TOTALS:		94.62				58.46				
**SHUNT TRIP BREAKER		PHASE TOTALS:		48.89	55.61	48.58						
***HACR BREAKER		TOTAL CONNECTED LOAD:				153	KVA					
****BREAKER PADLOCK OFF DEVICE		TOTAL CONNECTED LOAD:				425	AMP					

LOCATION: MECHANICS SHOP 105													
PANEL P2 SCHEDULE													
PHASE: 3			WIRE: 4			VOLTS: 208/120			10 KAIC				
CURRENT RATING: 225 AMP - MAIN LUGS ONLY													
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER		DESCRIPTION	CKT NO			
		TRIP	POLE	CKT	A	B	C	CKT			POLE	TRIP	
1	RECP - MECHANICS SHOP 105	20	1	1.26	1.26			0.00	1	20	SPARE	2	
3	RECP - MECHANICS SHOP 105	20	1	1.08		1.08		0.00	1	20	SPARE	4	
5	RECP - SHOP STORAGE 105B&C	20	1	0.54			0.54	0.00	1	20	SPARE	6	
7	CUH-2	20	2	1.50	4.70			3.20	3	60	AIR COMPRESSOR	8	
9	"	-	-	1.50				3.20	-	-	"	10	
11	SPARE	20	1	0.00				3.20	3.20	-	-	12	
13	BREAK RM 102 CNTR RECPS	20	1	0.36	1.26			0.90	1	20	RECP - MECHANICS SHOP 105	14	
15	CUH-1	20	2	1.50		2.68		1.18	1	25	EF-6	16	
17	"	-	-	1.50				1.68	0.18	1	15	BATH FAN TIMER	18
19	SPARE	20	1	0.00	0.00			0.00	1	20	SPARE	20	
21	GENERATOR JACK HEATER	20	2	1.00		3.19		2.19	2	30	CLNG FANS CF-13,14,15	22	
23	"	-	-	1.00				3.19	2.19	-	-	24	
25	PORTABLE LIFT	30	3	2.90	4.94			2.04	3	30	LIFT	26	
27	"	-	-	2.90		4.94		2.04	-	-	"	28	
29	"	-	-	2.90				4.94	2.04	-	-	30	
31	SPECIAL RECP - MECHANICS SHOP 105	30	3	2.88	3.06			0.18	1	20	RECP - LIFT	32	
33	"	-	-	2.88		5.38		2.50	2	30	SPECIAL RECP - MECHANICS SHOP 105	34	
35	"	-	-	2.88			5.38	2.50	-	-	"	36	
37	SPECIAL RECP - MECHANICS SHOP 105	30	3	0.18	0.68			0.50	1	20	ICE MACHINE (1)	38	
39	"	-	-	0.18		0.18		0.00	1	20	SPARE	40	
41	"	-	-	0.18			0.18	0.00	1	20	SPARE	42	
43	SPECIAL RECP - MECHANICS SHOP 105	30	3	0.18	0.18			0.00	1	20	SPARE	44	
45	"	-	-	0.18	0.18			0.00	1	20	SPARE	46	
47	"	-	-	0.18		0.18		0.00	1	-	SPACE	48	
49	SPACE	-	-	0.00	0.00			0.00	1	-	SPACE	50	
51	SPACE	-	-	0.00	0.00			0.00	1	-	SPACE	52	
53	SPACE	-	-	0.00	0.00			0.00	1	-	SPACE	54	
*BREAKER LOCKON DEVICE		CIRCUIT TOTALS:		29.66		28.04	NOTE:						
**SHUNT TRIP BREAKER		PHASE TOTALS:		16.08	22.33	19.29	1) SEE POWER KEYNOTE #9 ON E-4.0						
***HACR BREAKER		TOTAL CONNECTED LOAD:				58	KVA						
****BREAKER PADLOCK OFF DEVICE		TOTAL CONNECTED LOAD:				160	AMP						

LOCATION: NEW BLDG 1ST FLR EVIDENCE VEHICLE BAY												
PANEL P3 SCHEDULE												
PHASE: 3			WIRE: 4			VOLTS: 208/120			10 KAIC			
CURRENT RATING: 225 AMP - MAIN LUGS ONLY												
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER		DESCRIPTION	CKT NO		
		TRIP	POLE	CKT	A	B	C	CKT			POLE	TRIP
1	SPACE	-	-	0.00	0.00			0.00	1	20	SPARE	2
3	SPACE	-	-	0.00		0.00		0.00	1	20	SPARE	4
5	SPACE	-	-	0.00			0.00	0.00	1	20	SPARE	6
7	SPACE	20	1	0.00	0.53			0.53	1	15	EF-2	8
9	SPACE	20	1	0.00		0.86		0.86	1	20	EF-3	10
11	SPACE	-	-	0.00			1.18	1.18	1	25	EF-4	12
13	SPACE	-	-	0.00	0.90			0.90	1	15	EF-5	14
15	SPACE	-	-	0.00		0.00		0.00	1	-	SPACE	16
17	RECP - WASH BAY	20	1	1.08			1.08	0.00	1	-	SPACE	18
19	SPACE	-	-	0.00	0.18			0.18	1	15	OIL SEPERATOR ALARM	20
21	SPACE	-	-	0.00		0.18		0.18	1	15	EF-3 TIMER	22
23	SPACE	-	-	0.00		0.00	0.00	0.00	1	-	SPACE	24
25	POWER WASHER	60	3	4.90	4.90			0.00	1	-	SPACE	26
27	"	-	-	4.90		4.90		0.00	1	-	SPACE	28
29	"	-	-	4.90			4.90	0.00	1	-	SPACE	30
31	EXG POWER WASHER	60	3	4.90	4.90			0.00	1	-	SPACE	32
33	"	-	-	4.90		4.90		0.00	1	-	SPACE	34
35	"	-	-	4.90			4.90	0.00	1	-	SPACE	36
37	SPACE	-	-	0.00	0.00			0.00	1	-	SPACE	38
39	SPACE	-	-	0.00		0.00		0.00	1	-	SPACE	40
41	SPACE	-	-	0.00			0.00	0.00	1	-	SPACE	42
*BREAKER LOCKON DEVICE		CIRCUIT TOTALS:		30.48				3.83				
**SHUNT TRIP BREAKER		PHASE TOTALS:		11.41	10.84	12.06						
***HACR BREAKER		TOTAL CONNECTED LOAD:				34	KVA					
****BREAKER PADLOCK OFF DEVICE		TOTAL CONNECTED LOAD:				95	AMP					

LOCATION: MECHANICS SHOP 105												
PANEL PE SCHEDULE												
PHASE: 3			WIRE: 4			VOLTS: 208/120			10 KAIC			
CURRENT RATING: 100 AMP MAIN BREAKER												
CKT NO	DESCRIPTION	BREAKER		KVA LOADS			BREAKER		DESCRIPTION	CKT NO		
		TRIP	POLE	CKT	A	B	C	CKT			POLE	TRIP
1	GARAGE DOOR OPENERS	30	3	1.26	2.52			1.26	3	30	GARAGE DOOR OPENERS	2
3	"	-	-	1.26		2.52		1.26	-	-	"	4
5	"	-	-	1.26			2.52	1.26	-	-	"	6
7	LTG - BREAK RM 102	20	1	0.99	1.59			0.60	1	20	EM GARAGE/EVIDENCE VEH LTS	8
9	LTG - CORRIDOR 200	20	1	0.87		2.07		1.20	1	20	RECP - EVIDENCE TRUCK	10
11	IH-1,2,3,4	20	1	2.32			3.52	1.20	1	20	RECP - EVIDENCE TRUCK	12
13	AC-3	15	1	1.27	1.63			0.36	1	20	BREAK RM 102 CNTR RECP	14
15	AC-1	15	1	1.27		1.60		0.33	2	20	LTG - EXTERIOR	16
17	AC-2	15	1	1.27			1.60	0.33	-	-	"	18
19	LTG CONTROLS	20*	1	0.60	1.15			0.55	3	15	EF-1	20
21	REFRIGERATOR	20	1	1.00		1.55		0.55	-	-	"	22
23	GAS DETECTION SYSTEM	20*	1	0.54			1.09	0.55	-	-	"	24
25	FACP	20*	1	0.60	0.60			0.00	1	20	SPARE	26
27	HOT WATER HEATER VENT	20	1	0.34		1.34		1.00	1	20	GENERATOR BATT CHGR & RECP	28
29	SPACE	20	1	0.00			0.36	0.36	1	20	RECP - TEL/DATA MEZZANINE	30
31	SPACE	20	1	0.00	0.00			0.00	1	-	SPACE	32
33	SPACE	20	1	0.00		0.00		0.00	1	-	SPACE	34
35	SPACE	20	1	0.00			0.00	0.00	1	-	SPACE	36
*BREAKER LOCKON DEVICE		CIRCUIT TOTALS:		14.85				10.81				
**SHUNT TRIP BREAKER		PHASE TOTALS:		7.49	9.08	9.09						
***HACR BREAKER		TOTAL CONNECTED LOAD:				26	KVA					
****BREAKER PADLOCK OFF DEVICE		TOTAL CONNECTED LOAD:				71	AMP					

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950 Van Reed Road, Pottsville, PA 19464
 Client: WYOMISSING BOROUGH
 Location: BERKS COUNTY, PENNSYLVANIA
 Date: JULY 18, 2023

MCCARTHY
 ENGINEERING ASSOCIATES, INC.

PANEL SCHEDULES
 " PUBLIC WORKS FACILITY "

DRAWN BY: SW
 PRINCIPAL: JCM
 SCALE: AS NOTED
 DRAWING NO: E-6.0
 PROJECT NO: 230004

PROD. MANAGER: NEC
 DATE: AS NOTED

SPECIFICATIONS

- 1.1 THE ARCHITECTURAL GENERAL CONDITIONS SHALL APPLY TO AND FORM A PART OF THE ELECTRICAL SECTION OF THESE SPECIFICATIONS.
1.2 PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, AND TOOLS NECESSARY FOR A COMPLETE AND WORKABLE ELECTRICAL SYSTEM AS INDICATED ON THE DRAWINGS.
1.3 UNLESS NOTED OTHERWISE, THIS CONTRACTOR SHALL FURNISH AND INSTALL ALL CONTROL DEVICES TOGETHER WITH CONTROL WIRING, CONDUIT, AND ALL APPURTENANCES AND ACCESSORIES NECESSARY TO PERFORM THE OPERATING FUNCTIONS AS SPECIFIED.

- B. #10 AND SMALLER SHALL BE SOLID WITH TYPE THHN/THWN INSULATION.
C. #12 SHALL BE MINIMUM SIZE CONDUCTOR EXCEPT #14 MAY BE USED FOR CONTROL CIRCUIT WIRING AND #10 SHALL BE THE MINIMUM SIZE FOR CIRCUITS OVER 100 FEET LONG.
1.18 WIRE CONNECTIONS FOR SPLICING #8 AWG AND SMALLER SHALL BE MADE WITH PRESSURE CONNECTORS CONSISTING OF CONE-SHAPED COIL SPRINGS WITH INSULATED COVERS.
1.19 ALL LUGS AND/OR CIRCUIT BREAKER LUG CONNECTORS SHALL BE COPPER OR HIGH PERCENTAGE COPPER ALLOY RATED FOR USE WITH 75 DEGREE C WIRING.

- EQUAL. RECEPTACLES WITH INTEGRAL GROUND FAULT INTERRUPTING CAPACITY SHALL BE PROVIDED AS INDICATED ON THE DRAWINGS.
1.28 WIRING DEVICES AND COVER PLATES ARE TO BE COLOR COORDINATED WITH THE OWNER'S REPRESENTATIVE.
1.29 SAFETY SWITCHES SHALL BE THE SIZE AND TYPE AS SHOWN ON THE DRAWINGS.
1.30 PROVIDE FOR EVERY FUSE CLIP TO WHICH A CIRCUIT HAS BEEN CONNECTED, A NONRENEWABLE CARTRIDGE FUSE OF THE SIZE INDICATED ON THE DRAWINGS.
1.31 CIRCUIT BREAKERS SHALL BE ENCLOSED MOLDED CASE, BOLT-ON (EXCEPT THAT SQUARE D I-LINE BREAKERS ARE ACCEPTABLE), WITH QUICK-MAKE, QUICK-BREAK TOGGLE MECHANISM, NON-FUSIBLE CONTACTS, AND INVERSE TIME SHORT CIRCUIT CHARACTERISTICS.

- SHALL BE OF THE TWO-WIRE TYPE WHEREBY THE DETECTOR OPERATING POWER IS TRANSMITTED OVER THE SAME CONDUCTORS AS THE INITIATING CIRCUIT.
E. ALARM HORNS SHALL BE SEMI-FLUSH ELECTRO-MECHANICAL DESIGN WITH ELECTRONIC OPTICAL CONTROL FOR USE IN AN ELECTRICALLY SUPERVISED CIRCUIT.
F. VISUAL ALARM INDICATORS SHALL BE SEMI-FLUSH, CONTAIN A XENON FLASHTUBE AND BE SUITABLE FOR USE IN AN ELECTRICALLY SUPERVISED CIRCUIT.
G. AUDIBLE/VISUAL ALARM INDICATORS SHALL BE A FACTORY ASSEMBLED COMBINATION DEVICE COMPRISED OF A BELL OR HORN AND A XENON FLASHTUBE AS SPECIFIED ABOVE.
H. INSTALLATION OF ALL WIRING FOR FIRE ALARM SYSTEMS SHALL BE IN CONDUIT, OR ELECTRICAL METALLIC TUBING.



Project No. 230004

McCarthy Engineering Associates, Inc. logo and contact information. Includes address: 2500 East High Street, Suite #200, Pottsville, PA 16864. Phone: 610.319.8001. Project No. 230004. Drawing No. E-7.0. Issued for Bid July 19, 2023. Not for Construction.

ISSUED FOR BID JULY 19, 2023 NOT FOR CONSTRUCTION

FIRE SUPPRESSION SYSTEM SPECIFICATIONS:

- 1.1 THE ARCHITECTURAL GENERAL CONDITIONS SHALL APPLY TO AND FORM A PART OF THIS SECTION OF THESE SPECIFICATIONS.
1.2 PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND SUPERVISION AND PERFORM ALL OPERATIONS NECESSARY FOR THE PROPER AND COMPLETE EXECUTION OF ALL FIRE SUPPRESSION SYSTEM WORK IN STRICT ACCORDANCE WITH THESE SPECIFICATIONS AND DRAWING PLANS. WORK SHALL INCLUDE BUT NOT BE LIMITED TO: A NEW FIRE SUPPRESSION SYSTEM WATER SERVICE SUPPLY LINE, SERVICE ENTRANCE AND ALARM CHECK RISER ASSEMBLY EQUIPMENT, SPRINKLERS, SPRINKLER DROPS, SPRINKLERS BRANCH PIPING, CROSS AND FEED MAIN AND ALL RELATED FITTINGS, VALVES, HANGERS, ETC., AS REQUIRED.
1.3 ALL FIRE SUPPRESSION WORK SHALL BE UNDER THE SUPERVISION OF AND BY A QUALIFIED FIRE SUPPRESSION CONTRACTOR. ALL WORK SHALL BE IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE PENNSYLVANIA UNIFORM CONSTRUCTION CODE, NATIONAL FIRE PROTECTION ASSOCIATION, NATIONAL ELECTRIC CODE, OSHA AND ALL OTHER STATE AND LOCAL AUTHORITIES HAVING JURISDICTION AND APPLICABLE MANUFACTURER'S RECOMMENDATIONS.
1.4 THE SPRINKLER SYSTEM DESIGN AND INSTALLATION SHALL BE BY A RECOGNIZED SPRINKLER CONTRACTOR WHO IS AN EXPERIENCED SPECIALIST IN DESIGN AND CONSTRUCTION OF AUTOMATIC SPRINKLER SYSTEMS. THE CONTRACTOR SHALL SUBMIT TO THE OWNER OR THE OWNER'S REPRESENTATIVE, IN WRITING, EVIDENCE OF COMPARABLE EXPERIENCE PRIOR TO BEGINNING THE PROJECT.
1.5 DESIGN REQUIREMENTS
A. THE CONTRACTOR SHALL DESIGN AND INSTALL A WET PIPE SPRINKLER SYSTEM TO PROVIDE COMPLETE FIRE PROTECTION COVERAGE FOR ALL HEATED SPACES AND STAIRWELLS. THE SPRINKLER SYSTEM PIPE SIZING SHALL BE BY HYDRAULIC DESIGN.
1. THE DESIGN OF OFFICE AND ALL SIMILAR AREAS SHALL BE LIGHT HAZARD WITH A DENSITY OF 0.10 GPM PER SQUARE FEET OVER 1500 SQUARE FEET.
2. THE DESIGN OF GARAGE, WASH BAY AND STORAGE AREAS SHALL BE ORDINARY HAZARD GROUP I WITH A DENSITY OF 0.20 GPM PER SQUARE FEET OVER 1500 SQUARE FEET.
3. THE SYSTEM DESIGN SHALL INCLUDE A 250 GPM HOSE STREAM ALLOWANCE.
B. CONTRACTOR SHALL OBTAIN MOST CURRENT PRESSURE AND FLOW READINGS FROM LOCAL WATER AUTHORITY OR THE LOCAL FIRE MARSHALL. PRESSURE AND FLOW READING SHALL BE OBTAINED FROM A LOCATION AT OR NEAR THE PROJECT SITE. IF PRESSURE AND FLOW READINGS ARE OBTAINED OR NOT AVAILABLE, THE CONTRACTOR SHALL PERFORM A FLOW TEST OR MAKE APPROPRIATE ARRANGEMENTS WITH THE LOCAL AUTHORITY TO HAVE ONE PERFORMED AT OR NEAR THE PROJECT SITE.
C. PROVIDE NEW FIRE PROTECTION SERVICE ENTRANCE EQUIPMENT AND ALARM CHECK RISER VALVE. THE FIRE SUPPRESSION SYSTEM SERVICE ENTRANCE WORK SHALL INCLUDE BUT NOT BE LIMITED TO: 6 INCH WATER SUPPLY LINE, DOUBLE CHECK BACKFLOW ASSEMBLY, FIRE DEPARTMENT SIAMENSE CONNECTION AND 6 INCH ALARM CHECK VALVE ASSEMBLY WITH FLOW SWITCH AND MAIN DRAIN.
D. PRIOR TO INSTALLATION, THE FIRE PROTECTION CONTRACTOR SHALL PREPARE DESIGN DRAWINGS OF THE AUTOMATIC SPRINKLER SYSTEM AT A SCALE OF NOT LESS THAN 1/8" = 1' FOOT TO INCHES AND SUBMIT THEM AND EQUIPMENT TO BE USED TO THE LOCAL FIRE MARSHAL AND THE OWNER'S INSURANCE COMPANY FOR REVIEW AND APPROVAL. A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED SHALL SEAL THE DRAWINGS. AFTER APPROVAL, THE DRAWINGS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR REVIEW IN ACCORDANCE WITH SECTION 15700: PLUMBING AND FIRE PROTECTION - GENERAL. NO WORK SHALL BE DONE ON THE SYSTEM OR MATERIALS ORDERED, UNTIL DRAWINGS HAVE BEEN APPROVED.
1.6 THE CONTRACTOR SHALL VISIT THE SITE; EXAMINE ALL CONDITIONS AND MAKE ALLOWANCES FOR DIFFICULTIES AND CONTINGENCIES AFFECTING THE PROPER EXECUTION OF THIS WORK.
1.7 THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES NECESSARY FOR PERMITS AND INSPECTIONS REQUIRED WITH HIS WORK.
1.8 SUBMISSION OF A BID OR PROPOSAL SHALL BE CONSIDERED AS EVIDENCE THAT THE CONTRACTOR HAS FAMILIARIZED THEMSELVES WITH THE PLANS, SPECIFICATIONS AND BUILDING SITE. CLAIMS MADE SUBSEQUENT TO BIDS FOR MATERIAL AND/OR LABOR DUE TO DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED, UNLESS DIFFICULTIES COULD NOT HAVE BEEN FORESEEN EVEN THOUGH PROPER EXAMINATION HAD BEEN MADE.
1.9 ALL MATERIALS SHALL BE NEW, CLEAN AND WITHOUT DEFECTS. ANY DEFECTIVE MATERIALS SHALL BE REMOVED FROM THE JOB SITE. ALL MATERIALS AND EQUIPMENT SHALL CONFORM TO NFPA 13. ALL EQUIPMENT SHALL BE TESTED, LISTED AND LABELED BY AN APPROVED AUTHORITY (ANSI, ASME, ASTM, FM, UL) AND SHALL BE INSTALLED IN ACCORDANCE WITH ITS LISTING.
1.10 STANDARDS
A. MEET REQUIREMENTS AND RECOMMENDATIONS OF APPLICABLE PORTIONS OF THE LATEST EDITION OF THE STANDARDS LISTED.
1. AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)
2. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
3. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA 13 & 24)
4. UNDERWRITERS LABORATORIES (UL)
5. FACTORY MUTUAL (FM)
6. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
7. INTERNATIONAL BUILDING CODE (2015)
8. INTERNATIONAL FIRE CODE (2015)
1.11 MATERIALS AND EQUIPMENT
A. ALL MATERIALS AND EQUIPMENT SHALL BE OF MAKE AND TYPE LISTED BY UNDERWRITERS' LABORATORIES, INC. OR APPROVED BY THE FACTORY MUTUAL LABORATORIES. MATERIALS SHALL BE OF APPROVED, STANDARD QUALITY, AND THE ENTIRE INSTALLATION SHALL BE ACCOMPLISHED IN A THOROUGH AND WORKMANLIKE MANNER. ALL WORK AND MATERIALS SHALL CONFORM TO CURRENT REQUIREMENTS OF THE NFPA AS PUBLISHED IN THEIR STANDARD NO. 13 AND 24. THE PROVISIONS, INCLUDING APPENDICES, OF THE STANDARDS, UNLESS OTHERWISE SPECIFIED, SHALL BE FOLLOWED IN TOTAL, WHETHER THE STIPULATIONS LISTED THEREIN ARE DIRECTED OR RECOMMENDED.
B. PIPE AND FITTINGS
1. BURIED PIPE SHALL BE CEMENT LINED, DUCTILE IRON WATER PIPE WITH STANDARDIZED MECHANICAL JOINTS IN ACCORDANCE WITH NFPA. ALL BURIED PIPE LOCATED OUTSIDE THE BUILDING SHALL HAVE A MINIMUM COVER OF 36 INCHES.
2. ALL PIPE ABOVE GROUND AND WITHIN THE BUILDING SHALL BE SCHEDULE 40 BLACK STEEL WITH SCREWED OR MECHANICAL COUPLING JOINTS (WITH ROLLED GROOVE ENDS) AS PERMITTED BY NFPA. DRY SYSTEM PIPING SHALL BE SCHEDULE 40 GALVANIZED STEEL. ALL PIPING AND FITTINGS SHALL BE RATED FOR THE MAXIMUM PRESSURE. PIPING MATERIALS AND DIMENSIONS SHALL COMPLY WITH NFPA. PIPING INSTALLATION SHALL ADHERE TO THE MANUFACTURER'S INSTALLATION GUIDELINES. THE MATERIALS SHALL ALSO COMPLY WITH THE FOLLOWING:
a. SPECIFICATION FOR BLACK AND HOT DIPPED ZINC COATED (GALVANIZED) WELDED AND SEAMLESS STEEL PIPE FOR FIRE PROTECTION, ASTM A795.
b. SPECIFICATION FOR WELDED AND SEAMLESS PIPE, ASTM A53.
c. WROUGHT STEEL PIPE, ANSI B36.10M.
d. SPECIFICATION FOR ELECTRIC RESISTANCE WELDED STEEL PIPE, ASTM A135.
e. STANDARD VICTAULIC FITTINGS MAY BE USED FOR TEES, ELBOWS, REDUCERS, AND ADAPTORS. OTHER SPECIAL VICTAULIC DEVICES MAY BE USED IN THE SPRINKLER PIPING BUT ONLY IF THEY HAVE SPECIFIC UL APPROVAL. VICTAULIC DEVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
C. METAL PIPE SUPPORTS, SWAY BRACES, HANGERS, CLAMPS, ETC. AND ALL OTHER ACCESSORIES SHALL BE OF AN APPROVED PATTERN AND PLACED TO CONFORM TO THE REQUIREMENTS OF NFPA 13. HANGERS SHALL NOT UNDER

- ANY CIRCUMSTANCES PERCE ANY DUCTWORK.
D. VALVES
1. ALL VALVES SHALL BE RATED FOR THE MAXIMUM WORKING PRESSURE TO WHICH THEY ARE EXPOSED (175 PSI MINIMUM).
2. VERTICAL POST INDICATOR VALVE, STOCKHAM VALVES FIG-951A AND ATTACHMENTS, FITTINGS SUITABLE FOR USE WITH STOCKHAM VALVES FIG-832 NON-RISING STEM SHUTOFF VALVE. PROVIDE A SUPERVISORY TAMPER SWITCH FOR WIRING TO THE FIRE ALARM SYSTEM.
3. DOUBLE CHECK DETECTOR ASSEMBLY: ANS/ASSE 1048, ANWA C510-97. THE ASSEMBLY SHALL CONSIST OF TWO POSITIVE SEATING CHECK VALVES LOCATED BETWEEN TWO RESILIENT SEATED SHUTOFFS WITH A HYDRAULICALLY BALANCED BYPASS LINE AND FOUR TEST COCKS. THE MAIN VALVE BODY SHALL BE MANUFACTURED FROM 300 SERIES STAINLESS STEEL TO PROVIDE CORROSION RESISTANCE. THE CHECK VALVES SHALL BE THERMOPLASTIC CONSTRUCTION WITH STAINLESS STEEL HINGE PINS, CAM ARM, AND CAM BEARING. THE CHECK VALVES SHALL UTILIZE A SINGLE TORSION SPRING DESIGN TO MINIMIZE PRESSURE DROP THROUGH THE ASSEMBLY. THE CHECK VALVES SHALL BE MODULAR AND SHALL SEAL TO THE MAIN VALVE BODY BY THE USE OF AN O-RING. THERE SHALL BE NO BRASS OR BRONZE PARTS USED WITHIN THE CHECK VALVE ASSEMBLY. THE CHECK VALVE SEALS SHALL BE OF MOLDED THERMOPLASTIC CONSTRUCTION. THE USE OF SEAT SCREWS AS A RETENTION METHOD IS PROHIBITED. ALL INTERNAL PARTS SHALL BE ACCESSIBLE THROUGH A SINGLE COVER OF THE VALVE ASSEMBLY. THE VALVE COVER SHALL BE HELD IN PLACE THROUGH THE USE OF A SINGLE GROOVED STYLE TWO BOLT COUPLING. THE BYPASS LINE SHALL BE HYDRAULICALLY SIZED TO ACCURATELY MEASURE LOSS OF TEST FLOW. THE BYPASS LINE SHALL CONSIST OF A METER, A SMALL DIAMETER DOUBLE CHECK ASSEMBLY WITH TEST COCKS, AND ISOLATION VALVES. THE BYPASS LINE DOUBLE CHECK VALVE SHALL HAVE A SINGLE ACCESS COVER, TWO INDEPENDENTLY OPERATING MODULAR POPPET CHECK VALVES WITH TEST COCKS. THE ASSEMBLY SHALL BE A WATTS REGULATOR COMPANY SERIES 7740CDA.
4. FIRE DEPARTMENT CONNECTION: FLUSH MOUNT WALL TYPE, TWO WAY OUTLET WITH THREAD SIZE TO SUIT FIRE DEPARTMENT HARDWARE REQUIREMENTS, INDIVIDUAL DROP CLAPPER VALVES, TOGETHER WITH PLUGS, THREADED DUST CAP, AND CHAINS OF MATCHING MATERIALS AND FINISH.
5. 3/4 INCH AUTOMATIC DRIP DRAIN TO EXTERIOR, ESCUTCHEON LETTERED "AUTO SPRINKLER". FINISH SHALL BE CHROME PLATE. CONNECTION SHALL BE ALLEN CO. NO. 232 PROJECTING SIAMENSE WITH SILL COOK.
6. GATE VALVES WITHIN THE BUILDINGS SHALL BE OS&Y TYPE, IRON BODY WITH BRASS TRIM. SCREWED END GATE VALVES SHALL BE BRONZE. CHECK VALVES SHALL BE OF A TYPE HAVING IRON BODY, BRASS SEAT AND DISCS, CLEARWAY SWINGING, WITH DRIP CONNECTIONS. SCREWED END ANGLE AND GLOBE VALVES SHALL BE BRONZE. PROVIDE POST-INDICATING VALVES ON ALL SERVICE SHUTOFFS WHERE REQUIRED BY THE LOCAL AUTHORITY.
7. SHUTOFF VALVES 2-1/2 INCHES AND LARGER SHALL BE IRON BODY, BRONZE TRIMMED, OS&Y GATE WITH RENEWABLE WEDGE AND FLANGED CONNECTIONS. SHUTOFF VALVES TWO INCHES AND SMALLER SHALL BE BRONZE, OS&Y GATE, WEDGE DISC.
8. DRAIN VALVES SHALL BE GLOBE VALVES, BRONZE BODY, RUBBER DISC, AND UNION BONNET, 175 WWP, NIBCO KT-85.
9. ALARM CHECK VALVE SHALL BE EQUIPPED WITH A REMOVABLE COVER/CLAPPER ASSEMBLY. ALARM VALVE SHALL BE LISTED FOR INSTALLATION IN THE VERTICAL OR HORIZONTAL POSITION. ALARM VALVE SHALL BE EQUIPPED WITH GAUGE CONNECTIONS ON THE SYSTEM SIDE AND SUPPLY SIDE OF THE VALVE CLAPPER. ALARM VALVE SHALL BE EQUIPPED WITH AN EXTERNAL BYPASS TO ELIMINATE FALSE WATER FLOW ALARMS. ALARM VALVE TRIM PIPING SHALL BE GALVANIZED. VALVE TRIM SHALL INCLUDE A CONNECTION FOR A NON-INTERRUPTIBLE PRESSURE SWITCH. ALARM VALVE BODY SHALL BE DUCTILE IRON AND AVAILABLE WITH GROOVED BY GROOVED, FLANGED BY GROOVED, AND FLANGED BY FLANGED SUPPLY AND DISCHARGE OUTLETS, RESPECTIVELY. MAXIMUM WATER WORKING PRESSURE SHALL BE 250 PSI (17 BAR). ALARM CHECK VALVE SHALL BE VIKING CORPORATION MODEL 09470 OR 09471.
a. PORTED ALARM CONNECTIONS ON SPRINKLER RISER VALVE SHALL BE PIPED TO A RETARD CHAMBER TO ABSORB VARIABLE PRESSURE SURGES. CIRCUIT CLOSER SHALL BE INSTALLED ON RETARD CHAMBER WITH CIRCUIT CLOSER VENT TRIM TO ELIMINATE VAPOR OR HYDRAULIC LOCK AGAINST CIRCUIT CLOSER. RETARD CHAMBER SHALL BE VIKING CORPORATION MODEL 0-1. PROVIDE OPTIONAL PRESSURE SWITCH FOR INITIATING ALARM.
b. WATER FLOW WILL ACTIVATE AN ALARM BY WAY OF AN ALARM PRESSURE SWITCH. THE ALARM PRESSURE SWITCH SHALL BE COMPATIBLE WITH SYSTEM DEVICES. ALARM PRESSURE ENCLOSURE SHALL BE UL LISTED AND FACTORY MUTUAL APPROVED FOR THE APPLICATION IN WHICH IT IS USED. ALARM PRESSURE SWITCH SHALL HAVE THE ABILITY TO BE WIRED FOR CLASS A OR B SERVICE WITH A FACTORY PRESET NON-ADJUSTABLE PRESSURE SETTING OF 4 TO 8 PSI ON RISE IN PRESSURE. ALARM PRESSURE SWITCH SHALL HAVE A 1/2-INCH BRASS THREADED BASE. ALARM PRESSURE SWITCH SHALL BE VIKING CORPORATION MODEL 09470 OR 09471.
9. ALARM CHECK VALVES EQUIPPED WITH A FLOW INDICATING PRESSURE SWITCH OR WATER MOTOR ALARM SHALL BE EQUIPPED WITH A MAIN DRAIN VALVE CAPABLE OF A TEST FLOW THROUGH THE MAIN DRAIN VALVE EQUAL TO THAT OF THE SMALLEST SPRINKLER ORIFICE INSTALLED IN THE SPRINKLER SYSTEM. THE TEST FLOW SHALL BE OBTAINED THROUGH A PRESSURE-RETARDING CHAMBER TO THE ALARM-INITIATING DEVICE. MAIN DRAIN VALVE CAPABLE OF TEST FLOW SHALL HAVE TWO INCH SUPPLY AND DISCHARGE CONNECTIONS. THE TWO-INCH TEST VALVE SHALL BE LABELED AS TO THE POSITION OF THE DRAIN. VALVE HANDLE WILL DISTINGUISH WHICH FLOW IS BEING DISCHARGED. SYSTEM DRAIN OR SYSTEM TEST. THE TWO-INCH TEST VALVE SHALL BE MANUFACTURED TO PROVIDE AN AVAILABLE MEANS OF LOCKING VALVE IN THE CLOSED OR NON-WATER FLOW POSITION. THE TWO-INCH TEST VALVE SHALL BE OF THE SAME MANUFACTURER AS ALARM CHECK VALVE AND ASSOCIATED APPURTENANCES. THE TEST VALVE SHALL BE VIKING TEST AND DRAIN VALVE A-1.
10. SUPERVISORY DEVICES
a. PROVIDE SUPERVISORY SWITCH ON ALL OS&Y GATE VALVES TO DETECT AND INDICATE WHEN THE SUPERVED VALVE HAS BEEN CLOSED, WHEN THE DEVICE HAS BEEN REMOVED, OR WHEN DEVICE COVER HAS BEEN TAMPERED WITH. DEVICE SHALL BE UL LISTED AND SO MARKED AND FACTORY MUTUAL APPROVED.
1) VALVE SUPERVISORY SWITCH FOR OS&Y VALVES SHALL BE MODEL OSYU-4 AS MANUFACTURED BY POTTER ELECTRIC SIGNAL COMPANY OR APPROVED EQUAL. CONTACT SHALL BE ONE OR TWO SETS OF SPOT (FORM C) CONTACTS AS REQUIRED.
11. PROVIDE A LISTED AUDIBLE ALARM ON THE EXTERIOR OF THE BUILDING IN ACCORDANCE WITH NFPA 13. THE ALARM DEVICE MAY BE A MECHANICALLY ACTIVATED WATER MOTOR GONG DEVICE OR AN ELECTRONIC GONG, BELL, HORN, OR SIREN ACTUATED BY A FLOW SWITCH. ALL REQUIRED POWER, WIRING, AND CONTROL OF THE ALARM SHALL BE THE RESPONSIBILITY OF THE FIRE PROTECTION CONTRACTOR. ALL ELECTRONIC DEVICES SHALL BE IN ACCORDANCE WITH NFPA 72 AND THE NATIONAL ELECTRICAL CODE AND MUST BE FULLY COORDINATED WITH THE ELECTRICAL CONTRACTOR. THE ALARM DEVICE SHALL BE ACTIVATED BY THE WATER FLOW FROM A SINGLE SPRINKLER HEAD. COORDINATE LOCATION WITH THE ARCHITECT.
12. PROVIDE ALL CONTROL AND SIGNAL WIRING REQUIRED FOR PROPER OPERATION OF THE SPRINKLER SYSTEM FLOW SWITCHES AND TAMPER SWITCHES. PROVIDE SIGNAL WIRING BACK TO THE BUILDING FIRE ALARM SYSTEM CONTROL PANEL. ALL WIRING SHALL BE IN ACCORDANCE WITH THE ELECTRICAL SPECIFICATION SECTIONS.
E. IDENTIFICATION OF VALVES
1. ALL CONTROL, DRAIN, AND TEST CONNECTION VALVES SHALL BE PERMANENTLY MARKED (TAGGED) IN ACCORDANCE WITH NFPA 13.
F. METAL PIPE SUPPORTS, SWAY BRACES, HANGERS, CLAMPS, ETC. AND ALL OTHER ACCESSORIES SHALL BE OF AN APPROVED PATTERN AND PLACED TO CONFORM TO THE REQUIREMENTS OF NFPA 13. HANGERS SHALL NOT UNDER ANY CIRCUMSTANCES PERCE ANY DUCTWORK.
G. STEEL PIPE SLEEVES SHALL BE PROVIDED FOR ALL PIPES PASSING THROUGH MASONRY WALLS, FLOORS, AND CEILINGS. SLEEVES SHALL EXTEND COMPLETELY THROUGH CONSTRUCTION AND, IN THE CASE OF FLOORS, EXTEND TWO INCHES ABOVE THE FLOOR. UNLESS OTHERWISE INDICATED, SLEEVES SHALL BE OF SUCH SIZE AS TO PROVIDE APPROXIMATELY 1/4-INCH ALL AROUND CLEARANCE BETWEEN UNCOVERED PIPE AND SLEEVE. A ONE INCH ALL AROUND CLEARANCE SHALL BE PROVIDED BETWEEN THE SLEEVE AND PASSING PIPE OF COMBUSTIBLE MATERIALS. SLEEVES IN BEARING WALLS SHALL BE STEEL OR CAST IRON PIPE. SLEEVES IN OTHER WALLS AND IN

- FLOORS SHALL BE GALVANIZED STEEL HAVING A MINIMUM NOMINAL THICKNESS OF 0.036 INCH (20 GAUGE) OR OTHER APPROVED MATERIAL. THE SPACE BETWEEN PASSING PIPES AND SLEEVES SHALL BE SEALED WITH AN APPROVED FIRESTOPPING MATERIAL. PLATES SHALL BE PROVIDED AT ALL FINISHED SURFACES WHERE EXPOSED PIPING, BARE OR COVERED, PASSES THROUGH CEILING, WALLS, OR CEILINGS. PLATES SHALL BE FASTENED SECURELY TO PIPE OR COVERING AND SHALL COMPLETELY COVER THE SLEEVE.
H. WATER PRESSURE GAUGES SHALL HAVE THE ABILITY TO RECORD PRESSURES OF 150 PSI WHERE SUPPLY PRESSURES ARE NO GREATER THAN 150 PSI. WHERE SUPPLY PRESSURES EXCEED 150 PSI, THE PRESSURE GAUGES SHALL HAVE THE ABILITY TO RECORD PRESSURES OF 300 PSI. GAUGES SHALL BE UL LISTED AND FACTORY MUTUAL APPROVED. GAUGES SHALL HAVE AN ADJUSTABLE BUTADIENE STYRORE CASE WITH A POLYCARBONATE WINDOW. THE DIAL SHALL HAVE BLACK FIGURES ON A WHITE BACKGROUND. GAUGES SHALL HAVE A 1/4-INCH BRASS NPT INLET. GAUGES SHALL BE VIKING CORPORATION PRESSURE GAUGE PART NUMBER 01934A.
I. SPRINKLERS
1. SPRINKLERS SHALL BE PENDENT TYPE IN FINISHED AREAS WITH CEILINGS. IN AREAS WITHOUT CEILINGS (EXPOSED PIPING) SPRINKLERS SHALL BE UPRIGHT TYPE. SIDEWALL TYPE SPRINKLERS SHALL BE USED ONLY WHERE NECESSARY. ALL SPRINKLERS SHALL HAVE AN ORDINARY TEMPERATURE RATING (155 DEGREES F), UNLESS REQUIRED OTHERWISE.
a. CERTIFIED INDIVIDUALS APPROVED BY AN AGENCY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION SHALL PERFORM TESTING AND REPAIR OF DEVICES. TESTER QUALIFICATIONS SHALL BE IN ACCORDANCE WITH ASSE 5000 SERIES STANDARDS OR EQUIVALENT. CERTIFICATION FOR REPAIR SHALL BE IN ACCORDANCE WITH ASSE 5030 OR EQUIVALENT. CERTIFICATION SHALL INCLUDE NOT LESS THAN 32 HOURS OF COMBINED CLASSROOM AND PRACTICE TRAINING AND SUCCESSFUL COMPLETION OF A WRITTEN AND PRACTICAL EXAMINATION.
2. PERFORM TESTING PROCEDURES IN ACCORDANCE WITH ONE OF THE FOLLOWING STANDARDS: ASSE 5013, ASSE 5015, ASSE 5020, ASSE 503A, ASSE 5047, ASSE 5048, ASSE 5052, ASSE 5056, CSA B64.10 OR CSA B64.10.1.
C. WHERE TESTS INDICATE THAT THE DEVICE IS NOT FUNCTIONING PROPERLY, IT SHALL BE SERVICED OR REPAIRED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND BE RETESTED.
D. COPIES OF TEST REPORTS FOR THE INITIAL INSTALLATION SHALL BE SENT TO THE OWNER, AUTHORITY HAVING JURISDICTION AND TO THE WATER SUPPLIER.
E. ANNUAL INSPECTIONS SHALL BE MADE OF ALL BACKFLOW PREVENTION ASSEMBLIES AND AIR GAPS TO DETECT WHETHER THEY ARE OPERABLE.
1.9 INSPECTING
A. PROVIDE, AS A PART OF THIS WORK, FOUR INSPECTIONS BY SPRINKLER INSTALLER DURING FIRST OPERATIONAL YEAR.
B. SUBMIT INSPECTION REPORTS IN TRIPlicate, TO THE OWNER OR THE OWNER'S REPRESENTATIVE WITHIN 15 DAYS FROM DATE OF INSPECTION.
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1.13 SHOP DRAWINGS
A. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL IN ACCORDANCE WITH SECTION 15700: PLUMBING AND FIRE PROTECTION - GENERAL.
B. SHOW SIZES AND LOCATIONS, BY DIMENSIONING, OF PIPING, FITTINGS, HOSE CABINETS, SPRINKLER HEADS, EQUIPMENT, AND OTHER SPRINKLER ITEMS. IDENTIFY MATERIALS AND EQUIPMENT BY DESCRIPTION AND NUMBER.
C. SHOW MANUFACTURER'S NAMES, TRADE NAMES, CATALOG NUMBERS, ACCESSORIES, SPECIAL FEATURES, AND RATING DATA FOR ALL EQUIPMENT USED.
D. INDICATE REQUIRED CLEARANCES FOR OPERATING PARTS, FOR REMOVAL AND REINSTALLING, AND FOR SERVICING.
E. INCLUDE PROOF OF THE REVIEW AND APPROVAL OF THE OWNER'S INSURANCE COMPANY AND THE LOCAL FIRE MARSHAL.
F. INCLUDE COPIES OF HYDRAULIC CALCULATIONS FOR REVIEW.
1. HYDRAULIC CALCULATIONS SHALL INCLUDE ALL DATA OBTAINED FROM THE WATER SERVICE FLOW TEST.
2. HYDRAULIC CALCULATIONS SHALL INCLUDE MAXIMUM FLOWS THROUGH ALL PIPING, FITTINGS, AND EQUIPMENT FROM THE POINT WHERE WATER PRESSURE AND FLOW DATA WERE OBTAINED (AT THE WATER MAIN), TO THE HYDRAULICALLY MOST REMOTE DESIGN AREA. HYDRAULIC CALCULATIONS SHALL TAKE INTO ACCOUNT CHANGES IN ELEVATION OF THE SYSTEM PIPING. THESE ELEVATIONS SHALL BE LISTED ON THE SHOP DRAWINGS AND IN THE CALCULATIONS.
1.14 AS-BUILT DRAWINGS AND OPERATION AND MAINTENANCE MANUAL
A. AS-BUILT DRAWINGS AND OPERATION AND MAINTENANCE MANUAL SHALL BE SUBMITTED UPON COMPLETION OF ALL WORK
B. SHOW EXACT LOCATIONS AND SIZES, AS ACTUALLY INSTALLED, OF PIPING, VALVES, AND OTHER ITEMS THAT WILL NOT BE EASILY ACCESSIBLE AFTER COMPLETION OF WORK.
C. INCLUDE COPIES OF ALL PERMITS, INSPECTIONS AND TEST REPORTS REQUIRED FOR SYSTEM INSTALLATION IN THE OPERATION AND MAINTENANCE MANUAL.
1.15 PROTECTING
A. HANDLE FIRE PROTECTION ITEMS TO AVOID INJURY TO PERSONS AND TO AVOID DAMAGE TO MATERIALS OR WORK IN PLACE. SATISFACTORILY REPAIR OR REMOVE AND REPLACE WORK THAT HAS BEEN DAMAGED.
B. PLUG OR CAP PIPES AND FITTINGS, WHEN NOT IN USE, TO PREVENT ENTRANCE OF EXTRANEOUS MATERIALS.
C. COVER HOLES AND TRENCHES WHEN NOT IN USE. FASTEN OR SECURE PIPES AND OTHER SPRINKLER ITEMS DURING INTERRUPTIONS IN WORK, TO PREVENT DANGER OR DAMAGE.
1.16 DELIVERING AND STORING
A. DELIVER FIRE PROTECTION ACCESSORIES, SMALL-UNMARKED PARTS, AND INCIDENTAL ITEMS TO SITE IN MANUFACTURER'S ORIGINAL, UNOPENED, LABELED CONTAINERS.
B. STORE MATERIALS AND FIXTURES TO PREVENT DAMAGE AND INJURY. STORE FERROUS MATERIALS TO PREVENT RUSTING. STORE FIXTURES TO PREVENT STAINING AND DISCOLORING.
1.17 INSTALLATION
A. INSPECTOR'S TEST VALVES SHALL BE INSTALLED AT THE HIGHEST AND MOST REMOTE PART OF EACH SYSTEM IN RELATION TO THE RISER ASSEMBLY AND SHALL DISCHARGE OUTSIDE THE BUILDING OR TO A DRAIN CAPABLE OF ACCEPTING FULL FLOW UNDER SYSTEM PRESSURE. IN NO CASE SHALL A DIRECT CONNECTION BE MADE TO ANY COMPONENT OF THE SEWER SYSTEM. TEST VALVES SHALL BE CONVENIENTLY ACCESSIBLE WITHIN SEVEN FEET OF THE FLOOR.
B. INSTALLATION OF SPRINKLER SYSTEM SHALL CONFORM TO NFPA 13 AND 24 AND ALL LOCAL REQUIREMENTS.
C. ALL PIPING SHALL BE ACCURATELY CUT TO MEASUREMENTS ESTABLISHED BY THE CONTRACTOR AND SHALL BE WELDED INTO PLACE WITHOUT SPRINGING OR FORCING. IN ANY SITUATIONS WHERE BENDING OF PIPE IS REQUIRED, SUCH BENDING SHALL BE ACCOMPLISHED THROUGH THE USE OF A STANDARD PIPE-BENDING TEMPLATE. PIPE COMPOUND SHALL BE APPLIED TO MALE THREADS ONLY. THE USE OF TEFLON TAPE WILL NOT BE PERMITTED. DRIPS AND DRAINS SHALL BE INSTALLED WHERE NECESSARY AND SHALL DISCHARGE OUTSIDE OF THE BUILDING. IN NO CASE SHALL A DIRECT CONNECTION BE MADE TO ANY COMPONENT OF THE SEWER SYSTEM.
D. SUPPORT PIPING AS CLOSE TO COLUMN SUPPORTS AS POSSIBLE AND AT PANEL POINTS OF JOISTS OR JOIST GIRDERS ONLY. IF HANGER LOAD EXCEEDS 500 POUNDS, THE LOAD SHOULD BE DISTRIBUTED TO AS MANY MEMBERS AS REQUIRED TO REDUCE EACH HANGER LOAD TO LESS THAN 500 POUNDS.
E. ALL MAIN DRAINS SHALL BE PIPED TO DISCHARGE OUTSIDE THE BUILDINGS. VERIFY FINAL LOCATIONS IN THE FIELD WITH THE OWNERS' REPRESENTATIVE.
F. THE INSTALLATION OF ALL SPRINKLER HEADS SHALL BE COORDINATED WITH ALL DIFFUSERS, REGISTERS, GRILLES, LIGHTING, AND ALL OTHER HVAC AND ELECTRICAL EQUIPMENT IN EACH SPACE. IN AREAS WITH ACOUSTICAL TILE

- CEILINGS, SPRINKLER HEADS SHALL BE POSITIONED IN THE CENTER OF THE CEILING TILES IN AT LEAST ONE DIRECTION UNLESS DIRECTED OTHERWISE BY THE OWNER'S REPRESENTATIVE.
G. ALL EXPOSED PIPING LOCATED IN FINISHED SPACES SHALL BE PAINTED (COLOR SHALL BE SELECTED BY THE ARCHITECT).
1.18 TESTS
A. UPON COMPLETION OF THE INSTALLATION THE SYSTEMS SHALL BE HYDROSTATICALLY TESTED AND FLUSHED AS SPECIFIED IN NFPA 13, IN THE PRESENCE OF THE OWNER OR THE OWNER'S REPRESENTATIVE. THE CONTRACTOR SHALL SUBMIT A SIGNED AND DATED CERTIFICATE TO THE OWNER OR THE OWNER'S REPRESENTATIVE AS STIPULATED IN NFPA 13.
B. TESTING OF BACKFLOW PREVENTION ASSEMBLIES
1. PROVIDE TEST AT THE TIME OF INSTALLATION AND IMMEDIATELY AFTER REPAIRS AND OR RELOCATION FOR THE FOLLOWING: REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER ASSEMBLIES, DOUBLE CHECK-VALVE ASSEMBLIES, PRESSURE VACUUM BREAKER ASSEMBLIES, REDUCED PRESSURE DETECTOR FIRE PROTECTION BACKFLOW PREVENTION ASSEMBLIES, DOUBLE CHECK DETECTOR FIRE PROTECTION BACKFLOW PREVENTION ASSEMBLIES, HOSE CONNECTION BACKFLOW PREVENTERS AND SPILLPROOF VACUUM BREAKERS.
a. CERTIFIED INDIVIDUALS APPROVED BY AN AGENCY ACCEPTABLE TO THE AUTHORITY HAVING JURISDICTION SHALL PERFORM TESTING AND REPAIR OF DEVICES. TESTER QUALIFICATIONS SHALL BE IN ACCORDANCE WITH ASSE 5000 SERIES STANDARDS OR EQUIVALENT. CERTIFICATION FOR REPAIR SHALL BE IN ACCORDANCE WITH ASSE 5030 OR EQUIVALENT. CERTIFICATION SHALL INCLUDE NOT LESS THAN 32 HOURS OF COMBINED CLASSROOM AND PRACTICE TRAINING AND SUCCESSFUL COMPLETION OF A WRITTEN AND PRACTICAL EXAMINATION.
2. PERFORM TESTING PROCEDURES IN ACCORDANCE WITH ONE OF THE FOLLOWING STANDARDS: ASSE 5013, ASSE 5015, ASSE 5020, ASSE 503A, ASSE 5047, ASSE 5048, ASSE 5052, ASSE 5056, CSA B64.10 OR CSA B64.10.1.
C. WHERE TESTS INDICATE THAT THE DEVICE IS NOT FUNCTIONING PROPERLY, IT SHALL BE SERVICED OR REPAIRED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND BE RETESTED.
D. COPIES OF TEST REPORTS FOR THE INITIAL INSTALLATION SHALL BE SENT TO THE OWNER, AUTHORITY HAVING JURISDICTION AND TO THE WATER SUPPLIER.
E. ANNUAL INSPECTIONS SHALL BE MADE OF ALL BACKFLOW PREVENTION ASSEMBLIES AND AIR GAPS TO DETECT WHETHER THEY ARE OPERABLE.
1.9 INSPECTING
A. PROVIDE, AS A PART OF THIS WORK, FOUR INSPECTIONS BY SPRINKLER INSTALLER DURING FIRST OPERATIONAL YEAR.
B. SUBMIT INSPECTION REPORTS IN TRIPlicate, TO THE OWNER OR THE OWNER'S REPRESENTATIVE WITHIN 15 DAYS FROM DATE OF INSPECTION.

LEGEND AND ABBREVIATIONS

Table with 2 columns: Symbol and Description. Symbols include FP (Fire Protection Water Supply), FL (Flushing Connection), TW (Tapping), PT (Pipe Turning Down), PT (Pipe Turning Up), TT (Pipe Tee Up), TD (Pipe Tee Down), US (Upright Sprinkler), CP (Concealed Pendent Sprinkler), SW (Side Wall Sprinkler), SC (Strortz Connection), GS (Flow Gate Valve), FS (Flow Switch), TS (Tammer Switch), ABV (Above Finish Floor), ALT (Alternate), etc.

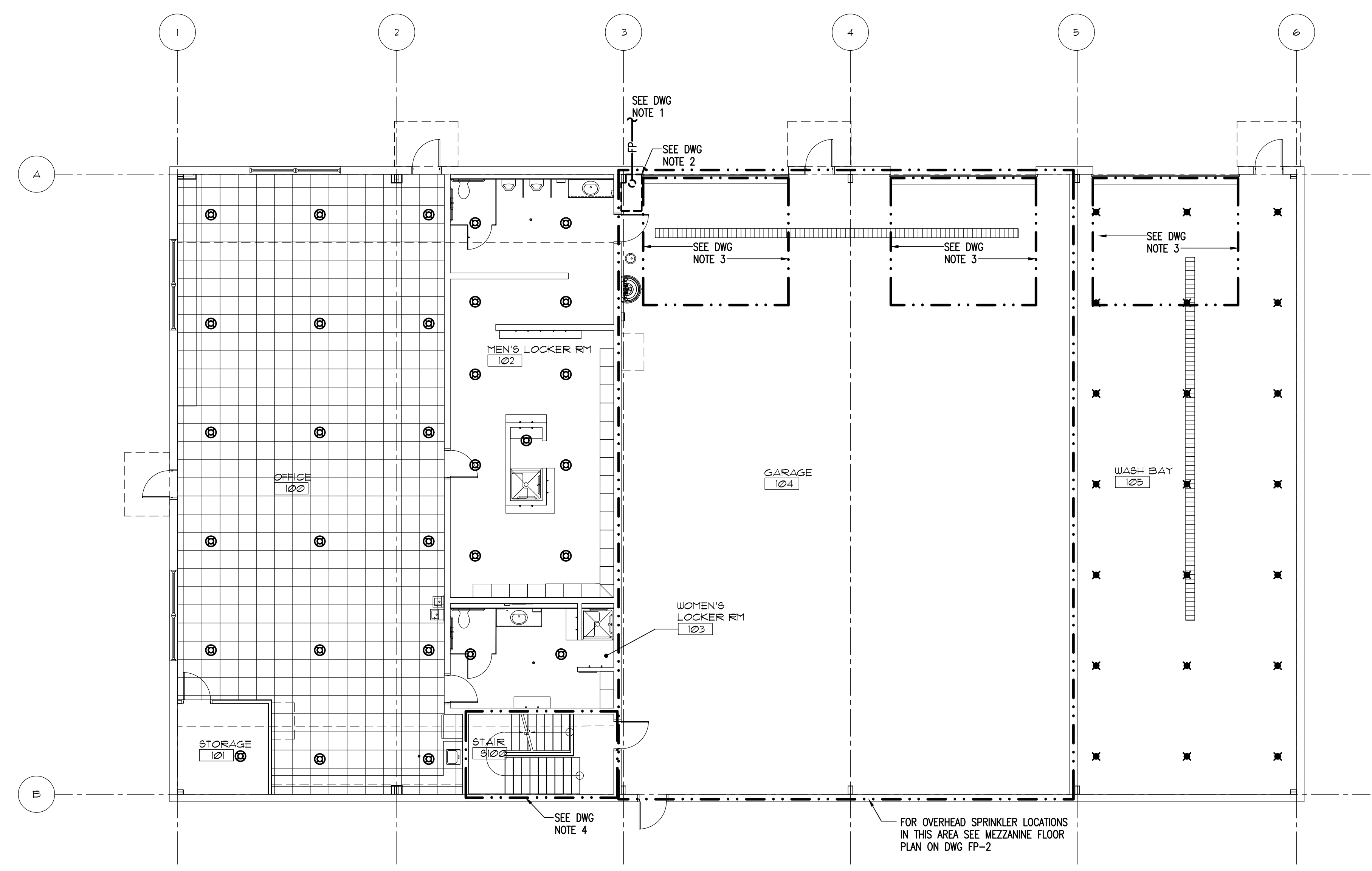
GENERAL NOTES:

- 1. THE ENTIRE INSTALLATION OF THE FIRE SUPPRESSION SYSTEM SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF NFPA PAMPHLETS #13 AND #24, THE INTERNATIONAL BUILDING CODES, THE OWNER'S INSURANCE CARRIER AND THE LOCAL FIRE DEPARTMENT.
2. THE INTENT OF FIRE SUPPRESSION DRAWINGS IS FOR APPROVAL PURPOSES ONLY AND TO AID THE FIRE PROTECTION CONTRACTOR IN SYSTEM LAYOUT FOR BIDDING. THE DRAWINGS IDENTIFY SPACE ALLOCATIONS FOR MAJOR ELEMENTS OF THE FIRE PROTECTION SYSTEM, BASIC AREAS OF COVERAGE AND DEVICE TYPES AND AREAS WHICH REQUIRE SPECIAL ATTENTION AND DEVICES. THE SUCCESSFUL FIRE PROTECTION CONTRACTOR IS RESPONSIBLE FOR PROVIDING APPROVED AND COMPLETE DESIGN DRAWINGS AND HYDRAULIC CALCULATIONS.
3. COORDINATE ALL SPRINKLER LOCATIONS WITH LIGHTS, CONDUITS, DUCTS, DIFFUSERS, REGISTERS, GRILLES AND IN PARTICULAR ARCHITECTURAL AND STRUCTURAL ELEMENTS TO ASSURE FINAL SYSTEM HARMONIZES WITH THE ARCHITECTURAL FEATURES OF THE BUILDING. ALL SPRINKLER LOCATIONS SHALL BE COORDINATED WITH ALL SUPPLY AIR DUCTS AND OUTLETS. FINAL SPRINKLER LOCATIONS SHALL BE IN ACCORDANCE WITH NFPA 13 SPACING REQUIREMENTS.
4. INSTALL SPRINKLERS ABOVE AND ALL FIXED OBSTRUCTIONS (OVER 48" WIDE AS REQUIRED, COORDINATE WITH H.V.A.C. AND ELECTRICAL CONTRACTORS. SPECIFIC ATTENTION IS CALLED TO GENERAL LIGHTING AND MAIN SUPPLY AND RETURN DUCTWORK FROM MECHANICAL UNITS.
5. PROVIDE SHEET METAL HOODS OR SHIELDS TO PROTECT IMPORTANT ELECTRICAL EQUIPMENT FROM SPRINKLER DISCHARGE.
6. PROVIDE DRAIN VALVES AND PIPING TO ALLOW COMPLETE DRAINAGE OF ALL SPRINKLER SYSTEM PIPING.
7. PROVIDE ALARM WIRING FROM SPRINKLER VALVE TAMPER SWITCHES AND ALARM CHECK TO MAIN FIRE ALARM PANEL.
8. THERE IS NO FIRE SUPPRESSION SYSTEM WORK ASSOCIATED WITH OUTDOOR STORAGE STRUCTURES OR THE EXISTING BUILDING RENOVATION WORK.

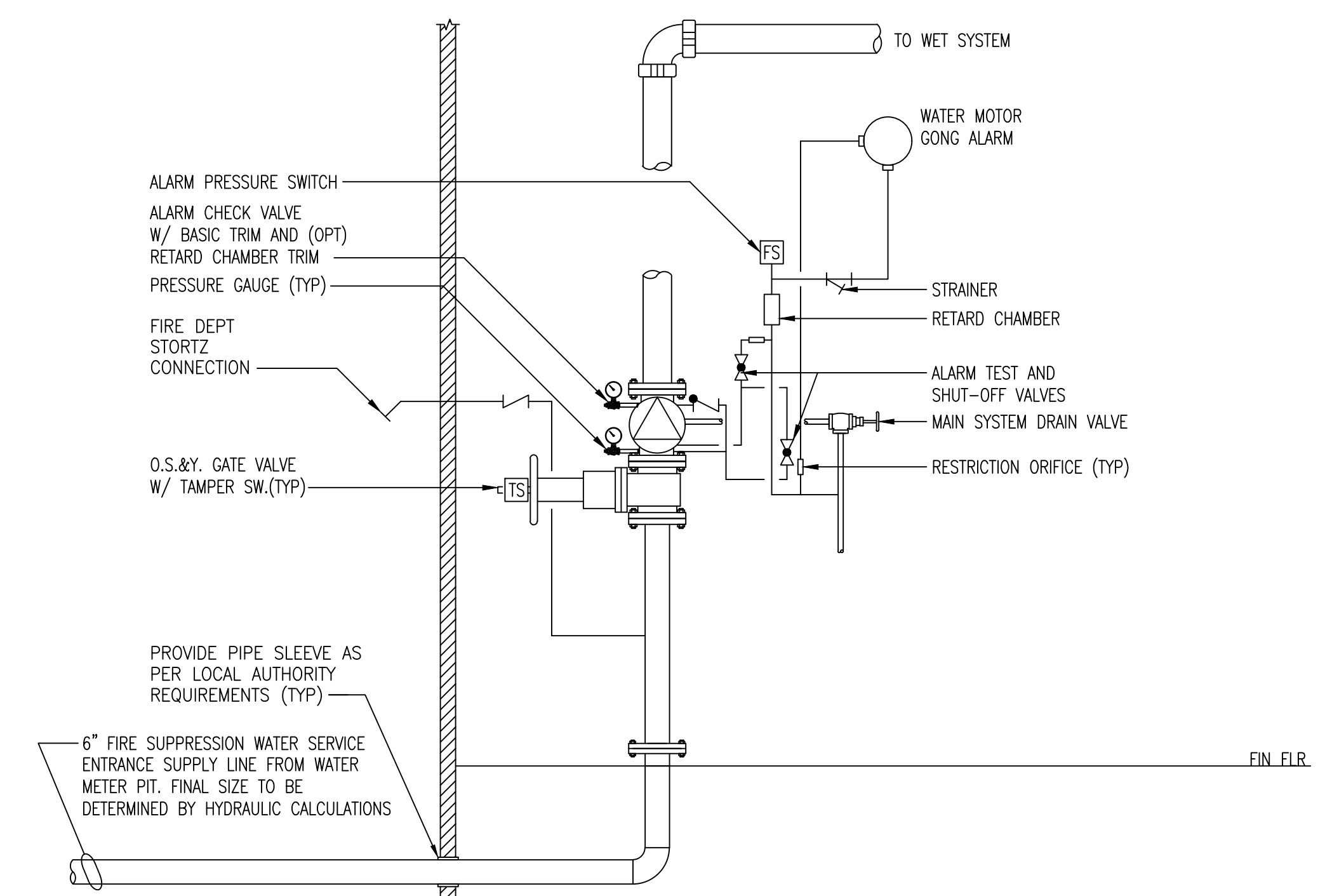
FIRE PROTECTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DESIGN AND CONSTRUCTION IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS

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FIRE PROTECTION FIRST FLOOR PLAN
 SCALE: 1/8" = 1'-0"



NOTES: 1. DOUBLE CHECK DETECTOR BACKFLOW ASSEMBLY IS IN METER PIT THE SITE CONTRACTOR IS RESPONSIBLE FOR METER PIT AND ASSOCIATED EQUIPMENT, REFER CIVIL SITE UTILITY DRAWINGS.
 2. WIRE TAMPER SWITCHES AND FLOW ALARM PRESSURE SWITCH TO BUILDING FIRE ALARM SYSTEM.

FIRE SERVICE ENTRANCE & ALARM CHECK RISER VALVE DIAGRAM
 NO SCALE

DRAWING NOTES:

1. FIRE SUPPRESSION SYSTEM WATER SUPPLY LINE. REFER TO CIVIL ENGINEERS SITE UTILITY PLANS. COORDINATE FIRE SUPPRESSION WATER SERVICE ENTRANCE SUPPLY LINE LOCATION WITH THE SITE CONTRACTOR.
2. FIRE SUPPRESSION SERVICE ENTRANCE EQUIPMENT, FOR PIPING AND VALVE ARRANGEMENT, SEE "FIRE SERVICE ENTRANCE AND ALARM CHECK RISER VALVE DIAGRAM" ON THIS DRAWING. SEE PLUMBING DRAWING P-1 FOR BUILDING DOMESTIC WATER SERVICE SUPPLY LINE. COORDINATE LOCATION OF FIRE SUPPRESSION WATER SERVICE ENTRANCE EQUIPMENT WITH DOMESTIC SERVICE ENTRANCE EQUIPMENT.
3. PROVIDE SPRINKLERS WITH GUARDS FOR COVERAGE OF THE AREA BELOW GARAGE DOORS WHEN OVERHEAD DOOR IS IN THE OPEN POSITION.
4. PROVIDE SPRINKLERS AT TOP OF STAIR TOWER AND UNDER LANDING/SLOPING STAIR AT BOTTOM OF STAIR TOWER FOR COMPLETE COVERAGE OF STAIR TOWER.
5. SEE DRAWING FP-0 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS

FIRE PROTECTION CONTRACTOR IS SOLELY RESPONSIBLE FOR DESIGN AND CONSTRUCTION IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL CODES AND REGULATIONS

Revision	Date	Description

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FIRE PROTECTION FIRST FLOOR FACILITY
 "PUBLIC WORKS FACILITY"
 Client: WYOMISSING BOROUGH, BERKS COUNTY, PENNSYLVANIA
 Location: JULY 18, 2023
 Date:

DESIGNER:	EPG	PROJ. MANAGER:	NEC
PRINCIPAL:	JCM	SCALE:	AS NOTED
DRAWING NO.:	FP-1		
PROJECT NO.:	230004		

ISSUED FOR BID JULY 19, 2023
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LEGEND AND ABBREVIATIONS

	EXISTING WORK OR WORK DONE BY OTHERS	AAD	MOTORIZED AUTOMATIC AIR DAMPER	MCA	MINIMUM CIRCUIT AMPS
	PIPE, VENT OR COMBUSTION AIR SUPPLY TURNING UP	ABV	ABOVE	MIN	MINIMUM
	PIPE TURNING DOWN	ACC	AIR COOLED CHILLER	MOC	MAXIMUM OVERCURRENT PROTECTION NUMBER
	SENSOR	AFF	ABOVE FINISHED FLOOR	NO	OUTSIDE AIR
	THERMOSTAT	AFG	ABOVE FINISHED GRADE	OAI	OUTSIDE AIR INTAKE
	CONNECT TO EXISTING	AH	NON-DUCTED AIR HANDLER	OED	OPEN ENDED DUCT
	EXTENT OF DEMOLITION	AHU	AIR HANDLING UNIT	P	PLUMBING CONTRACTOR
	NEW WORK NOTE	AUX	AUXILIARY	PC	PRESSURE DROP
	DEMOLITION NOTE	BD	BALANCING DAMPER	PD	PLACES
	DUCT SMOKE DETECTOR	BDD	BACKDRAFT DAMPER	PL	POUND PER SQUARE INCH
	SUPPLY DUCTWORK	BFP	BACKFLOW PREVENTER	PSI	POUND PER SQUARE INCH GAUGE
	EXHAUST OR RETURN DUCTWORK	BHP	BRAKE HORSEPOWER	PSIG	PUMP
	BALANCING DAMPER (BD)	BTU	BRITISH THERMAL UNIT	R	REGISTER
	DIFFUSER	CA	CAPACITY	RA	RETURN AIR
	GRILLE OR REGISTER	CD	CONDENSATE DRAIN	REF	REFERENCE
	ELBOW DOWN	CFM	CUBIC FEET PER MINUTE	RL	REFRIGERANT LIQUID PIPING
	DUCT TURNING UP	CH	CABINET HEATER	RMA	RATED LOAD AMPS
	TRANSITION - RECTANGULAR TO RECTANGULAR	CLG	CEILING	RPM	REVOLUTIONS PER MINUTE
	TRANSITION - RECTANGULAR TO ROUND	CU	CONDENSING UNIT	RS	REFRIGERANT SUCTION PIPING
	TRANSITION - ROUND TO ROUND	D	DIFFUSER	RV	RELIEF VENT
	FLEXIBLE DUCTWORK	DB	DRY BULB	SA	SUPPLY AIR
	MOTOR-OPERATED DAMPER	DC	DUCT COIL	SEER	SEASONAL ENERGY EFFICIENCY RATIO
	LOUVER	DN	DOWN	SF	SQUARE FEET
	FIRE DAMPER (FD)	EA	EXHAUST AIR	SG	SUPPLY GRILLE
	UNION	EAT	ENTERING AIR TEMPERATURE	SO	SENSIBLE
	GAS DETECTION CONTROLLER	EBBR	ELECTRIC BASEBOARD RADIATION	SP	STATIC PRESSURE
	NITROGEN-DIOXIDE SENSOR	EC	ELECTRICAL CONTRACTOR	SR	SUPPLY REGISTER
	CARBON-MONOXIDE SENSOR	EER	ENERGY EFFICIENCY RATIO	SSAC	NON-DUCTED SPLIT SYSTEM AIR CONDITIONER
	GAS DETECTION WARNING STROBE	EF	EXHAUST FAN	SSHP	NON-DUCTED SPLIT SYSTEM HEAT PUMP
		EFF	EFFICIENCY	TD	TRANSFER DUCT
		ESD	EXISTING SLOT DIFFUSER	TH	TYPICAL
		ESP	EXTERNAL STATIC PRESSURE	UH	UNIT HEATER
		ESR	EXISTING SUPPLY REGISTER	UV	UNIT VENTILATOR
		EXG	EXISTING	W	WATT
		EXT	EXTERNAL	W	WATT
		EW	ELECTRIC WALL HEATER	WB	WET BULB
		EW	ENTERING WATER TEMPERATURE	WG	WATER GAUGE
		F	FAN	WMS	WIRE MESH SCREEN
		FDU	FAN COIL UNIT		
		FD	FIRE DAMPER		
		FLA	FULL LOAD AMPS		
		FT	FOOT (FEET)		
		FT	FOOT (FEET)		
		FPM	FOOT (FEET) PER MINUTE		
		G	GRILLE		
		GC	GENERAL CONTRACTOR		
		GF	GAS FURNACE		
		HD	HEAD		
		HP	SPLIT SYSTEM HEAT PUMP		
		HP	HORSEPOWER		
		IEER	INTEGRATED ENERGY EFFICIENCY RATIO		
		IH	INFRARED HEATER		
		KEF	KITCHEN EXHAUST FAN		
		KW	KILOWATT		
		L	LOUVER		
		LAT	LEAVING AIR TEMPERATURE		
		LF	LINEAR FEET		
		LEA	LOCKED ROTOR AMPS		
		MAX	MAXIMUM		
		MBH	THOUSAND BRITISH THERMAL UNITS		
		MC/M.C.	MECHANICAL CONTRACTOR		

GENERAL NOTES:

- THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL INTENT OF THE WORK. PROVIDE SHEET METAL SYSTEMS COMPLETE PER SPECIFICATION, SMACNA STANDARDS, AND PER APPLICABLE CODES INCLUDING ALL NECESSARY OFFSETS, FITTINGS, AND SPECIAL RADII OR MITERED ELBOWS WHICH ARE REQUIRED DUE TO SPACE CONSTRAINTS OR OTHER CONDITIONS.
- CONTRACTOR SHALL SUPPLY AND INSTALL ALL NECESSARY SUPPLY DIFFUSERS AND RETURN AIR REGISTERS WHERE INDICATED ON THE DRAWING. COORDINATE LOCATION OF DIFFUSERS AND REGISTERS WITH ARCHITECTURAL DRAWINGS. CENTER CEILING DIFFUSERS AND REGISTERS ON LIGHT FIXTURE PATTERN UNLESS OTHERWISE NOTED. COORDINATE APPROPRIATE BORDER SELECTION WITH CEILING TYPE AND ARCHITECTURAL PLANS. COORDINATE FINISH AND FINAL COLOR WITH ARCHITECTURAL PLANS.
- DUCT BRANCH TAKEOFF DETAILS WITH VOLUME DAMPER SHOWN ON DETAIL DRAWING APPLY TO ALL LOW VELOCITY DUCTS, SUPPLY DUCTS IN CONSTANT VOLUME SYSTEMS, RETURN AND EXHAUST DUCTS AND OPEN END RETURN DUCTS. PROVIDE VOLUME DAMPER AT EACH TAP TO MAIN DUCT.
- WHERE INTERNAL DUCT INSULATION OR ACOUSTICAL LINING IS SPECIFIED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE DUCT SIZES SHALL BE INCREASED TO ACCOMMODATE THE THICKNESS OF INTERNAL INSULATION AND PROTECTION SHEET AS SPECIFIED. DUCT DIMENSIONS ON DRAWINGS ARE INSIDE CLEAR DIMENSIONS.
- COORDINATE EXACT LOCATIONS OF THERMOSTATS, TEMPERATURE SENSORS AND FAN SWITCHES, WITH ARCHITECTURAL DRAWINGS.
- PROVIDE FIRE DAMPER OR FIRE SMOKE DAMPER WHERE DUCT PENETRATES RATED WALLS, PARTITIONS OR SLABS AS SHOWN ON PLANS AND ON THE DETAIL SHEETS. MECHANICAL CONTRACTOR TO REVIEW ARCHITECTURAL DRAWINGS AND VERIFY ALL RATED PARTITIONS.
- THIS CONTRACTOR SHALL INSTALL DUCT SMOKE DETECTORS AND COORDINATE THE LOCATIONS WITH ELECTRICAL CONTRACTOR.
- CONTRACTOR MUST FIELD VERIFY ALL DIMENSIONS AND CONDITIONS OF THE SITE AND/OR BUILDING.
- ADEQUATELY BRACE AND PROTECT ALL WORK DURING CONSTRUCTION AGAINST DAMAGE, BREAKAGE, COLLAPSE, DISTORTIONS, AND ALL ALIGNMENTS ACCORDING TO CODES AND STANDARDS OF GOOD PRACTICE.
- FIRE STOPPING SHALL BE INSTALLED AT ALL PENETRATIONS OF FIRE RATED CONSTRUCTION AS PER SPECIFICATIONS.
- CONTRACTOR SHALL COORDINATE THE WORK SHOWN ON THESE DRAWINGS WITH ALL OTHER TRADES (E.G., SPRINKLER, ELECTRICAL, TELECOMM, ETC.) FOR WORK IN FINISHED CEILING.
- MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 6'-0" AT DROPS TO DIFFUSERS.
- WHERE LOW PRESSURE DUCTWORK SIZES ARE NOT INDICATED, USE THE FOLLOWING SCHEDULE:

CFM	DUCT SIZE
0-220	12x10
221-400	16x10
401-700	30x10
701-1100	30x14
1101-1400	34x14

- SIZES INDICATE CLEAR INSIDE DIMENSION.
- ALL OTHER MEDIUM PRESSURE BRANCH TAKE-OFFS SHALL BE SIZED AT A FRICTION LOSS OF 0.10"/100 FEET. PROVIDE A CONICAL CONNECTION FOR CIRCULAR TAKE-OFFS. PROVIDE A 45° SHOE-TAP CONNECTION FOR RECTANGULAR TAKE-OFFS.
 - PROVIDE VOLUME DAMPERS AT EACH LOW PRESSURE SUPPLY, RETURN AND EXHAUST DUCT BRANCH TAKE-OFF.

GRILLES, REGISTERS, AND DIFFUSERS SCHEDULE

TAG	MANUFACTURER	MODEL	TYPE	FACE SIZE (N x IN)	NECK SIZE	CONSTRUCTION	DEFLECTION	REMARKS
D-1	PRICE	SPD	PLAQUE LAY-IN	24x24	6"	STEEL	-	1, 2
D-2	PRICE	SPD	PLAQUE LAY-IN	24x24	8"	STEEL	-	1, 2
G-1	PRICE	500	LOUVERED RETURN	24x24	22x22	STEEL	-	1, 2
G-2	PRICE	PDDR	PERF EXHAUST	24x24	8"	STEEL	-	1, 2
G-3	PRICE	PDDR	PERF EXHAUST	12x12	6"	STEEL	-	1, 2

- NOTES:
- COORDINATE FRAME TYPE WITH CEILING TYPE.
 - COLOR/FINISH SHALL BE SELECTED BY THE ARCHITECT.

LOUVER SCHEDULE

TAG	MANUFACTURER / MODEL	DEPTH	FACE SIZE (W x H)	MAX. PRESSURE DROP (IN. W.G.)	SERVICE
L-1	GREENHECK MODEL ESD-435	4 IN.	12x12	0.08	EXHAUST
L-2	GREENHECK MODEL ESD-435	4 IN.	36x36	0.08	EXHAUST
L-3	GREENHECK MODEL ESD-435	4 IN.	36x36	0.08	EXHAUST
L-4	GREENHECK MODEL ESD-435	4 IN.	36x36	0.08	INTAKE
L-5	GREENHECK MODEL ESD-435	4 IN.	36x36	0.08	INTAKE
L-6	GREENHECK MODEL ESD-435	4 IN.	24x18	0.08	INTAKE
L-7	GREENHECK MODEL ESD-435	4 IN.	18x18	0.08	EXHAUST

- NOTES:
- PROVIDE WITH BIRDSCREEN AND FLANGED FRAME.
 - COLOR/FINISH SHALL BE SELECTED BY THE ARCHITECT.

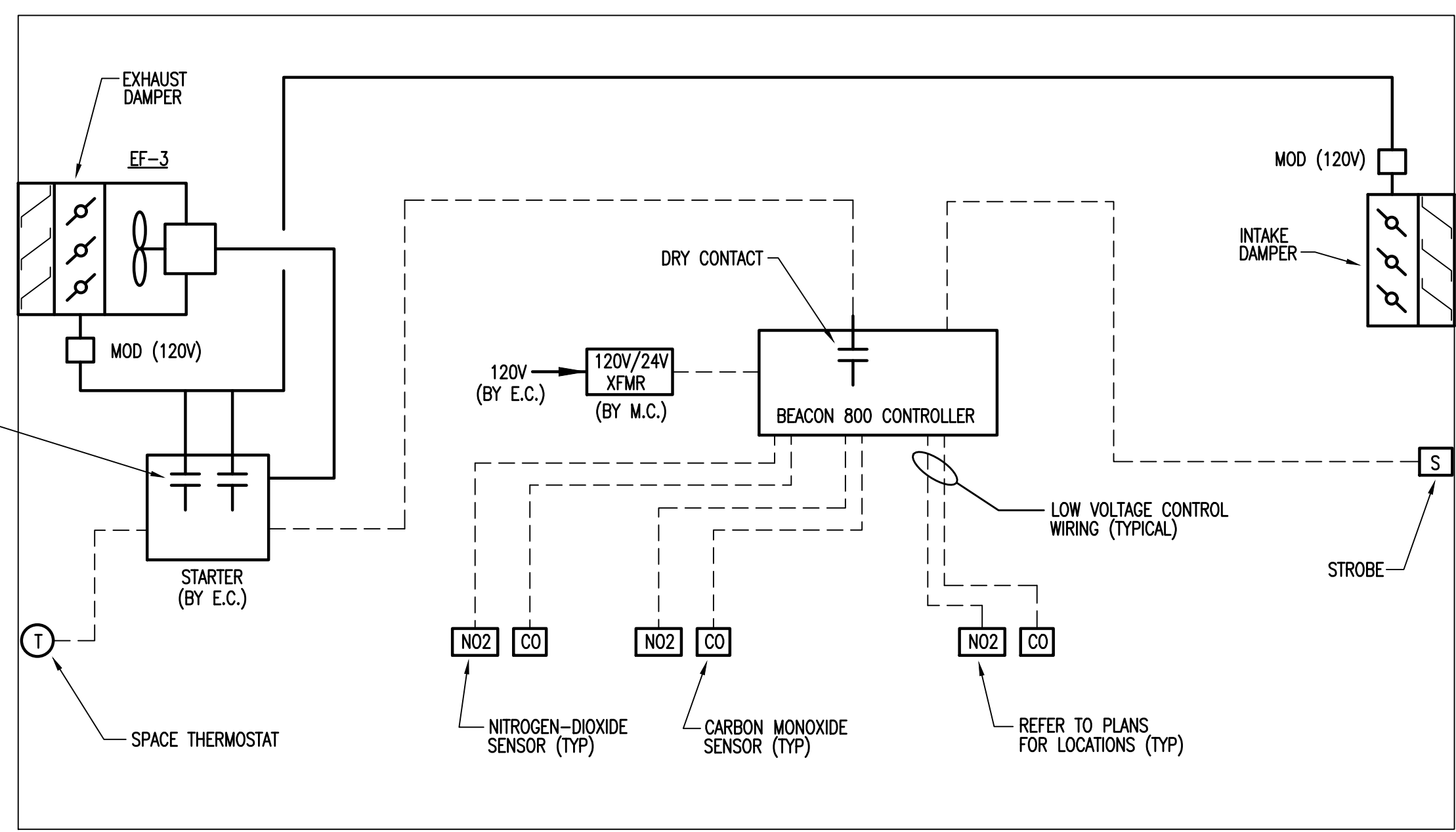


Project No. 230004

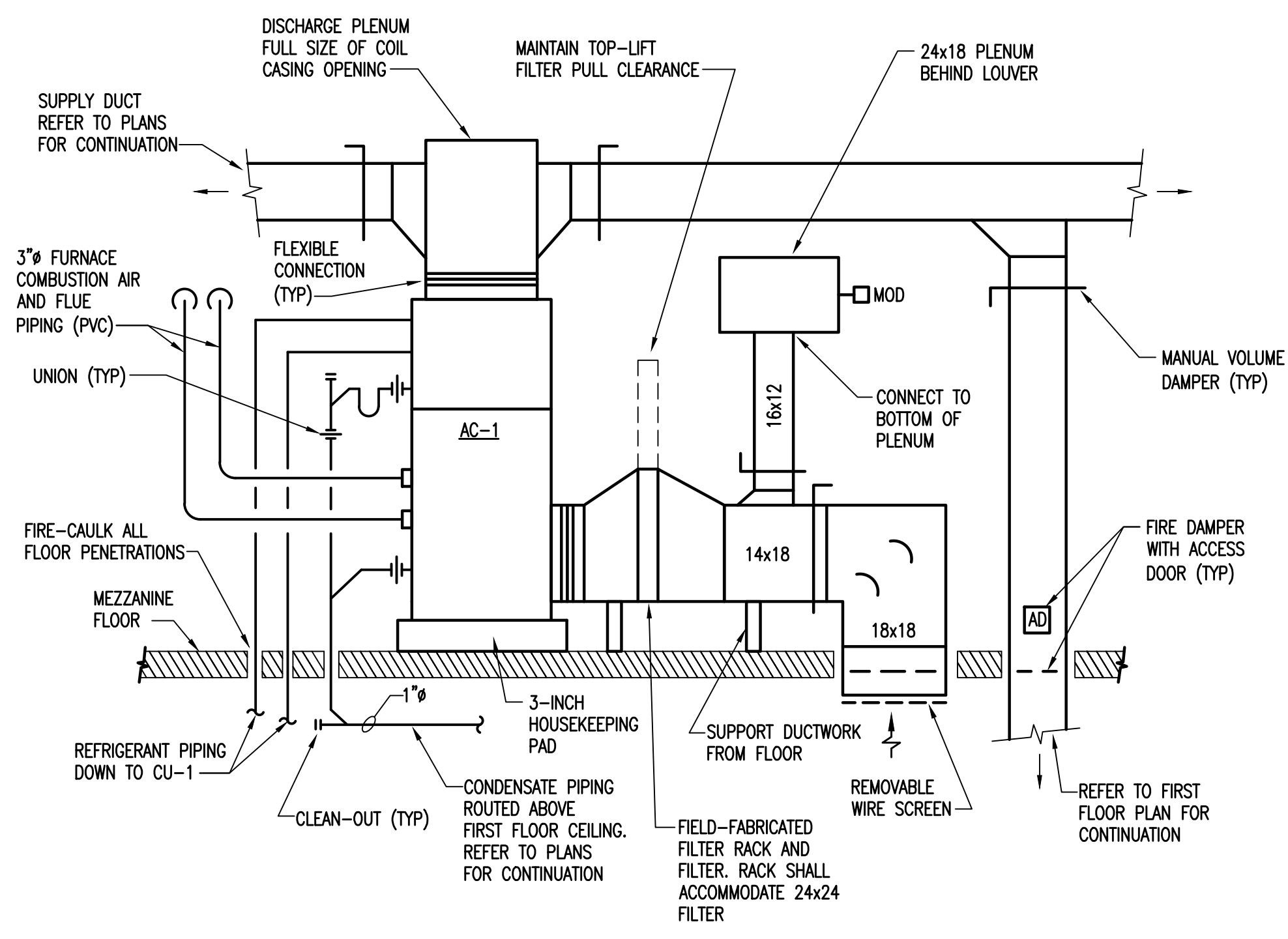
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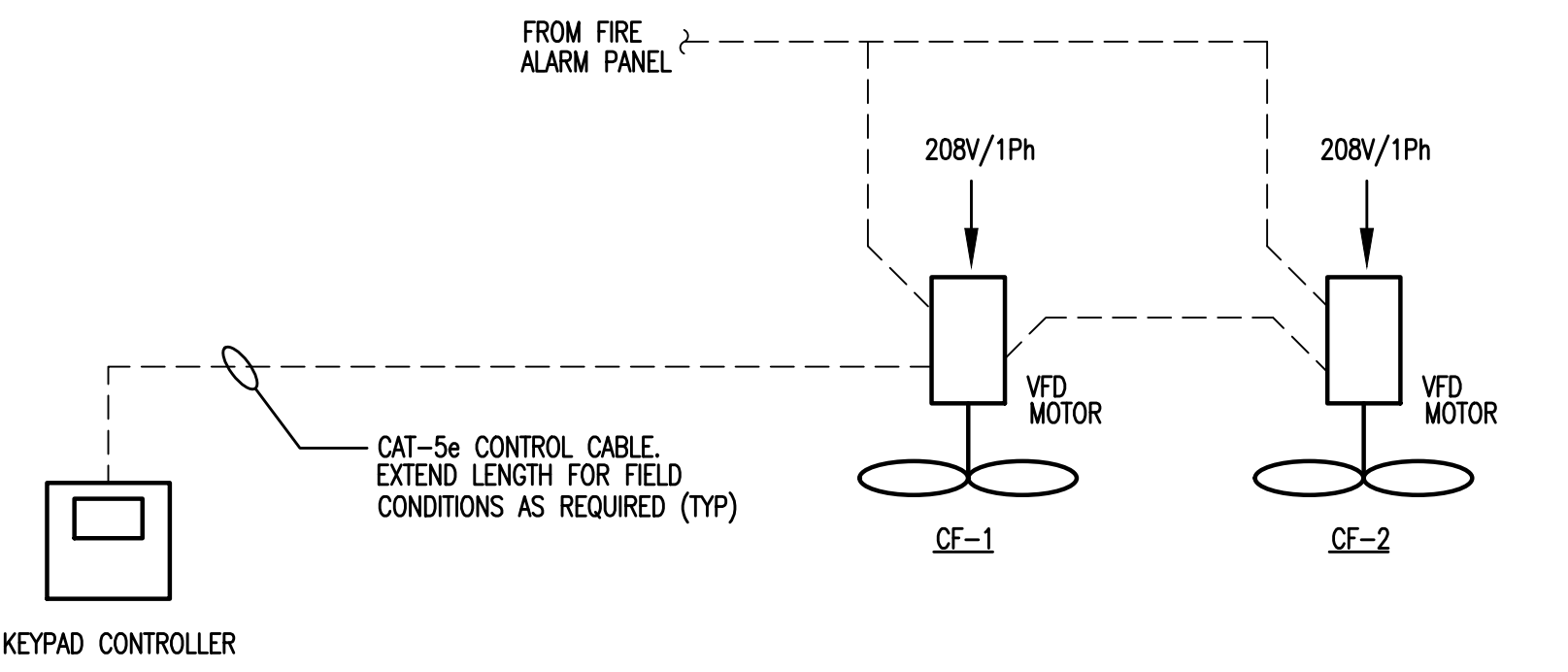
MECHANICAL COVER SHEET
 "PUBLIC WORKS FACILITY"
 WYOMISSING BOROUGH, BERKS COUNTY, PENNSYLVANIA
 Client: WYOMISSING BOROUGH
 Location: JULY 18, 2023
 Date:



GAS DETECTION SYSTEM CONTROL SCHEMATIC
NOT TO SCALE



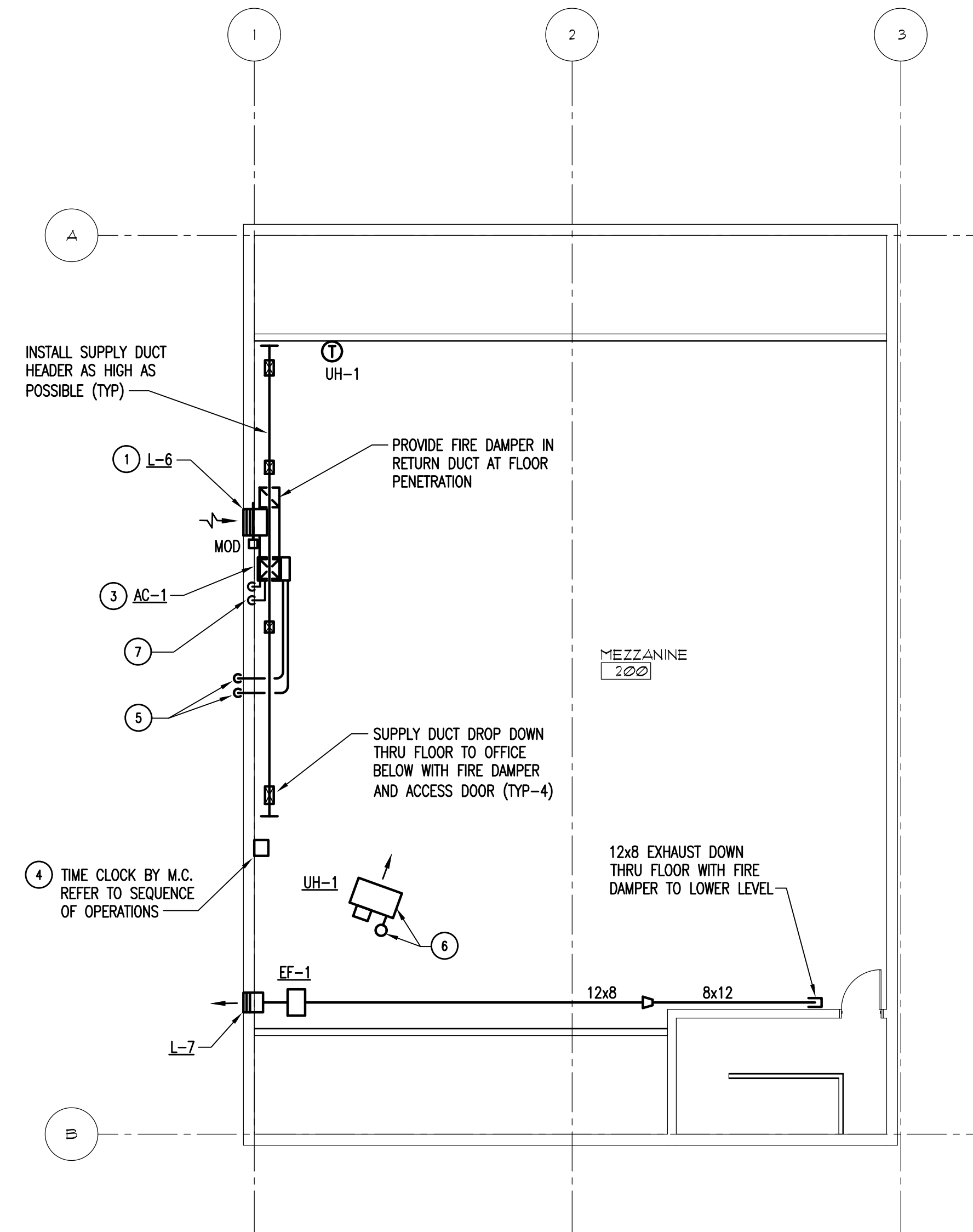
AC-1 INSTALLATION DETAIL - ELEVATION
NO SCALE



CEILING FAN CONTROL SCHEMATIC
NOT TO SCALE

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DRAWN BY: SAS	PROJ. MANAGER: NEC
PRINCIPAL: JCM	SCALE: AS NOTED
DRAWING NO. M-0	PROJECT NO. 230004



- NEW WORK NOTES:**
- 1 PROVIDE LOUVER AT LOCATION SHOWN BELOW SUPPLY DUCTWORK. PROVIDE PLENUM BEHIND LOUVER AS SHOWN. SLOPE PLENUM AND CONNECTED DUCTWORK TOWARD LOUVER. MAINTAIN A MINIMUM OF 10'-0" BETWEEN FRESH AIR INTAKES AND ALL SOURCES OF EXHAUST.
 - 2 INSULATE EXHAUST DUCTWORK AND LOUVER PLENUM BETWEEN FAN DISCHARGE AND LOUVER.
 - 3 REFER TO AC INSTALLATION DETAIL.
 - 4 PROVIDE TIME CLOCK FOR CONTROL OF AC-1 OA DAMPER AND EXHAUST FAN EF-1. TIMER SHALL BE INTERMATIC ELECTROMECHANICAL MODEL T74018 OR APPROVED EQUAL.
 - 5 TERMINATE 3-INCH PVC FURNACE VENTING WITH DOWN-TURNED ELBOWS WITH STAINLESS STEEL BIRD SCREENS. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
 - 6 INSTALL UNIT HEATER AS HIGH AS POSSIBLE. PROVIDE FIELD-FURNISHED COMBUSTION AIR DUCTING FOR USE WITH MANUFACTURER'S CONCENTRIC THRU-THE-ROOF VENTING KIT. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
 - 7 REFRIGERANT PIPING FROM BELOW.

NEW BUILDING -- MEZZANINE -- MECHANICAL NEW WORK PLAN
 SCALE: 1/8" = 1'-0"

Revision	Date	Description

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SEAL

**MECHANICAL -- NEW BUILDING
 MEZZANINE PLAN
 " PUBLIC WORKS FACILITY "**
 Client: WYOMISSING BOROUGH, BERKS COUNTY, PENNSYLVANIA
 Location: JULY 18, 2023
 Date:

DRAWN BY: SAS	PRJL. MANAGER: NEC
PRINCIPAL: JCM	SCALE: AS NOTED
DRAWING NO. M-2	
PROJECT NO. 230004	

ISSUED FOR BID JULY 19, 2023
 NOT FOR CONSTRUCTION

AC UNIT SCHEDULE (INDOOR UNIT)

TAG	TYPE	TOTAL CFM	OA CFM	EXT. STATIC PRESS. (IN. W.G.)	COOLING COIL		HEATING (GAS FURNACE)				FILTER	ELECTRICAL (FURNACE SECTION)				BASIS OF DESIGN	NOTES
					EAT (DB/WB) [LEAVING COIL]	LAT (DB/WB) [LEAVING COIL]	# STAGES	EAT (°F)	MAX. HEATING INPUT (MBH)	MAX. HEATING OUTPUT (MBH)		MOTOR HP	DRIVE	V/Ph/Hz	MOCP		
AC-1	VERTICAL DUCTED	1980	440	0.55	79.2/65.4	57.8/55.7	2	58	100	97	MERV 8	1.0	DIRECT	120/1/60	15A	TRANE S9X2C100USPSBA	ALL

NOTES:
 1. PROVIDE WITH MODEL 4TXCC009DS3 DIRECT-EXPANSION ACCESSORY COOLING COIL.
 2. M.C. TO COORDINATE AND FIELD-CUT SIDE RETURN OPENING INTO SIDE OF UNIT PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 3. COOLING CAPACITIES INDICATED ARE AT A COINCIDENT OUTDOOR AMBIENT TEMPERATURE OF 95F.
 4. PROVIDE WITH MANUFACTURER'S HARD-WIRED 7-DAY PROGRAMMABLE THERMOSTAT, WITH AUTO-CHANGE-OVER FEATURE AND BATTERY BACK-UP.

CONDENSING UNIT SCHEDULE (OUTDOOR UNIT)

TAG	TYPE	LOCATION	REFRIGERANT	NOMINAL CAPACITY (MBH)	FANS (QUANTITY)	COMPRESSORS (QUANTITY)	ELECTRICAL CHARACTERISTICS				BASIS OF DESIGN	NOTES	
							UNIT MCA	VOLTS	PHASE	HERTZ			MOCP
CU-1	AIR-COOLED	GRADE	R410A	5.0	1	1	35.0	208-230	1	60	60A	TRANE MODEL 4TR8060N1	ALL

NOTES:
 1. PROVIDE ALL INTER-CONNECTING CONTROL WIRING BETWEEN INDOOR SECTION AND OUTDOOR CONDENSING UNIT.
 2. PROVIDE ALL INTER-CONNECTING REFRIGERANT PIPING BETWEEN INDOOR UNIT AND OUTDOOR UNIT. FIELD-CHARGE REFRIGERANT LINES ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
 3. SIZE REFRIGERANT PIPING ACCORDING TO MANUFACTURER'S SPECIFICATIONS.

FAN SCHEDULE

REF NO	MANUFACTURER / MODEL NO.	LOCATION	FLOW (CFM)	SPEED (RPM)	STATIC EXT PRESS (IN. WG)	MOTOR (HP/WATTS)	DRIVE TYPE	V-Ph-Hz	TYPE	NOTES
EF-1	PENN-BARRY ZEPHYR MODEL Z10H	MEZZANINE	440	1550	0.55	390 W	DIRECT	120-1-60	CABINET CENTRIF.	1,3
EF-2	PENN-BARRY ZEPHYR MODEL Z8S	MAINTENANCE SHOP	175	1050	0.25	77 W	DIRECT	120-1-60	CABINET CENTRIF.	1,3
EF-3	PENN-BARRY BREEZEWAY MODEL P16RA	MAINTENANCE SHOP	2400	1550	0.25	1/2 HP	DIRECT	120-1-60	WALL PROPELLER	2
EF-4	PENN-BARRY BREEZEWAY MODEL P20SA	WASH BAY	2000	1300	0.30	1/3 HP	DIRECT	120-1-60	WALL PROPELLER	2
EF-5	PENN-BARRY ZEPHYR MODEL Z8S	EXISTING BUILDING	150	1050	0.375	77 W	DIRECT	120-1-60	CABINET CENTRIF.	1,3
CF-1,2	GREENHECK DS-6-8-70HV	MAINTENANCE SHOP	28,600	142	0.00	2/3 HP	DIRECT/VFD	208-1-60	CEILING FAN	4

NOTES:
 1. PROVIDE WITH GRAVITY BACKDRAFT DAMPER. STATIC PRESSURE INDICATED DOES NOT REFLECT GRAVITY DAMPER.
 2. PROVIDE WITH WALL SLEEVE AND MANUFACTURER'S FAN GUARD.
 3. PROVIDE WITH MANUFACTURER'S SPEED CONTROLLER FOR BALANCING.
 4. PROVIDE THE FOLLOWING FACTORY OPTIONS/ACCESSORIES: FACTORY-INTEGRAL VFD DRIVE, MILL FINISH, Z-PURLIN MOUNTING KIT, 6'-FT DROP TUBE EXTENSION, IMPELLER HUB/PLATE, POWER WIRING PIGTAIL, NETWORK COMMUNICATION WIRING, 150FT OF TWISTED PAIR CAT-5e CONTROL CABLE, LOW-VOLTAGE FIRE ALARM INTERFACE RELAY, SAFETY CABLE, GUY WIRES, CABLE CLAMP HARDWARE, NEMA-3R TOGGLE SWITCH, IP40 KEYPAD (WALL-MOUNTED) TO CONTROL BOTH FANS.

GAS-FIRED UNIT HEATER SCHEDULE

REF NO	MANUFACTURER / MODEL NO.	LOCATION	NATURAL GAS BURNER				ELECTRICAL		POWER CONNECTION	NOTES
			INPUT (MBH)	OUTPUT (MBH)	MINIMUM INLET PRESS. (IN. W.G.)	MAXIMUM INLET PRESS. (IN. W.G.)	FLA	V-Ph-Hz		
UH-1	RE-VERBER-AIR / UH-45	MEZZANINE	45	36.0	5.0	14.0	2.7	120-1-60	HARD-WIRED	ALL

NOTES:
 1. PROVIDE WITH MANUFACTURER'S STANDARD 24V THERMOSTAT AND INTEGRAL CONTROL TRANSFORMER.
 2. PROVIDE WITH MANUFACTURER'S SUPPORT HANGERS/ANGLES.
 3. PROVIDE WITH SEPARATED COMBUSTION, POWERED EXHAUST, THRU-THE-ROOF CONCENTRIC VENTING KIT WITH B-VENT AND RAIN CAP, AND VIBRATION ISOLATION KIT.

INFRARED HEATER SCHEDULE

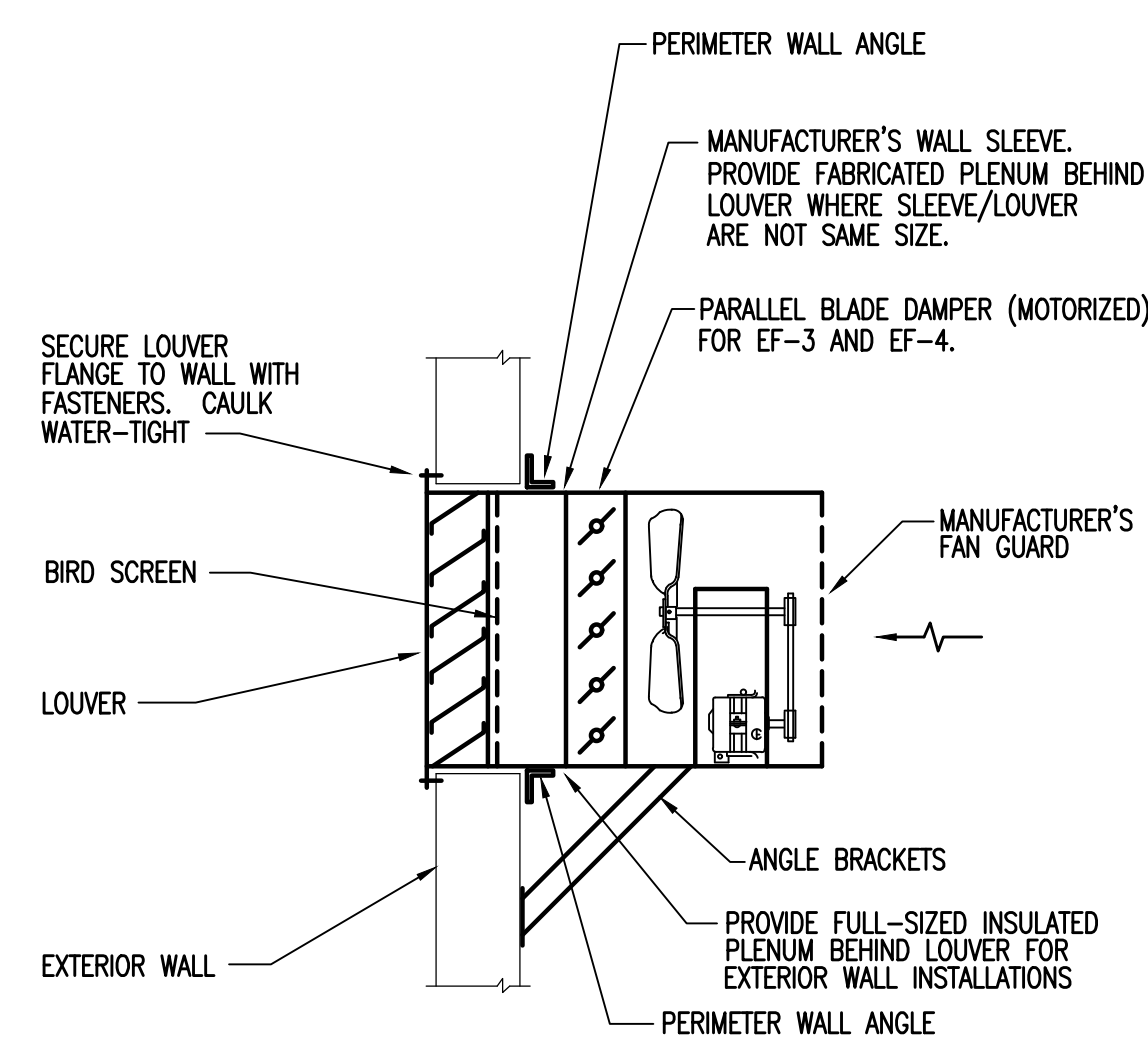
REF NO	MANUFACTURER / MODEL NO.	LOCATION	OVERALL LENGTH (FT)	NATURAL GAS BURNER			ELECTRICAL			POWER CONNECTION	NOTES
				HIGH-FIRE INPUT (MBH)	MINIMUM INLET PRESS. (IN. W.G.)	MAXIMUM INLET PRESS. (IN. W.G.)	V-Ph-Hz	STARTING AMPS	RUNNING AMPS		
IH-1,2,3	RE-VERBER-RAY / HL3-40-75	MAINTENANCE SHOP	41'-1"	75	5.0	14.0	120-1-60	4.8	1.1	PLUG-AND-CORD	1,2,3,4
IH-4	RE-VERBER-RAY / HL3-50-150	WASH BAY	50'-9"	150	5.0	14.0	120-1-60	4.8	1.1	PLUG-AND-CORD	1,2,3,4,5

NOTES:
 1. PROVIDE WITH MANUFACTURER'S STANDARD 24V THERMOSTAT.
 2. PROVIDE WITH MANUFACTURER'S HANGERS, TUBE CLAMPS, AND CENTER SUPPORTS.
 3. PROVIDE WITH MANUFACTURER'S REFLECTOR END CAPS.
 4. PROVIDE WITH MANUFACTURER'S FLEXIBLE GAS CONNECTOR HOSE.
 5. PROVIDE WITH ALUMINIZED STEEL TUBES, AND STAINLESS STEEL BURNER/BOX, HANGERS, AND REFLECTORS/CAPS.

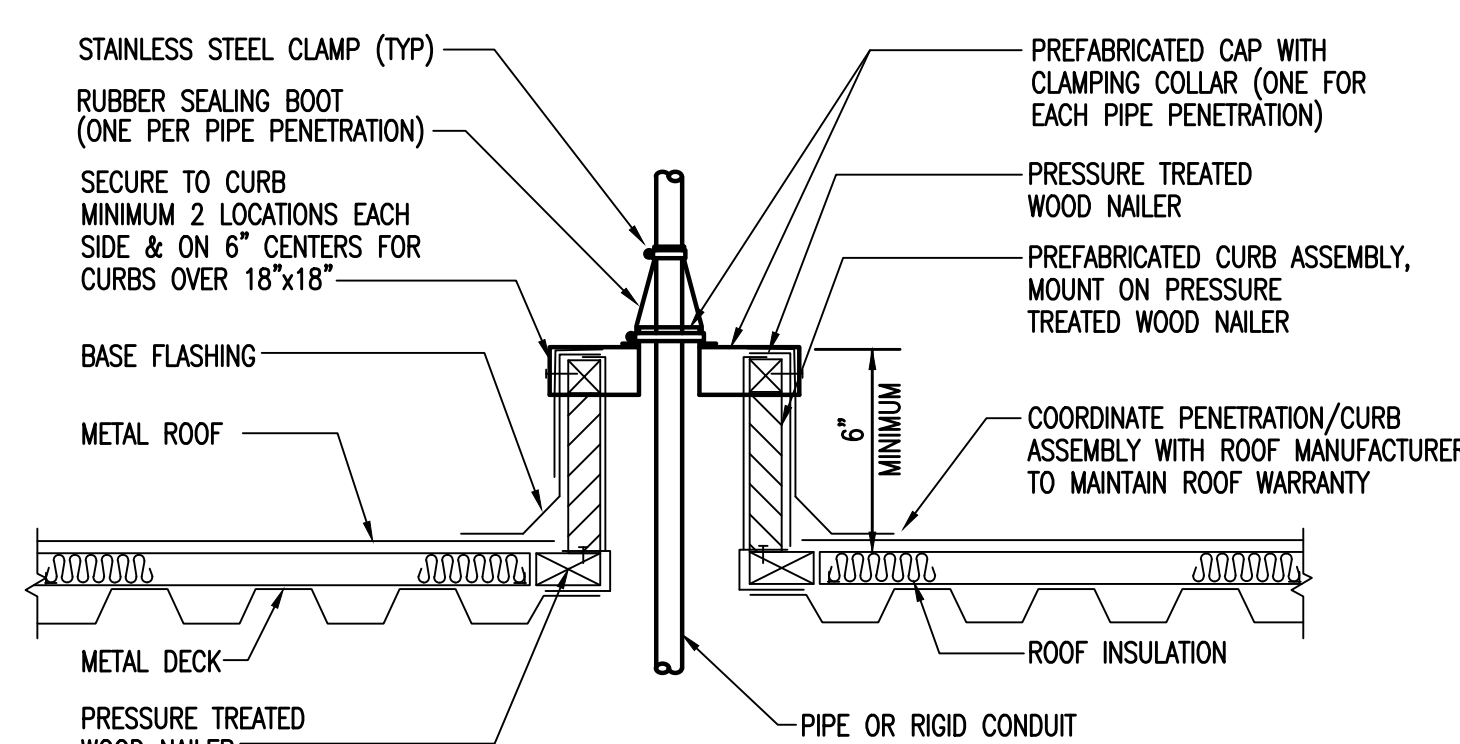
ELECTRIC CABINET HEATER SCHEDULE

REF NO	TYPE	AIR FLOW (CFM)	CAPACITY (WATTS)	ELECTRICAL CHARACTERISTICS			BASIS OF DESIGN	NOTES
				VOLTS	PHASE	HERTZ		
CUH-1,2	SURFACE-MOUNTED WALL HEATER	100	3000	208	1	60	BERKO MODEL CWH3404F	ALL

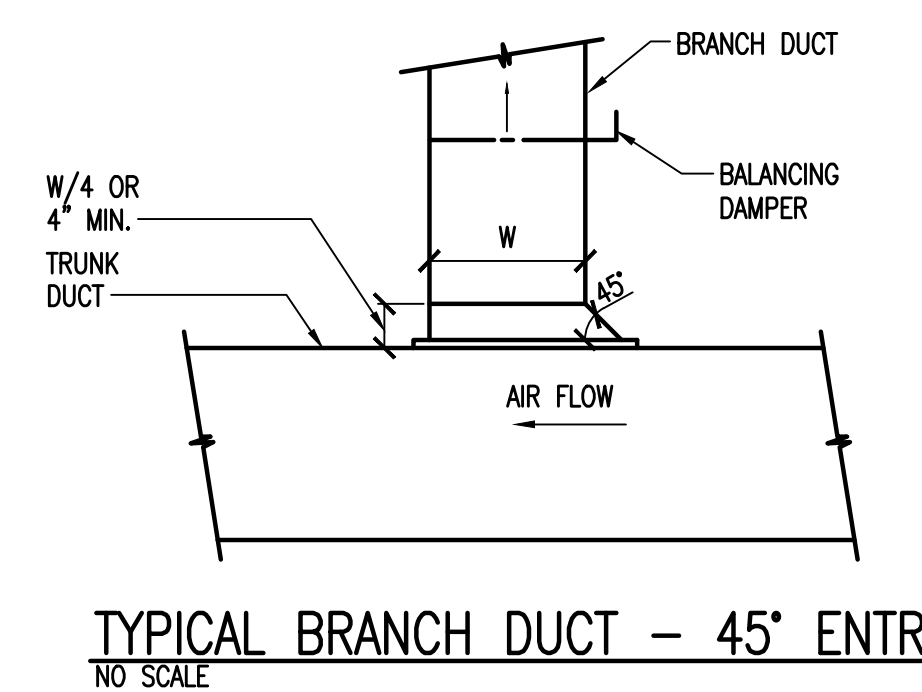
NOTES:
 1. PROVIDE WITH SURFACE MOUNTING FRAME, INTEGRAL ON/OFF SWITCH, INTEGRAL THERMOSTAT, AND MANUAL RESET THERMAL OVERHEAT PROTECTOR.



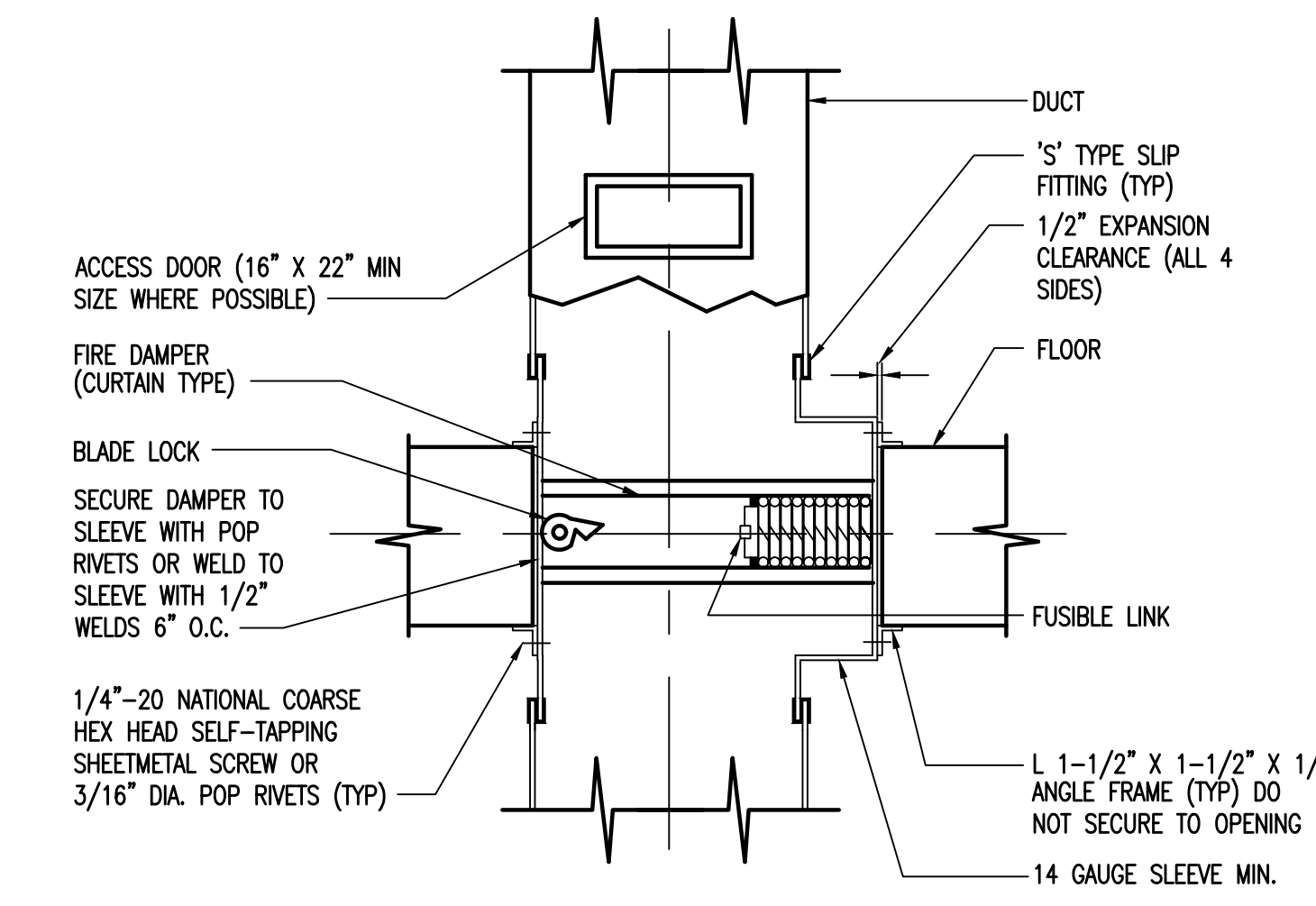
TYPICAL PROPELLER EXHAUST FAN DETAIL
NO SCALE



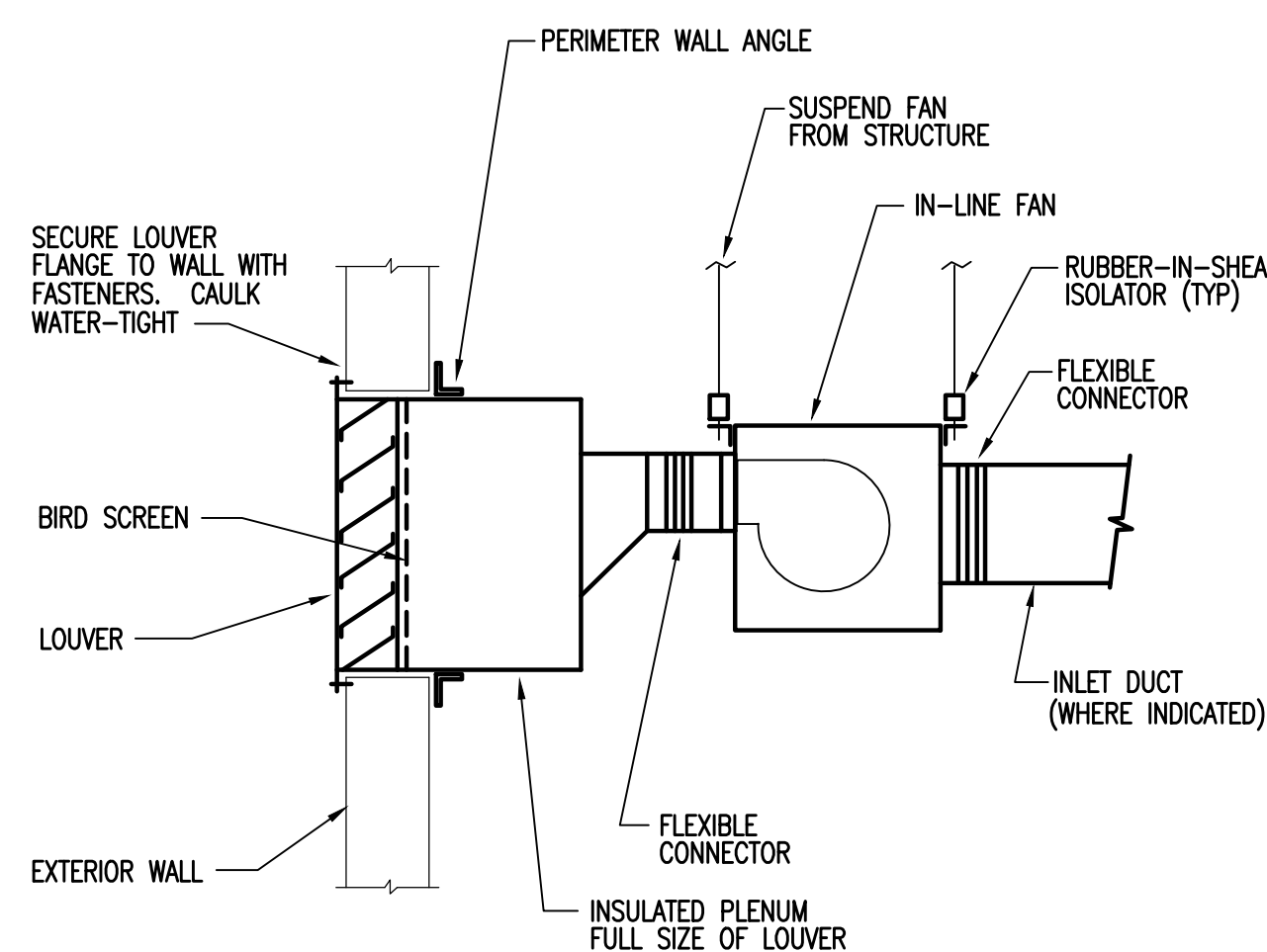
TYPICAL PIPE OR CONDUIT ROOF PENETRATION DETAIL
NO SCALE



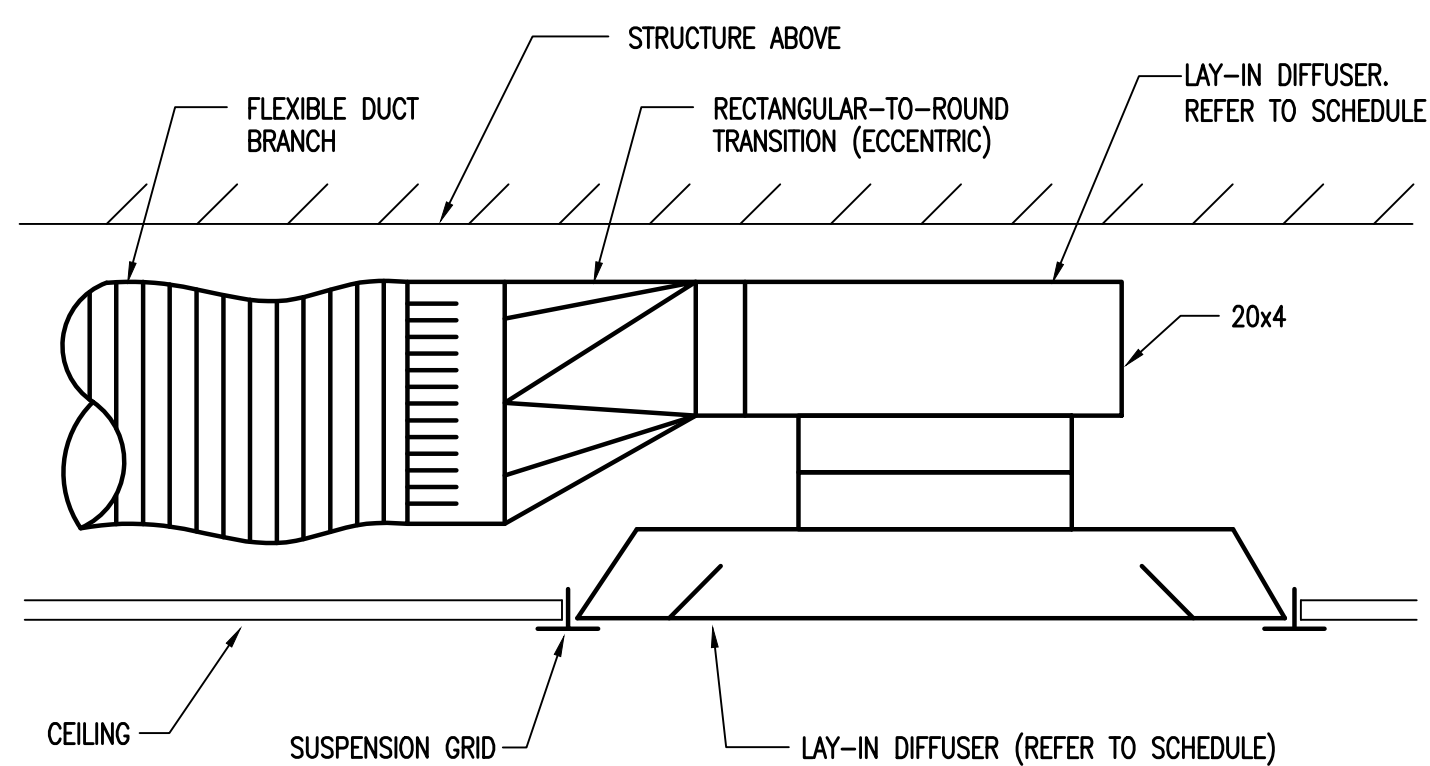
TYPICAL BRANCH DUCT - 45° ENTRY
NO SCALE



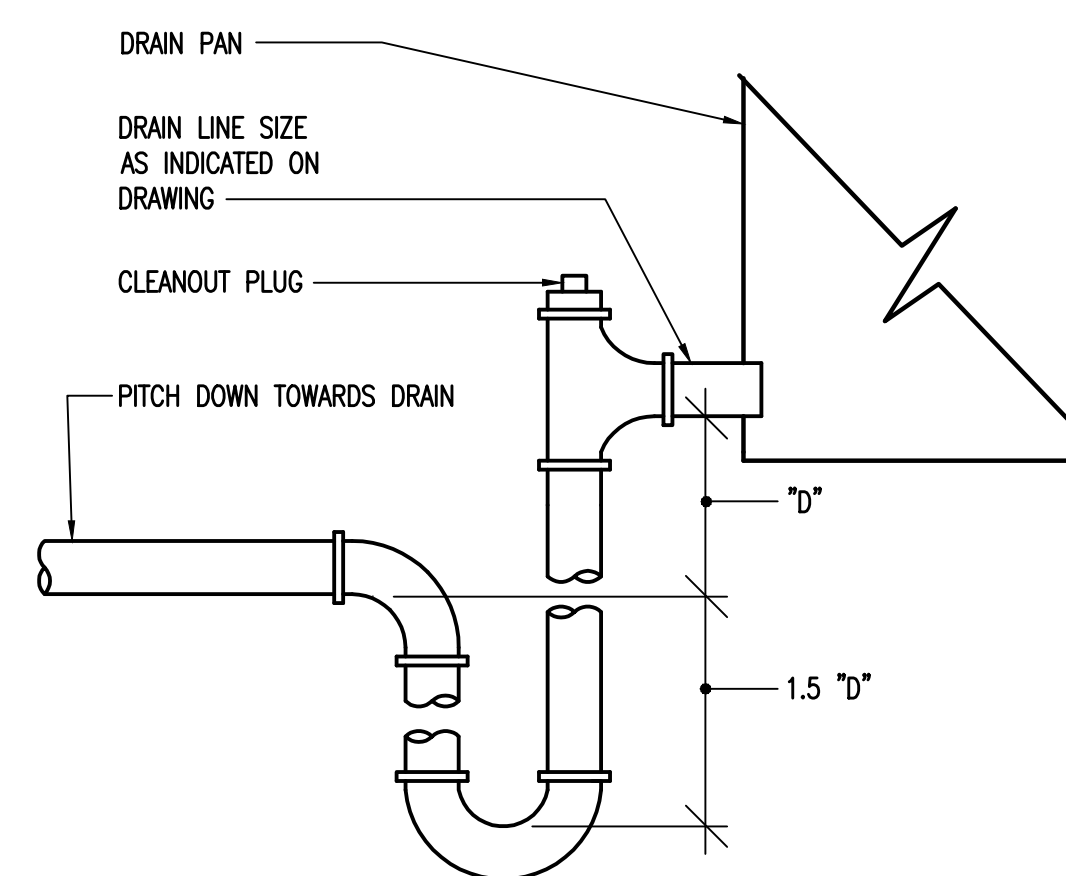
TYPICAL HORIZONTAL FIRE DAMPER DETAIL
NO SCALE



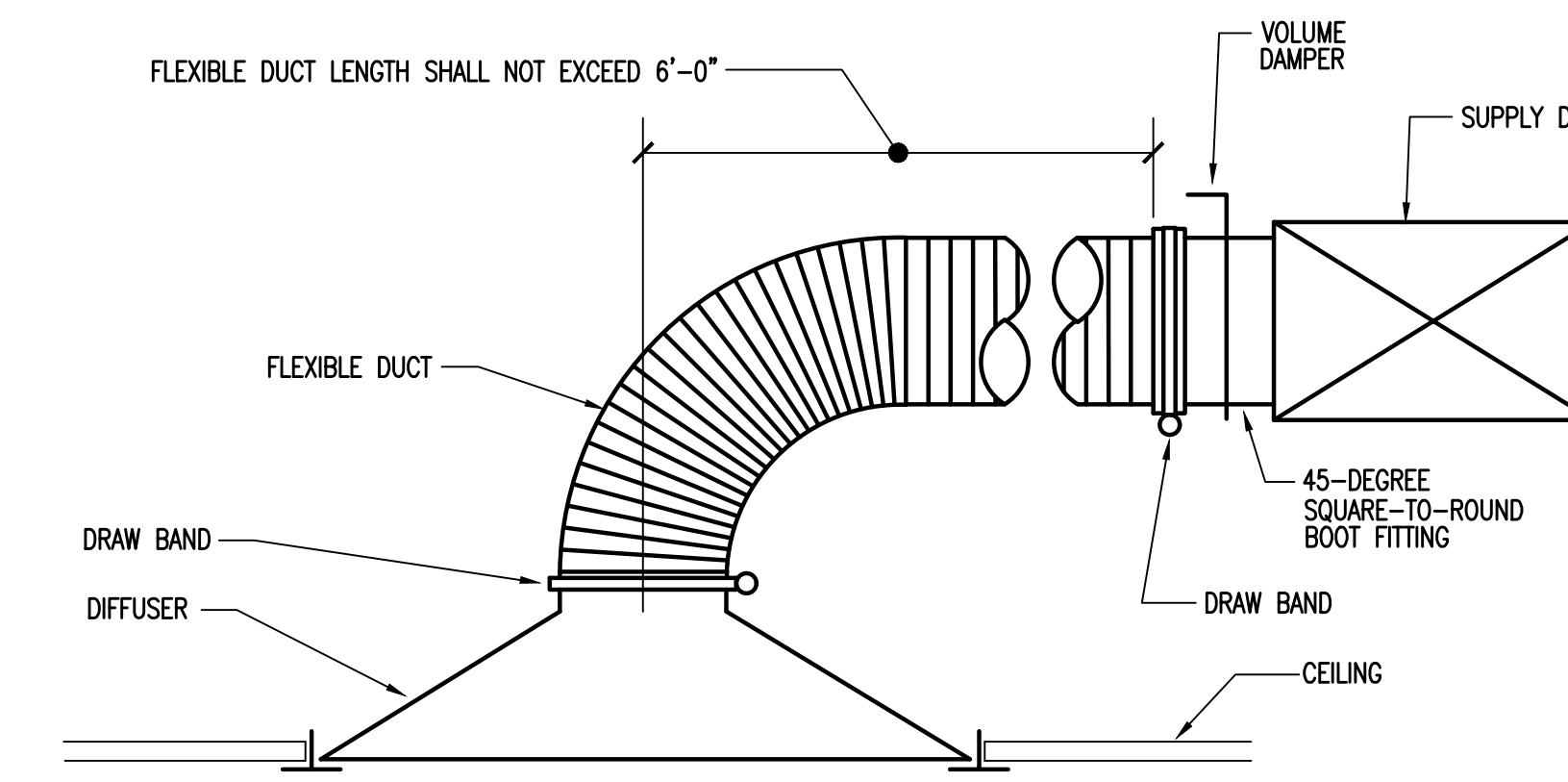
TYPICAL IN-LINE FAN DETAIL
NO SCALE



CONFINED SPACE DIFFUSER INSTALLATION DETAIL
NO SCALE



TYPICAL CONDENSATE DRAIN PAN TRAP DETAIL
NO SCALE



DIFFUSER INSTALLATION DETAIL
NO SCALE



MECHANICAL SCHEDULES AND DETAILS "PUBLIC WORKS FACILITY"

Client: WYOMISSING BOROUGH, BERKS COUNTY, PENNSYLVANIA
 Location: JULY 18, 2023
 Date:

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Revised: _____
 Date: _____

Drawn By: SAS
 Principal: JCM
 Scale: AS NOTED

Project Manager: NEC
 Scale: AS NOTED

Drawing No: M-4
 Project No: 230004

ISSUED FOR BID JULY 19, 2023
 NOT FOR CONSTRUCTION

REF NO	FIXTURE	CW (IN)	HW (IN)	SAN (IN)	TRAP (IN)	VENT (IN)	REMARKS
P-1	WATER CLOSET	1/2		4		2	ADA ACCESSIBLE, PRESSURE-ASSISTED TANK TYPE, SEE NOTE 1
P-2	URINAL	3/4		2	2	1 1/4	ADA ACCESSIBLE, WALL MOUNT, BATTERY POWERED SENSOR OPERATED ACTIVATED ASSEMBLY FLUSHOMETER VALVE.
P-3	LAVATORY	1/2	1/2	2	1 1/2	1 1/4	ADA ACCESSIBLE, UNDER MOUNT, COUNTER MOUNT MANUAL FAUCET ASSEMBLY, SEE NOTES 2 & 3
P-4	HAND WASHFOUNTAIN	1/2	1/2	2	1 1/2	1 1/4	ADA ACCESSIBLE, WALL MOUNT, INFRARED SENSOR-ACTIVATED CONVECTIONAL FAUCETS
P-5	SHOWER	1/2	1/2	2	2	1 1/4	ADA ACCESSIBLE, ONE PIECE TRANSFER SHOWER ENCLOSURE, PRESSURE BALANCE SHOWER VALVE
P-6	SINK	1/2	1/2	2	1 1/2	1 1/4	COUNTER MOUNT, MANUAL FAUCET ASSEMBLY SEE NOTE 3
P-7	HOSE BIBB	3/4					WALL MOUNT, RECESSED HOSE BOX WITH LOCKABLE COVER
P-8	WATER COOLER	1/2		2	1 1/4	1 1/4	ADA ACCESSIBLE, WALL MOUNT, BI-LEVEL, FRONT PUSHBUTTON
P-9	EMERGENCY EYEWASH	1/2"	1/2"				*TEPID WATER SUPPLY, SEE NOTE 4
P-10	MOP SERVICE BASIN	1/2	1/2	3	3	2	FLOOR MOUNT, WALL MOUNT MANUAL FAUCET ASSEMBLY

NOTES:
1. COORDINATE FLUSHING HANDLE LOCATION WITH WIDE SIDE OF TOILET ROOM OR STALL FOR EACH FIXTURE.
2. COORDINATE COUNTER TOP ROUGH-IN HOLE REQUIREMENTS WITH THE GENERAL CONTRACTOR.
3. MOUNT INDIVIDUAL THERMOSTATIC MIXING VALVE BELOW FIXTURE.
4. TEPID WATER SUPPLY FROM EMERGENCY TEMPERING VALVE ASSEMBLY.

SYM	FIXTURE	DESCRIPTION	SPECIFICATIONS
P-1	WATER CLOSET ADA	FLOOR MOUNT, BOTTOM OUTLET, ELONGATED BOWL, 12" ROUGH-IN, HIGH EFFICIENCY, ULTRA LOW CONSUMPTION 1.1 GPF, 16-1/2" RIM HEIGHT.	AMERICAN STANDARD CADET FLOWISE, PRESSURE-ASSISTED SIPHON JET ACTION HIGH EFFICIENCY TANK TYPE TOILET, MODEL 2467.100, WHITE VITREOUS CHINA WITH EVERCLEAN SURFACE CLOSE-COUPLED FLUSHOMETER TANK, SPEED CONNECT TANK/BOWL COUPLING SYSTEM AND 2 BOLT CAPS, COMMERCIAL HEAVY DUTY WHITE OPEN FRONT SEAT, PROVIDE FLEXIBLE SUPPLY WITH WALL FLANGES AND LOOSE KEY STOP. SEE NOTE 1
P-2	URINAL ADA	WALL HUNG, 3/4 INCH INLET, TOP SPUD, LOW CONSUMPTION, HIGH EFFICIENCY, ULTRA LOW CONSUMPTION 0.125 GPF	AMERICAN STANDARD DECORUM HIGH EFFICIENCY URINAL SYSTEM, MODEL 6042.633, WHITE VITREOUS CHINA WITH EVERCLEAN SURFACE, MODERN DEEP SUMP DESIGN WASHOUT WITH STRAINER, 2" THREADED OUTLET CONNECTION AND EXPOSED BATTERY POWERED SELECTION FLUSHOMETER VALVE. PROVIDE FIXTURE SUPPORT CONSTRUCTED OF CAST IRON AND/OR STEEL AND COMPLETELY CONCEALED BEHIND THE FINISHED WALL SURFACE. SUPPORT SHALL BE COMPLETE WITH A FACEPLATE AND FLOOR ANCHORS. FIXTURE LOADING SHALL NOT BE ON THE WALL.
P-3	LAVATORY ADA	UNDER-MOUNT RECTANGULAR BASIN, 20-1/4" X 15-11/16" X 7-5/16" OVERALL DIMENSIONS CENTER DRAIN AND FRONT OVERFLOW	KOHLER CAXTON MODEL K-20000, WHITE VITREOUS, NO FAUCET HOLES REQUIRES COUNTER - MOUNT FAUCET. KOHLER KUMIN MODEL K-98827-4, MANUAL SINGLE HANDLE FAUCET FAUCET, CERAMIC DISK VALVES, HIGH-TEMPERATURE LIMIT SETTINGS AND POP-UP DRAIN WITH 1-1/4" TAIL PIECE, PROVIDE P-TRAP, FLEXIBLE SUPPLIES WITH WALL FLANGES AND LOOSE KEY STOPS. SEE NOTE 2
P-4	HAND WASHFOUNTAIN ADA	WALL MOUNT, STAINLESS STEEL, 36" SEMI-CIRCULAR, INFRARED.	BADLEY MODEL SN2023, ACCOMMODATES 3 USERS AT ONE TIME, SECTIONAL SPRAYHEAD MODULE IS CONTROLLED BY INFRARED SENSOR-ACTUATED SOLENOID, THERMOSTATIC MIXING VALVE AND FLOW RESTRICTOR KEEPS FLOW RATE CONSTANT 0.5 GPM PER STATION.
P-5	SHOWER ADA	ONE-PIECE ENCLOSURE, PRE-LEVELLED BASE, CENTER DRAIN, 3/4" SKIRT, NO THRESHOLD, EXTERIOR NOMINAL DIMENSIONS 38" X 38-1/4" X 77"	AQUATIC ACCESSIBLE TRANSFER SHOWER, MODEL 1363BFSC, WHITE ACRYLX APPLIED ACRYLIC SURFACE, SHALL BE FURNISHED COMPLETE WITH GRAB BARS, FOLD-UP SEAT, PRESSURE BALANCE MIXING VALVE, HAND-HELD SHOWER ASSEMBLY WITH SLIDE BAR, CUTAIN ROD AND SHOWER CURTAIN.
P-6	SINK ADA	SINGLE BOWL UNDERMOUNT WITH 33 X 22 X 9" OVERALL DIMENSIONS AND REAR CENTER DRAIN	AMERICAN STANDARD EDGEWATER MODEL 185B.932211.075, 18 GAUGE 304 STAINLESS STEEL WITH A POLISHED SATIN FINISH, SINGLE HOLE, ZERO RADIUS CORNERS, FULL SPRAY SIDES AND BOTTOM SOUND PADS, BOTTOM AND STRAINER. PROVIDE MOUNTING HARDWARE, MOEN ARBOR MODEL 7594, PULL-DOWN KITCHEN FAUCET ASSEMBLY, HIGH-ARCH-SPOUT WITH THREE-FUNCTION PULL-DOWN SPRAY, SINGLE HANDLE DURALAST CARTRIDGE, 1.5 GPM MAXIMUM FLOW RATE, P-TRAP ASSEMBLY, FLEXIBLE SUPPLIES WITH WALL FLANGES AND LOOSE KEY STOPS. SEE NOTE 2.
P-7	HOSE BIBB	ROUGH BRASS FINISH	WOODFORD MODEL 24, ANTI-SIPHON FAUCET, 3/4 INCH HOSE CONNECTION WITH VACUUM BREAKER AND METAL HANDLE WHEEL.
P-8	WATER COOLER ADA	WALL MOUNT, BI-LEVEL, STAINLESS STEEL	ELKAY MODEL LZ8TLBSC, FILTERED REFRIGERATION UNIT WITH SELF-CLOSING EASY-TOUCH CONTROLS ON FRONT AND BOTH RIGHT AND LEFT SIDES.
P-9	EMERGENCY EYEWASH	FREE STANDING PEDESTAL MOUNT	STAINLESS STEEL BOWL, SCHEDULE 40 GALVANIZED PIPE AND FITTINGS, 1/2 INCH U.S. MADE CHROME-PLATED BRASS STAY-OPEN BALL VALVE, POWDER-COATED CAST ALUMINUM HANDLE AND FLOOR FLANGE. UNIT SHALL HAVE (2) POLYPROPYLENE GS-PLUS™ SPRAY HEADS WITH INTEGRAL "FLIP-TOP" DUST COVERS, FILTERS AND 1.6 GPM FLOW CONTROL ORIFICES MOUNTED ON A CHROME-PLATED BRASS EYEWASH ASSEMBLY. UNIT SHALL INCLUDE ANSI COMPLIANT SIGN. UNIT SHALL BE HYDROSTATICALLY TESTED TO MEET OR EXCEED ANSI Z358.1 - 2014, AND COME WITH A FULL 2-YEAR WARRANTY; GUARDIAN EQUIPMENT G1825 OR APPROVED EQUAL. SEE NOTE 3
P-10	MOP SERVICE BASIN	FLOOR MOUNT, SERVICE BASIN, 24 X 24 X 10 INCH NOMINAL DIMENSIONS WITH 1 INCH WIDE SHOULDERS, STAINLESS STEEL BOTTOM OUTLET STRAINER.	FIAT PRODUCTS' MOLDED STONE, MODEL MSB 2424 WITH MODEL MSG STAINLESS STEEL WALL GUARDS. T & S BRASS MODEL B-0655-BSTP WALL MOUNT SERVICE SINK FAUCET ASSEMBLY, 8 INCH CENTERS, LEVER HANDLES WITH COLOR CODED INDEXES, SPOUT WITH VACUUM BREAKER, PAIL HOOK AND 3/4 INCH HOSE CONNECTION, BUILT-IN SERVICE STOPS, 3 INCH DEEP SEAL TRAP

NOTES:
1. COORDINATE FIXTURE FLUSHING HANDLE LOCATION WITH WIDE SIDE OF TOILET ROOM OR STALL FOR EACH FIXTURE.
2. PROVIDE INDIVIDUAL THERMOSTATIC MIXING VALVE WHICH COMPLIES WITH ASSE 1070.
3. PROVIDE EMERGENCY TEMPERING VALVE ASSEMBLY WHICH COMPLIES WITH ASSE 1071 AND ANSI Z358.1 FOR TEPID WATER SUPPLY TO COMBINATION SHOWER AND EYE/FACE WASH UNIT.

REF NO	DESCRIPTION	SAN (IN)	TRAP (IN)	VENT (IN)	REMARKS
FCO	FLOOR CLEANOUT - SHALL BE JAY R. SMITH MFG. CO., SERIES 4220S, RATED FOR HEAVY LOAD TRAFFIC; ADJUSTABLE CLEANOUT WITH SCORIATED COVER	4			
FD1	FLOOR DRAIN - SHALL BE WADE, 1100-A5, CAST IRON DRAIN BODY WITH FLANGE, INTEGRAL CLAMPING COLLAR, SEEPAGE OPENINGS AND FIVE (5) INCH ROUND ADJUSTABLE SATIN FINISH NICKEL BRONZE TOP.	2	2	2	TOILET ROOMS & MECH SPACES SEE NOTE 1
FD2	FLOOR DRAIN - SHALL BE WADE, 1100-A5, CAST IRON DRAIN BODY WITH FLANGE, INTEGRAL CLAMPING COLLAR, SEEPAGE OPENINGS AND FIVE (5) INCH ROUND ADJUSTABLE SATIN FINISH NICKEL BRONZE TOP.	3	3	2	NEW BUILDING MEZZANINE SEE NOTE 1
FS	FLOOR SINK - SHALL BE ZURN MODEL Z-1901-33 A.R.E. SANI-FLOOR RECEPTOR 12 X 12 X 8 INCH DEEP, CAST IRON BODY, MEDIUM DUTY GRATE WITH SLOTS, WHITE ACID RESISTING PORCELAIN ENAMEL INTERIOR AND TOP, WHITE ACID RESISTANT COATED ANTI-SPLASH BOTTOM DOME STRAINER.	4	4	2	SEE NOTE 1 & 3
TD1	TRENCH DRAIN SYSTEM SHALL BE ZURN 2886 WITH 80" LONG CHANNELS, 6-1/4" WIDE REVEAL AND A 4" THROAT. MODULAR CHANNEL SECTIONS SHALL BE MADE OF 0% WATER ABSORBENT HIGH DENSITY POLYETHYLENE (HDPE). CHANNELS SHALL HAVE A POSITIVE MECHANICAL CONNECTION BETWEEN CHANNEL SECTIONS THAT WILL NOT SEPARATE DURING THE INSTALLATION AND MECHANICALLY LOCK INTO THE CONCRETE SURROUND A MINIMUM OF EVERY 10". CHANNELS WEIGH LESS THAN 2.31 LBS. PER LINEAR FOOT. HAVE A SMOOTH, 1-1/2" RADIUS SELF-CLEANING BOTTOM WITH A MANNING'S COEFFICIENT OF 0.009 AND 75% OR NEUTRAL 0% BUILT IN SLOPE. CHANNELS HAVE REBAR CLIPS STANDARD TO SECURE TRENCH IN ITS FINAL LOCATION. CHANNELS ARE PROVIDED WITH STANDARD DGC GRATES THAT LOCK DOWN WITH LOCKDOWN BARS TO THE CHANNEL AND IS NOT INTENDED FOR DYNAMIC TRAFFIC LOADINGS. ZURN 5-388" WIDE REVEAL DUCTILE IRON SLOTTED GRATE CONFORMING TO ASTM SPECIFICATION A536-84, GRADE 80-55-06. DUCTILE IRON GRATE IS RATED CLASS C PER THE DIN EN1433 TOP LOAD CLASSIFICATIONS, SUPPLIED IN 20" [508MM] NOMINAL LENGTHS WITH 1/2" WIDE SLOTS, AND 3/4" BEARING DEPTH. GRATE HAS AN OPEN AREA OF 28.1 SQ. IN PER FT.	4	4	2	NEW BUILDING GARAGE [104] SEE NOTE 2
TD2	TRENCH DRAIN SYSTEM SHALL BE ZURN MODEL 2874-12, 80" LONG CHANNELS, 17" WIDE REVEAL AND A 12" WIDE THROAT. MODULAR CHANNEL SECTIONS SHALL BE MADE OF 0% WATER ABSORBENT HIGH DENSITY POLYETHYLENE (HDPE). CHANNELS SHALL HAVE A POSITIVE MECHANICAL CONNECTION BETWEEN CHANNEL SECTIONS THAT WILL NOT SEPARATE DURING INSTALLATION AND SHALL MECHANICALLY LOCK INTO CONCRETE SURROUND A MINIMUM OF EVERY 10". CHANNELS SHALL WEIGH LESS THAN 6.6 LBS. PER LINEAR FOOT. HAVE SMOOTH 3.5" RADIUS SELF-CLEANING BOTTOM WITH A MANNING'S COEFFICIENT OF 0.009 AND 1.00% OR NEUTRAL 0% BUILT-IN SLOPE. CHANNELS SHALL HAVE ALL GRATES LOCKED DOWN. CHANNELS COME WITH CLIPS ATTACHED TO THE FRAME TO ACCOMMODATE VERTICAL RE-BAR FOR POSITIONING AND ANCHORING PURPOSES. SHALL BE PROVIDED WITH THE STANDARD DGC GRATE, ZURN 16-1/4" WIDE DUCTILE IRON SLOTTED GRATE, WHICH LOCKS DOWN TO THE FRAME WITH 4 INDIVIDUAL BOLT ANCHORS PER GRATE. DUCTILE IRON CONFORMS TO ASTM SPECIFICATION A536-84, GRADE 80-55-06. DUCTILE IRON GRATE IS RATED CLASS C PER THE DIN EN1433 TOP LOAD CLASSIFICATIONS, SUPPLIED IN 20" NOMINAL LENGTHS WITH 13/16" WIDE SLOTS, AND 1-3/4" BEARING DEPTH. GRATE HAS AN OPEN AREA OF 118 SQ. IN. PER FT. THE 1/4" THICK CARBON STEEL FRAME ASSEMBLY CONFORMS TO ASTM SPECIFICATION A36 WITH 10 - 4" LONG CONCRETE ANCHORS PER 80". THE FRAME SHALL HAVE A POWDER COATED FINISH. ALL WELDS MUST BE PERFORMED BY A CERTIFIED WELDER PER ASTM STANDARD AWS D1.1. FRAMES SHALL BE PRODUCED IN THE USA.	4	4	2	NEW BUILDING WASH BAY [105] SEE NOTE 2

NOTES:
1. PROVIDE WITH BARRIER TYPE FLOOR DRAIN TRAP SEAL PROTECTION DEVICE COMPLYING WITH ASSE 1072.
2. SUBMIT MANUFACTURERS' LAYOUT PLAN FOR EACH TRENCH DRAIN SYSTEM SHOWING OVERALL LENGTH, CATCH BASIN/OUTLET LOCATIONS AND LISTING OF ALL UNITS BEING FURNISHED. COORDINATE EACH TRENCH SYSTEM FINAL OVERALL LENGTH AND CATCH BASIN/OUTLET LOCATIONS WITH THE ARCHITECTURAL DRAWINGS. PROVIDE (2) TWO TRENCH DRAIN SHOVELS FOR DRAIN CLEANOUT. PROVIDE (5) FIVE EXTRA TRENCH GRATES. TURN GRATES OVER TO THE OWNER UPON PROJECT FINAL COMPLETION.
3. COORDINATE GRATE OPENING REQUIREMENT WITH INDIRECT DRAINS FROM ICE MACHINE.

LEGEND AND ABBREVIATIONS

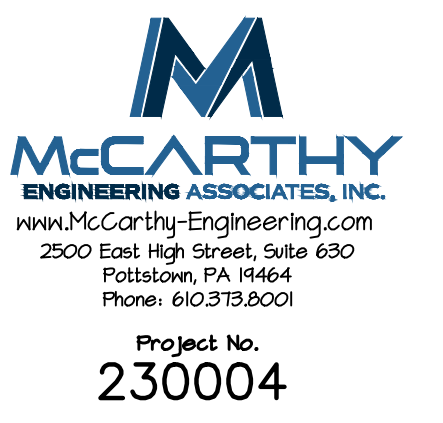
- EXISTING OR WORK BY OTHERS
- WORK BY THIS CONTRACTOR
- SANITARY PIPING (SAN)
- SANITARY VENT PIPING (SV)
- COLD WATER PIPING (CW)
- HOT WATER PIPING (HW)
- HOT WATER RECIRCULATING PIPING (HWR)
- GAS PIPING (G)
- COMPRESSED AIR PIPING (CA)
- PIPE TURNING UP
- PIPE TURNING DOWN
- WATER HAMMER ARRESTOR (WHA)
- BALL VALVE
- CHECK VALVE
- GATE VALVE
- PRESSURE REDUCING VALVE (PRV)
- TEMPERATURE & PRESSURE VALVE
- THERMOSTATIC MIXING VALVE
- GAS COCK
- THERMOMETER
- PRESSURE GAUGE W/ COCK
- CIRCULATING PUMP (ONLINE TYPE)
- FIXTURE REFERENCE NUMBER
- METER
- GAS METER
- CONNECT TO EXISTING
- & ABOVE BUILDING BELOW CEILING CLEANOUT CONTINUE DRINKING FOUNTAIN DRAINAGE FIXTURE UNIT DOWN DRAWING ELECTRIC EXISTING EMERG ENG FAI FRESH AIR INLET FCO FLOOR CLEANOUT FD FLOOR FLR FLOOR GCO GRADE CLEANOUT HB HOSE BIBB LAV LAVATORY MSH THOUSAND BRITISH THERMAL UNIT MSB MOP SERVICE BASIN RECIRC SHWR SHOWER TD TRENCH DRAIN URINAL URINAL VENT THRU ROOF WC WATER CLOSET WCO WALL CLEANOUT

EMERGENCY STATION DESIGN NOTES:

- THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), 29 CFR 1910.151, REQUIRES THAT: "WHERE THE EYES OR BODY OF ANY PERSON MAY BE EXPOSED TO IRRITANT OR CORROSIVE MATERIALS, SUITABLE FACILITIES FOR QUICK DRENCHING OR FLUSHING OF THE EYES AND BODY SHALL BE PROVIDED WITHIN THE WORK AREA FOR IMMEDIATE EMERGENCY USE." DEPARTMENT OF ENERGY (DOE) HEALTH AND SAFETY REGULATIONS, FOUND IN 10 CFR 851, FOLLOW MOST OSHA REGULATIONS. DOE HAS STATED "WHERE THIS INJURIOUS EXPOSURE OF CORROSIVE MATERIALS TO THE EYES OR BODY POTENTIAL EXISTS, THERE MUST BE AN EMERGENCY EYE WASH FACILITY THAT MEETS ANSI STANDARDS. EQUIPMENT DESIGN BASIS IS PER THE INTERNATIONAL PLUMBING CODE (IPC) SECTION 411, WHICH REQUIRES THE USE OF ANSI/ISEA Z358.1 COMPLIANT EQUIPMENT WHENEVER EYEWASH OR SHOWER EQUIPMENT IS NEEDED, AND THAT WASTE CONNECTIONS SHALL NOT BE REQUIRED FOR EMERGENCY SHOWERS AND EYEWASH STATIONS. DESIGN BASIS FOR EMERGENCY STATIONS IS EYE WASH STATION IN MECHANICS SHOP [105] AREA.
- THE EYE WASH STATION EQUIPMENT SELECTION HAS CAPACITY TO DELIVER 0.4 GALLONS OF WATER PER MINUTE FOR 15 MINUTES AT A 100 DEGREE FAHRENHEIT TEMPERATURE RISE FOR A TEPID WATER SUPPLY TEMPERATURE OF 70 DEGREES FAHRENHEIT BASED ON A DOMESTIC WATER SUPPLY AMBIENT TEMPERATURE OF 40 DEGREE FAHRENHEIT.
- THE OWNERS FACILITIES SAFETY REPRESENTATIVE AND OR INSURANCE CARRIER SHALL CONFIRM FINAL EMERGENCY EQUIPMENT TYPE(S), LOCATION(S) AND WATER DELIVERY TEMPERATURES MEET HAZARD ASSESSMENT AND OPERATIONAL REQUIREMENTS FOR HAZARDS MATERIALS ENCOUNTERED OR GENERATED IN WORK AREAS.

GENERAL NOTES:

- ALL PLUMBING WORK SHALL CONFORM TO THE LATEST PLUMBING CODE OF THE BOROUGH OF WYOMISSING, PA AND SUBSEQUENT AMENDMENTS THERETO.
- DRAWINGS ARE DIAGRAMMATIC. COORDINATE ALL FIXTURE LOCATIONS AND NEW PIPE ROUTING WITH EXISTING FIELD CONDITIONS, INCLUDING BUT NOT LIMITED TO EXISTING PLUMBING SYSTEMS, PIPING, STRUCTURAL COMPONENTS AND ARCHITECTURAL DETAILS PRIOR TO INSTALLATION.
- VERIFY LOCATIONS, MOUNTING HEIGHTS, TRIM LOCATIONS, ETC. FOR ALL PLUMBING FIXTURES WITH THE ARCHITECT PRIOR TO INSTALLATION. — DESIGNATES FIXTURE AND FIXTURE TRIM. MOUNTING OF ALL ADA FIXTURES AND RELATED TRIM TO MEET THE AMERICAN DISABILITIES ACT GUIDELINES AND ANSI REQUIREMENTS FOR PEOPLE WITH DISABILITIES.
- CONCEAL ALL PIPING IN WALLS/CHASE SPACE, BELOW FLOORS, AND ABOVE CEILINGS UNLESS OTHERWISE NOTED. INSTALL ALL WATER SUPPLY PIPING IN EXTERIOR WALLS ON THE INSIDE (WARM SIDE) OF THE BUILDING INSULATION. SEAL ALL PIPING PENETRATIONS THROUGH RATED ASSEMBLIES ACCORDINGLY. REFER TO ARCHITECTURAL DRAWINGS FOR FIRE AND SOUND RATED PARTITIONS, CEILINGS, AND FLOORS.
- DRAWING INDICATES THE GENERAL SCOPE OF WORK ASSOCIATED WITH THE REMOVAL OF EXISTING MATERIALS, EQUIPMENT, AND PIPING SYSTEMS, BUT IS NOT NECESSARILY INCLUSIVE OF EVERY EXISTING CONDITION. THE FULL EXTENT OF REMOVAL WORK SHALL BE DETERMINED IN THE FIELD BASED ON THE ACTUAL CONDITIONS ENCOUNTERED AND AS REQUIRED FOR THE PROPER EXECUTION OF ALL TRADES WORK.
- THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE TO CLEARLY IDENTIFY ALL PLUMBING FIXTURES AND EQUIPMENT THAT IS TO BE REMOVED AND REVIEW WITH THE OWNER'S REPRESENTATIVE PRIOR TO STARTING ANY DEMOLITION WORK.
- REMOVAL OF ALL EQUIPMENT, PIPING, FIXTURES, ETC. SHALL INCLUDE ALL RELATED SUPPORTS, HANGERS, ETC. WHERE PIPING IS NOTED TO BE ABANDONED IN WALLS OR FLOORS, PIPING SHALL BE REMOVED TO BEYOND FINISH SURFACE, CAPPED OR PLUGGED IN APPROVED MANNER, PATCH SURFACE AND FINISH TO MATCH ADJACENT CONDITIONS. CLOSE OFF AND SEAL TIGHT ALL WALL, FLOOR, AND ROOF PENETRATIONS NOT BEING UTILIZED FOR NEW PIPING SYSTEMS SO AS TO MAINTAIN STRUCTURAL INTEGRITY OF SURROUNDING ASSEMBLY. THE REMOVAL OF ALL FIXTURE BRANCH PIPING SHALL BE BACK TO LAST ACTIVE PIPING TAKE-OFF. THERE SHALL BE NO DEAD END SECTIONS OF PIPE, CAP AND PLUG ALL OPEN END PIPE IN CODE APPROVED MANNER.
- ALL MATERIALS, EQUIPMENT, FIXTURES NOT REUSED OR CLAIMED BY THE OWNER SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE REMOVED PROMPTLY FROM THE PREMISES BY THE CONTRACTOR. ANY DEMOLITION ITEMS IN QUESTION SHALL BE REVIEWED WITH THE OWNERS REPRESENTATIVE PRIOR TO REMOVAL. ALL SPACES SHALL BE KEPT FREE OF DEBRIS AT ALL TIMES.

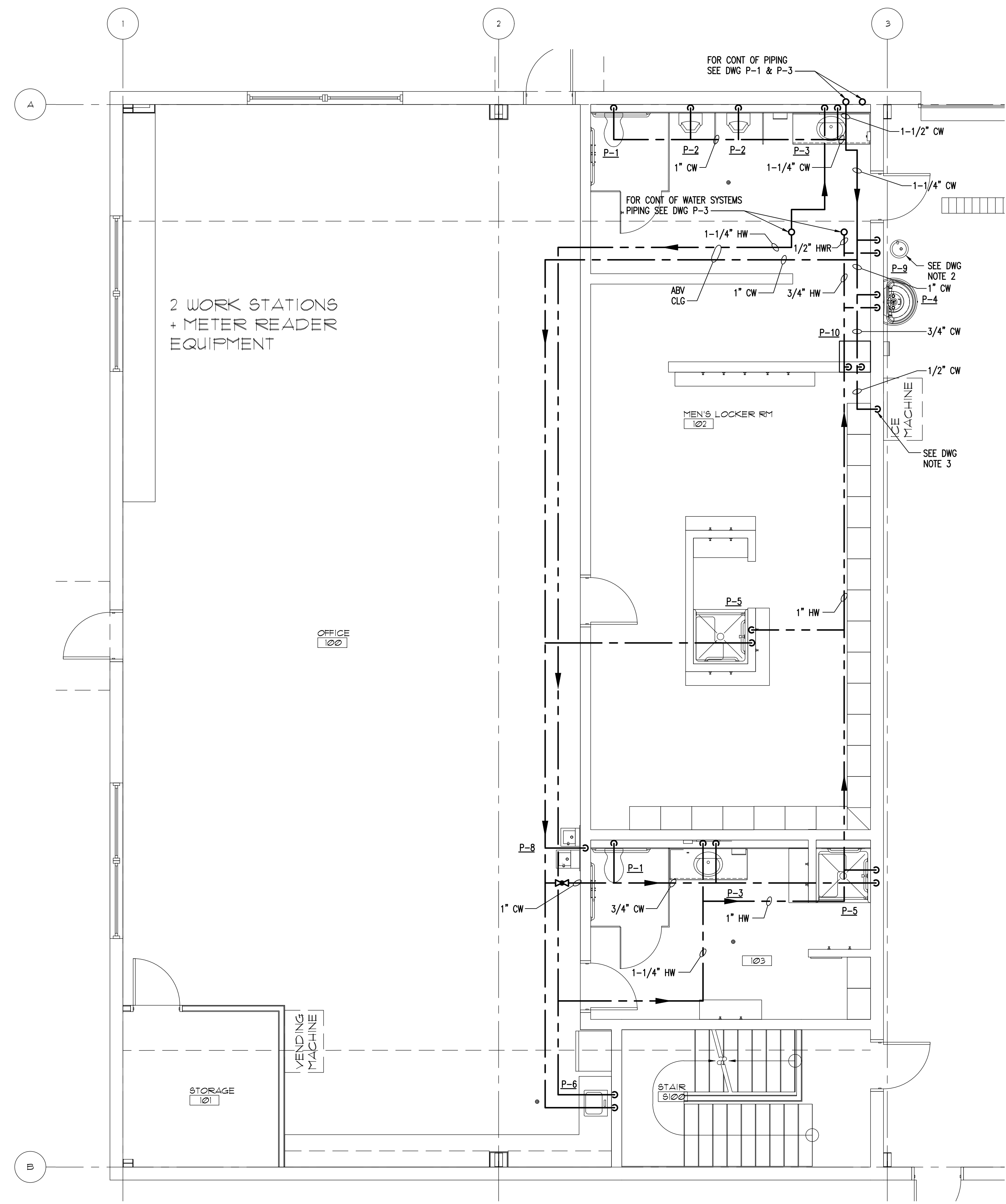


PLUMBING COVER SHEET "PUBLIC WORKS FACILITY"
 WYOMISSING BOROUGH, BERKS COUNTY, PENNSYLVANIA
 Client: WYOMISSING BOROUGH
 Location: JULY 18, 2023
 Date:

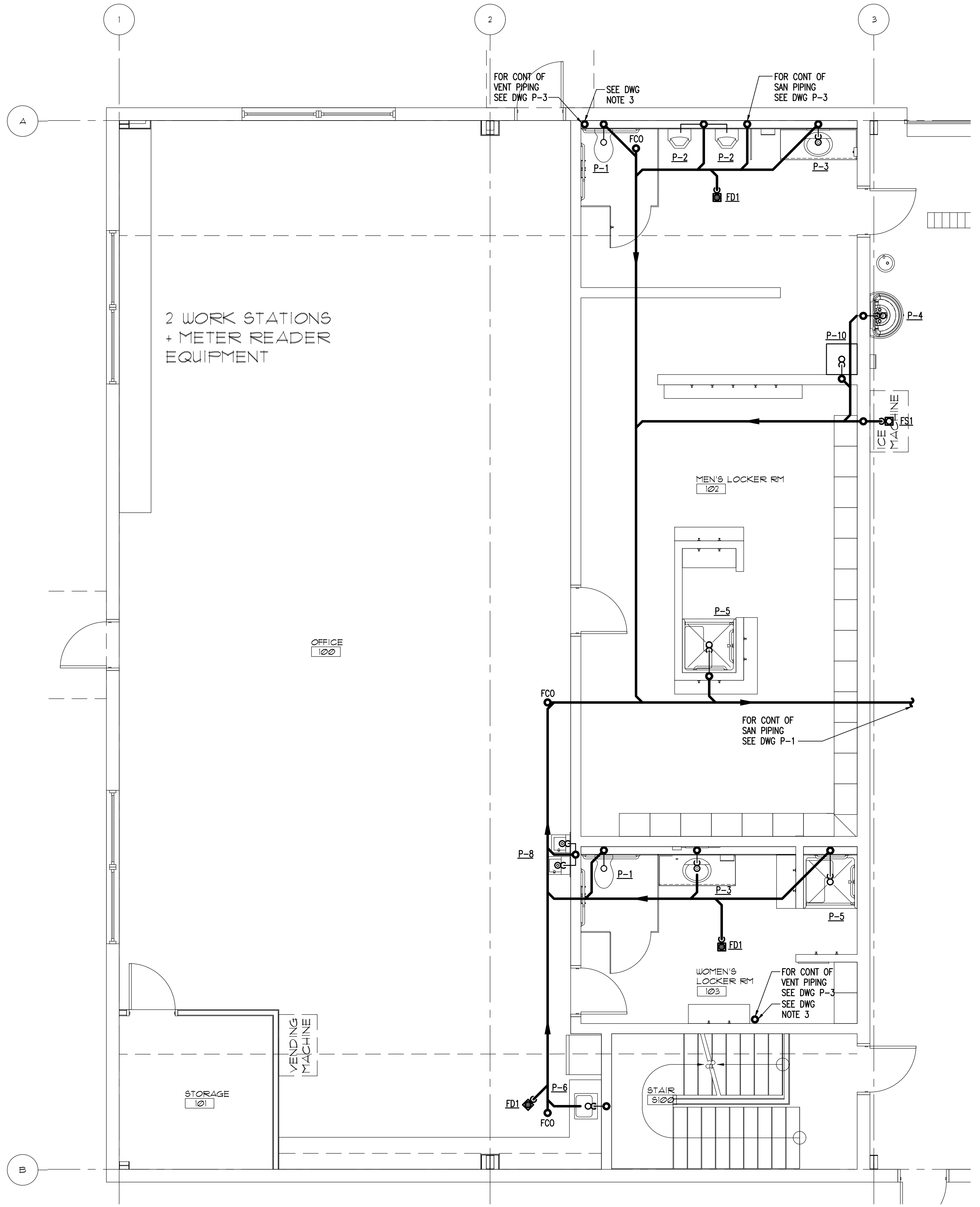
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DRY BY:	PROJ. MGR:
EPG	NEC
PRINCIPAL:	SCALE:
JCM	AS NOTED
DRAWING NO.	
P-0	
PROJECT NO:	
230004	

ISSUED FOR BID JULY 19, 2023
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PLUMBING ENLARGED PARTIAL FIRST FLOOR PLAN – WATER SYSTEMS PIPING
 SCALE: 1/4" = 1'-0"



PLUMBING ENLARGED PARTIAL FIRST FLOOR PLAN – DRAINAGE & VENT PIPING
 SCALE: 1/4" = 1'-0"

DRAWING NOTES:

1. PROVIDE A WALL BOX WITH 1/2" COLD WATER SUPPLY LINE COMPLETE WITH BALL VALVE, BACKFLOW PREVENTER (WATS OR EQUAL) AND CONNECT TO INLINE FILTER SYSTEM SUPPLIED WITH OWNER FURNISHED ICE MACHINE. THE PLUMBING CONTRACTOR SHALL INSTALL FILTER SYSTEM IN ACCESSIBLE LOCATION. COORDINATE FINAL LOCATION OF EQUIPMENT, LINE SIZES AND CONNECTION REQUIREMENTS WITH THE OWNER'S EQUIPMENT SUPPLIER.
2. EMERGENCY EYEWASH STATION SEE "EMERGENCY STATION DESIGN NOTES" ON DRAWING P-0 AND "EMERGENCY EYEWASH PIPING DIAGRAM" ON DRAWING P-5.
3. ROUTE NEW VENT PIPING AS SHOWN ON SANITARY RISER DIAGRAM AND AS HIGH AS POSSIBLE ABOVE NEW CEILINGS (WHERE APPLICABLE) AND CONNECT TO VENT THROUGH ROOF. PRIOR TO THE START OF ANY VENT SYSTEM WORK THIS CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF VENT PIPE ROUTING AND VENT TERMINAL LOCATION WITH THE OWNER.
4. SEE DRAWING P-0 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.

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<p>1952 Van Rensselaer Road Suite 2 Pottsville, PA 19464 Phone: 610.319.8001</p>	<p>Client: WYOMISSING BOROUGH Location: BERKS COUNTY, PENNSYLVANIA Date: JULY 18, 2023</p>
<p>PLUMBING ENLARGED PARTIAL FLOOR PLANS PIPING SYSTEMS "PUBLIC WORKS FACILITY"</p>	<p>PROJ. MANAGER: EPG NEC PRINCIPAL: JCM AS NOTED</p>
<p>DRAWING NO: P-2</p>	<p>PROJECT NO: 230004</p>

ISSUED FOR BID JULY 19, 2023
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COMPRESSED AIR SYSTEM EQUIPMENT & MATERIALS NOTES:

1. DUE TO THE SMALL SCALE OF THE DRAWING, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND HANGERS WHICH MAY BE REQUIRED. THE DRAWING IS GENERALLY DIAGRAMMATIC AND INDICATIVE OF THE PIPING SYSTEM WORK. THE CONTRACTOR SHALL CAREFULLY INVESTIGATE THE STRUCTURAL CONDITIONS AFFECTING THE INSTALLATION OF NEW PIPING TO SERVE AREA. PROVIDE ALL WORK ACCORDINGLY, FURNISHING NECESSARY FITTINGS AND HANGERS AS MAY BE REQUIRED TO MEET THE VARIOUS CONDITIONS. THE PLUMBING CONTRACTOR SHALL SUBMIT A PIPING LAYOUT DRAWING SHOWING FINAL PIPE ROUTING, PIPE ELEVATIONS AND ALL PIPE SUPPORTS FOR THE OWNER'S REVIEW.
2. BASIS OF DESIGN FOR COMPRESSED AIR SYSTEM IS A TOTAL SUPPLY OF 24 CFM AT 125 PSI FROM SOURCE EQUIPMENT. PIPE SIZING IS BASED ON A MAXIMUM SYSTEM PRESSURE LOSS OF TEN (10) PERCENT IN THE PIPE SYSTEM. ALL COMPRESSED AIR PIPING WITHIN SHALL BE HARD DRAWN TYPE "L" COPPER TUBING IN ACCORDANCE WITH ASTM-B88. FITTINGS SHALL BE WROUGHT COPPER OR CAST BRASS. VALVES SHALL BE CAST BRASS UNLESS NOTED OTHERWISE. HANGERS FOR SUPPORTING COPPER TUBING SHALL BE COPPERIZED. ALL JOINTS SHALL BE MADE WITH SOLDER AND FLUX HAVING LEAD CONTENT OF NOT MORE THAN 0.2 PERCENT.
3. COMPRESSED AIR SOURCE SHALL BE ROTARY SCREW, FIXED SPEED TYPE AIR COMPRESSOR TOTAL AIR SYSTEM COMPLETE WITH COMPRESSOR, COOLER AND DRYER, INTEGRATED CONTROLS, WATER SEPARATORS, DRAIN PORTS, FILTERS AND HORIZONTAL RECEIVER TANK; MODEL R5.5I TAS, MANUFACTURED BY INGERSOLL RAND.
 AIR COMPRESSOR SHALL BE CAPABLE OF DELIVERING 27.5 CFM AT 125 PSIG. AIR RECEIVER SHALL BE ASME RATED HORIZONTAL TYPE WITH 120 GALLON CAPACITY. COMPRESSOR, COOLER AND DRYER, INTEGRATED CONTROLS, WATER SEPARATORS, FILTERS, ETC. TO BE IN ENCLOSURE MOUNTED TO THE TOP OF THE TANK AND SHALL BE COMPLETE WITH ONE AIR PRESSURE GAUGE (0-300 PSIG), ASME SAFETY RELIEF VALVE, AIR DISCHARGE SERVICE VALVE AND DRAIN VALVES.
 COMPRESSOR SHALL BE DRIVEN BY A 7-1/2 HP MOTOR. MOTOR SHALL RUN AT 3315 RPM AND SHALL BE 208V, THREE PHASE, 60 CYCLES.
4. COPPER AND COPPER ALLOY PRESS FITTINGS SHALL CONFORM TO THE MATERIAL REQUIREMENTS OF ASME B16.18, ASME B16.22 AND PERFORMANCE CRITERIA OF JAMPO PS 117. SEALING ELEMENTS FOR PRESS FITTINGS SHALL BE EPDM. SEALING ELEMENTS SHALL BE FACTORY INSTALLED OR AN ALTERNATIVE SUPPLIED BY FITTING MANUFACTURER. PRESS END SHALL HAVE SC (SMART CONNECT) FEATURE DESIGN (LEAKAGE PATH) TO ASSURE LEAKAGE OF LIQUIDS AND/OR GASES FROM INSIDE THE SYSTEM PAST THE SEALING ELEMENT OF A UNPRESSED CONNECTION. THIS FEATURE SHALL PROVIDE THE INSTALLER WITH A QUICK AND EASY IDENTIFICATION OF CONNECTIONS WHICH HAVE NOT BEEN PRESSED PRIOR TO PUTTING THE SYSTEM INTO OPERATION. COPPER PRESS FITTINGS SHALL BE PROGRESS WITH SC FEATURE AS MANUFACTURED BY VEGA NORTH AMERICA.
 COPPER PRESS FITTING JOINTS SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS. THE TUBING SHALL BE FULLY INSERTED INTO THE FITTING AND THE TUBING MARKED AT THE SHOULDER OF THE FITTING. THE FITTING ALIGNMENT SHALL BE CHECKED AGAINST THE MARK ON THE TUBING TO ASSURE THE TUBING IS FULLY ENGAGED (INSERTED) IN THE FITTING. THE JOINTS SHALL BE PRESSED USING THE TOOL APPROVED BY THE MANUFACTURER.
5. PERFORM INSPECTION, TESTING AND CLEANING OF PIPING, FITTINGS, VALVES, OUTLETS, AND ASSOCIATED SOURCE EQUIPMENT. PROVIDE WRITTEN DOCUMENTATION TO ASSURE THE SYSTEM IS IN USEABLE CONDITION FOR INTENDED SERVICE. AFTER THE INSTALLING CONTRACTOR HAS COMPLETED ALL TESTS, A THIRD PARTY SHALL PERFORM SYSTEM VERIFICATION TESTING.

Revision	Date	Description

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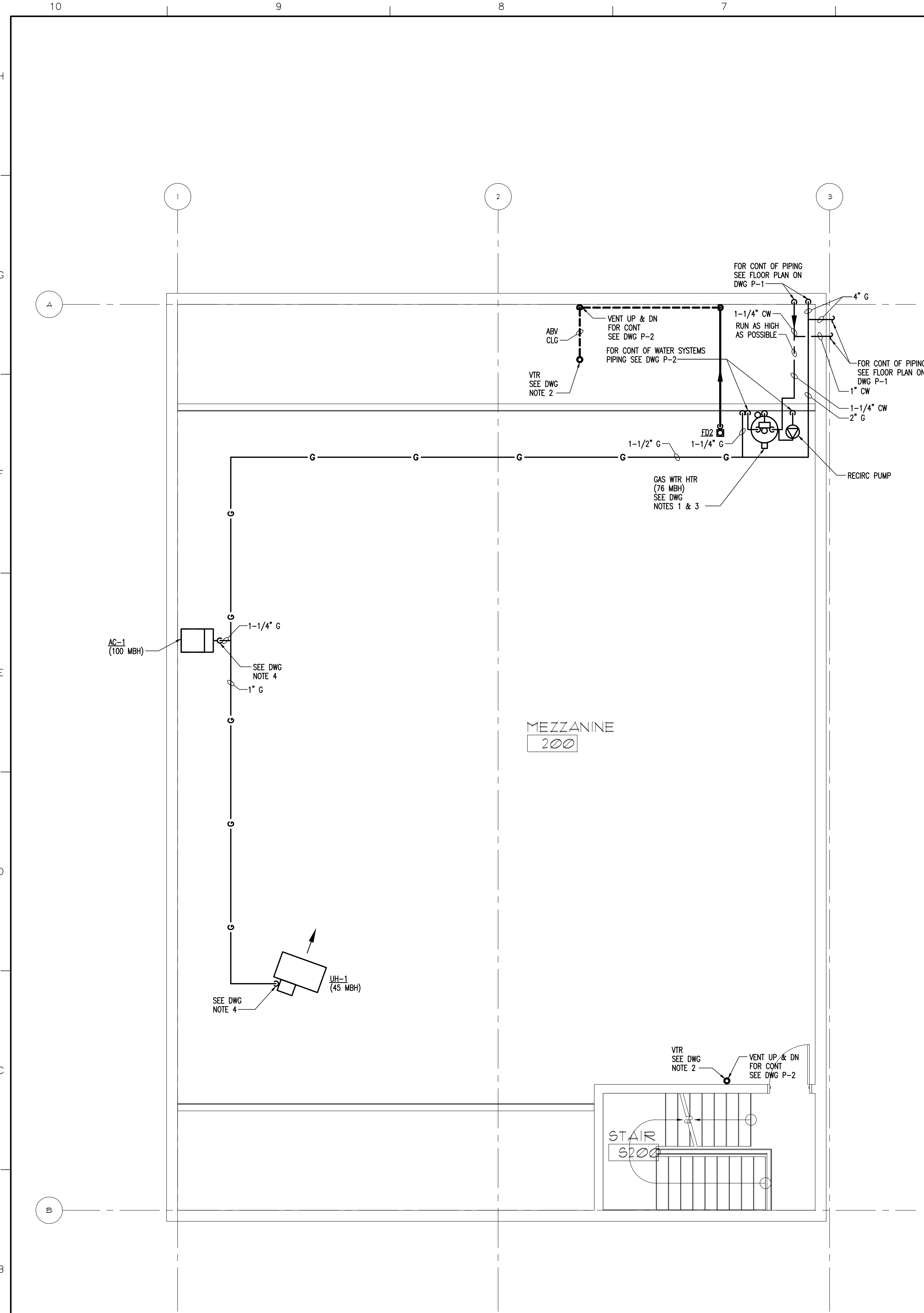
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**PLUMBING MEZZANINE PLAN
 PIPING SYSTEMS
 "PUBLIC WORKS FACILITY"**

Client: WYOMISSING BOROUGH, BERKS COUNTY, PENNSYLVANIA
 Location: JULY 18, 2023
 Date:

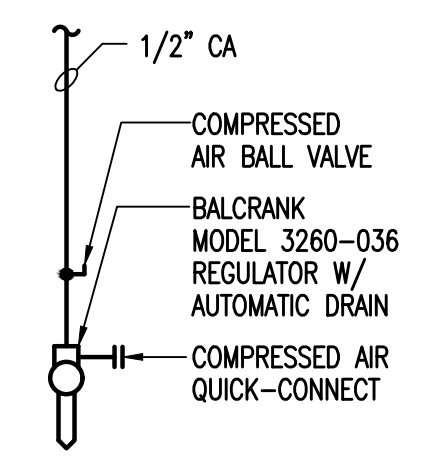
DRAWN BY: EPG	PROJ. MANAGER: NEC
PRINCIPAL: JCM	SCALE: AS NOTED
DRAWING NO. P-3	
PROJECT NO. 230004	

ISSUED FOR BID JULY 19, 2023
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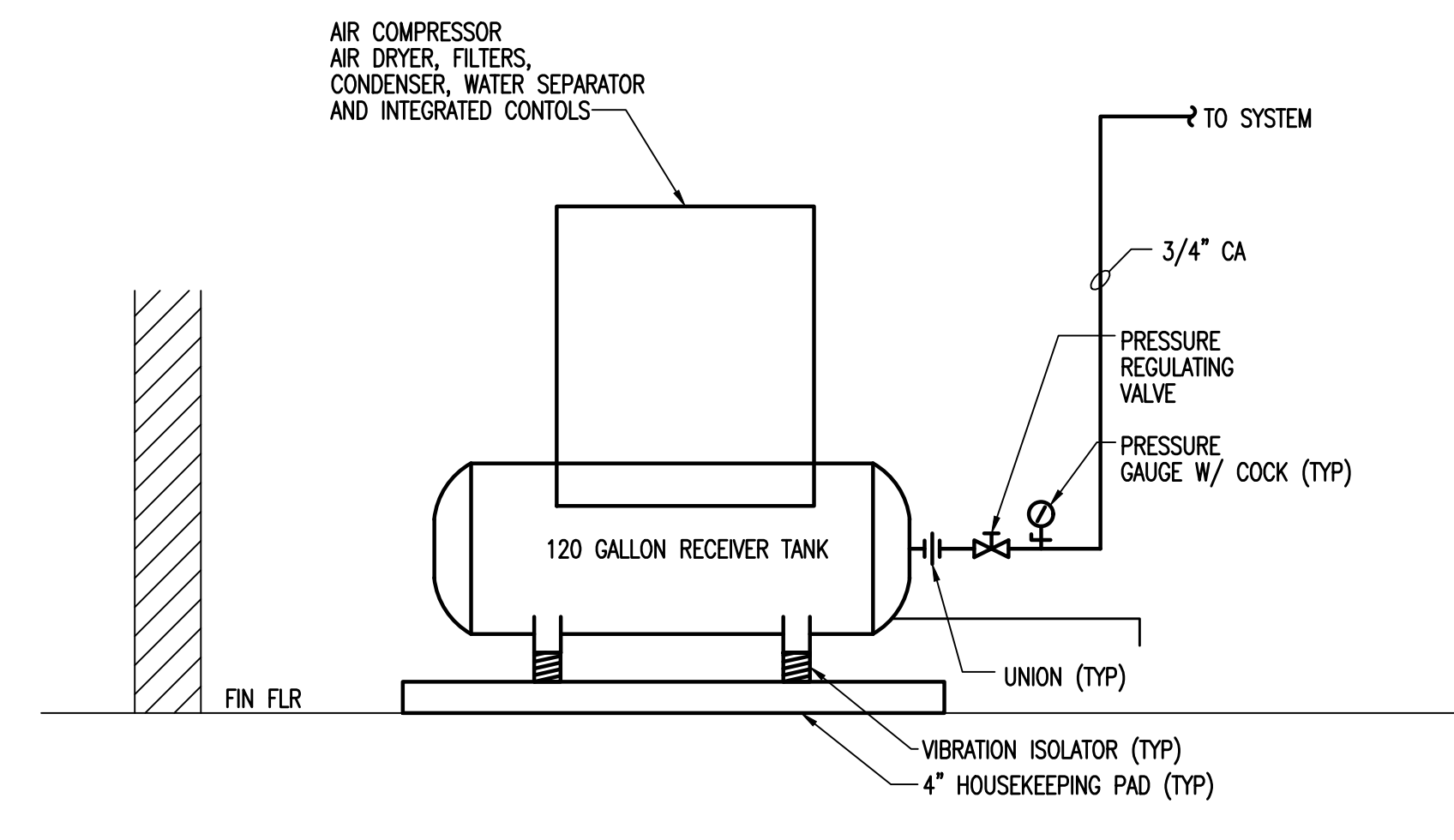


PLUMBING MEZZANINE PLAN - WATER DRAINAGE, VENT AND GAS PIPING
 SCALE: 1/4" = 1'-0"

COMPRESSED AIR DROP DIAGRAM
 NO SCALE

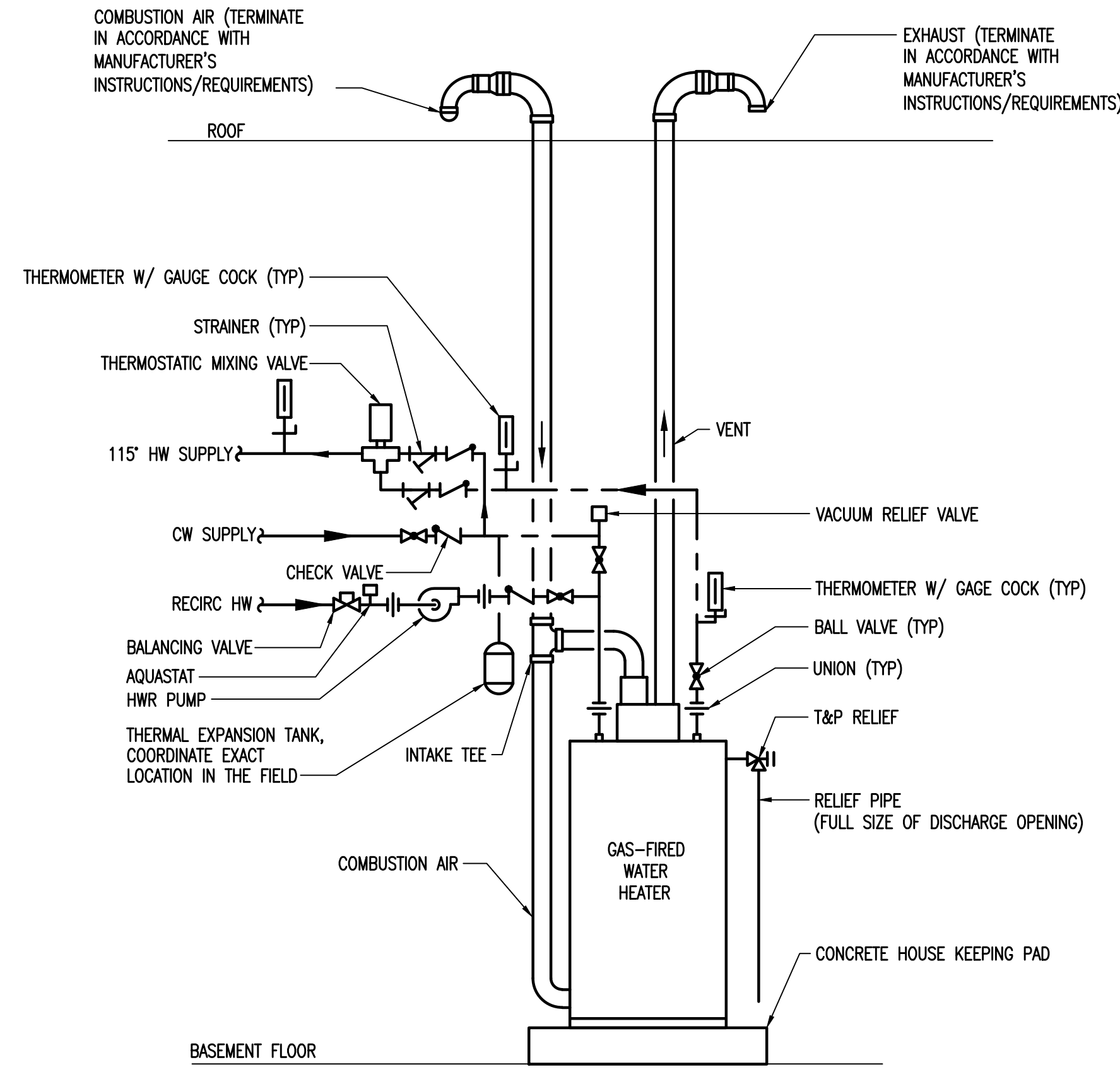


AIR COMPRESSOR PIPING DIAGRAM
 NO SCALE



DRAWING NOTES:

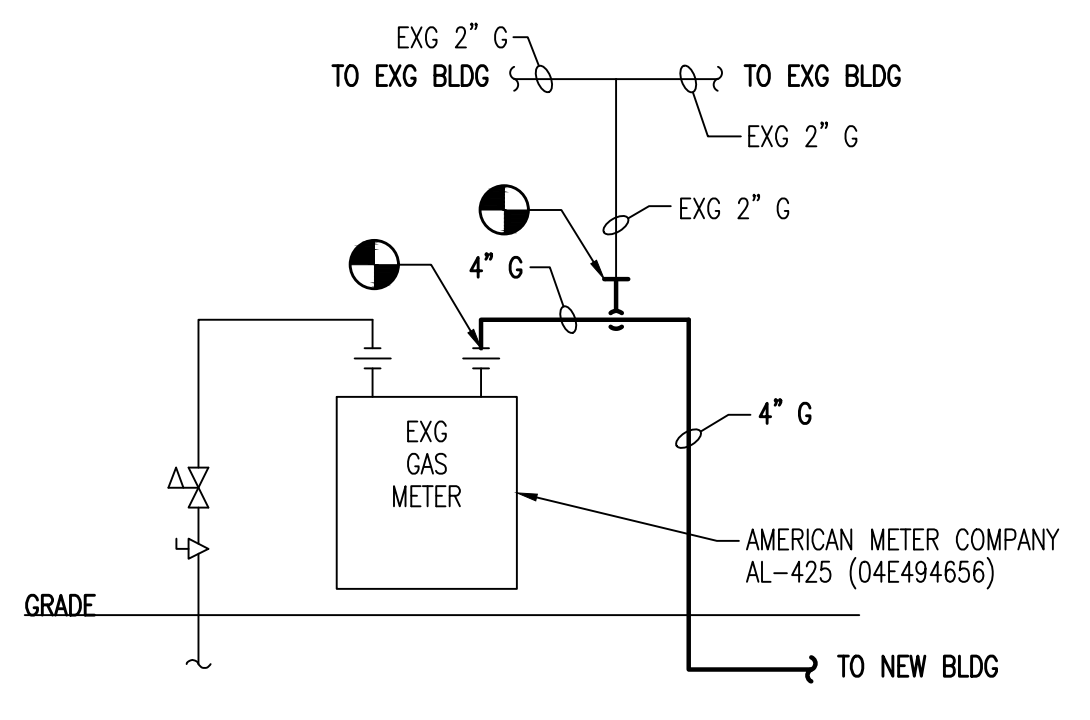
1. GAS FIRED AUTOMATIC STORAGE TANK TYPE WATER HEATER, HOT WATER CIRCULATION PUMP AND FLOOR STAND. SEE WATER HEATER PIPING DIAGRAM ON DRAWING P-5. FOR VALVES, EQUIPMENT AND APPURTENANCES IN WATER SYSTEMS PIPING TO WATER HEATER.
2. ROUTE NEW VENT PIPING AS SHOWN ON SANITARY RISER DIAGRAM AND AS HIGH AS POSSIBLE ABOVE NEW CEILINGS (WHICR APPLICABLE) AND CONNECT TO VENT THROUGH ROOF. PRIOR TO THE START OF ANY VENT SYSTEM WORK THIS CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF VENT PIPE ROUTING AND VENT TERMINAL LOCATION WITH THE OWNER.
3. CONNECT GAS LINE TO WATER HEATER CONNECTION TO BE COMPLETE WITH DIRT LEG, ISOLATION GAS VALVE AND UNION SEE "WATER HEATER PIPING DIAGRAM" ON DRAWING P-5
4. THE PLUMBING CONTRACTOR SHALL CONNECT GAS LINE TO MECHANICAL UNIT, CONNECTION TO BE COMPLETE WITH DIRT LEG, ISOLATION GAS VALVE AND UNION. PRIOR TO THE START OF ANY NEW GAS SUPPLY SYSTEM WORK THIS CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF PIPE ROUTING AND POINT OF CONNECTION TO UNIT WITH THE MECHANICAL CONTRACTOR.
5. SEE DRAWING P-0 FOR GENERAL NOTES, LEGEND AND ABBREVIATIONS.



- NOTES:**
- COORDINATE FINAL ROUTING OF VENTING IN THE FIELD.
 - VENT PIPING CONNECTOR LENGTHS SHALL NOT EXCEED THE MAXIMUM NUMBER OF FEET STRAIGHT PIPE (INTAKE & EXHAUST), CORRESPONDING TO TOTAL NUMBER OF ELBOWS (INTAKE & EXHAUST) INSTALLED. PER THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
 - THE 90° TERMINAL ELBOWS, SUPPLIED WITH THE HEATER, MUST BE INSTALLED AT THE EXTREME ENDS OF INTAKE AND EXHAUST VENTING OUTSIDE THE BUILDING. THE END TERMINAL WITH EXTERIOR SCREEN, SUPPLIED WITH THE WATER HEATER, MUST BE INSTALLED ON THE INTAKE VENT.
 - PROVIDE MANUFACTURER'S CONDENSATE TRAP KIT AND DISCHARGE TO FUNNEL/FLOOR DRAIN.

POWER WASHER EQUIPMENT & MATERIALS NOTES:

- THE POWER WASHER SHALL BE A STATIONARY ASSEMBLY (MACHINE DIMENSIONS L 51" X W 31" X H 54") WITH CAPACITY TO DELIVER A FLOW OF 6.0 GALLON PER MINUTE/360 GALLONS PER HOUR AT 3000 PSI FOR HEAVY DUTY CLEANING CAPABILITY. ELECTRIC-POWERED 208V/3-PHASE WASHER (TOTAL MACHINE AMPERAGE OF 41 AMPS) WITH NATURAL GAS TO FIRE THE BURNER. UNIT SHALL HAVE GAS INPUT OF 558,050 BTU/HR AND BE EQUIPPED WITH A GAS PRESSURE REGULATOR VALVE TO PROVIDE OPERATING GAS MANIFOLD PRESSURE OF 3.5 INCH WATER COLUMN AND MINIMUM GAS INPUT OF 6 INCH WATER COLUMN. ASSEMBLY SHALL INCLUDE A STAINLESS-STEEL COIL, TEN (10) INCH DRAFT DIVERTER AND TEN (10) INCH EXHAUST STACK. UNIT CONTROLS TO FEATURE PROGRAMMABLE SMART CONTROL AUTOMATION TO ALLOW AUTO START/STOP AND SHUT DOWN CAPABILITY. THE 15 HP MOTOR SHALL BE PROTECTED BY REMOVABLE PANELS FOR EASY SERVICING ACCESS AND POWERED BY A HIGHLY EFFICIENT TRIplex BELT DRIVE PUMP AND INCLUDE 50' HOSE WITH WAND AND HIGH-PRESSURE NOZZLE. ASSEMBLY SHALL CARRY A 7-YEAR LIMITED WARRANTY AND BE ETL CERTIFIED FOR SAFETY; MODEL 1832SS-208, MANUFACTURED BY HOTSYS. SUBMIT INSTALLATION DRAWINGS, MATERIAL LIST AND INSTALLATION AND MAINTENANCE MANUAL.
- PROVIDE EXHAUST VENT SYSTEM FOR POWER WASHER. EXHAUST VENT SYSTEM SHALL CONFORM TO THE REQUIREMENTS OF NFPA 54 AND NFPA 211, AND COMPLY WITH UL 1738, UL6, S636 STANDARD FOR VENTING SYSTEMS FOR CATEGORY I, III, AND IV GAS-BURNING APPLIANCES, AND ALSO APPROVED FOR USE WITH TYPE I VENTING SYSTEMS (GAS OR OIL) IN ACCORDANCE WITH UL 641. ALL FLUE-GAS CARRYING COMPONENTS OF THE VENT SYSTEM SHALL BE OBTAINED THROUGH ONE SOURCE. THE VENT SYSTEM SHALL BE FACTORY-BUILT STAINLESS STEEL SPECIAL GAS TYPE DOUBLE WALL, ENGINEERED AND DESIGNED FOR USE AS SPECIFIED BY THE EQUIPMENT MANUFACTURER. THE JOINT CLOSURE SYSTEM SHALL BE AN INNER WALL MECHANICAL LOCKING STRAP DESIGN. JOINTS SHALL NOT USE SCREWS OR FASTENERS THAT PENETRATE THE INNER CONDUIT. VENT SHALL BE CONSTRUCTED WITH A FACTORY INSTALLED GASKET USED TO SEAL THE JOINT. USE OF GASKET LUBE, AVAILABLE FROM THE FACTORY, SHOULD BE USED FOR MAXIMIZING GASKET LIFE AND EASE OF INSTALLATION. INNER WALL JOINTS SHALL BE DESIGNED WITH A MALE AND FEMALE OVERLAPPING METAL-METAL CONNECTION TO MAINTAIN CONDENSATE ON THE AL29-4C STAINLESS STEEL. PROPER 1/4 INCH PER FOOT PITCH MUST ALWAYS BE MAINTAINED AND CONDENSATE SHOULD FLOW BACK TOWARD THE APPLIANCE TO THE REQUIRED NUMBER OF DRAINS. THE OUTER WALL CASING SHALL BE CONSTRUCTED OF 430 STAINLESS STEEL THAT SHALL NOT REQUIRE ADDITIONAL SURFACE PREPARATION, SUCH AS PAINTING, TO WITHSTAND THE OUTDOORS OR HIGH HUMIDITY ENVIRONMENTS. INNER CONDUIT AND OUTER WALL CASING SHALL BE CONSTRUCTED WITH A ONE-INCH AIR SPACE BETWEEN THEM AND IN SUCH A FASHION THAT PREVENTS CROSS-ALLOY CONTAMINATION. TEES AND ELBOWS SHALL PROVIDE A PRESSURE DROP LESS THAN 15 FEET EQUIVALENT HORIZONTAL VENT. FITTINGS THAT INCREASE OR DECREASE VENT DIAMETER SHALL BE ASYMMETRIC IN CONSTRUCTION WITH A FLAT WALL THAT MAINTAINS A STRAIGHT LINE WITH ADJOINING PARTS IN ORDER TO FACILITATE THE UNOBSTRUCTED FLOW OF ALL CONDENSATE. ALL PARTS SHALL BE COMPATIBLE WITH OTHER SINGLE WALL AND DOUBLE WALL PRODUCTS OF THE SAME MANUFACTURER. GENERAL ELECTRIC RYVIO6 (AKA MOMENTIVE) OR DOW CORNING 736 HIGH TEMPERATURE SEALANT SHALL BE USED TO SEAL ALL JOINTS ON SYSTEMS WHERE THE MAXIMUM FLUE GAS TEMPERATURE WILL NOT EXCEED 550°F. A FACTORY INSTALLED 550°F COMPATIBLE SILICONE RUBBER GASKET SHALL BE USED TO SEAL JOINTS. SYSTEM IS TO BE SIZED IN ACCORDANCE WITH THE APPLIANCE MANUFACTURER'S SPECIFICATIONS, NFPA 54-NATIONAL FUEL GAS CODE (ANSI Z223.1), ASHRAE RECOMMENDATIONS, AND OTHER APPLICABLE CODES. ALL COMPONENTS SHALL BE INSTALLED IN STRICT COMPLIANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND ALL PERTINENT LOCAL, REGIONAL, NATIONAL, AND INTERNATIONAL BUILDING AND MECHANICAL CODES AND REGULATIONS. AVAILABLE MANUFACTURER SUBJECT TO COMPLIANCE WITH REQUIREMENTS. PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: HEATFAB SAF-T VENT CI PLUS, METAL-FAB SELKIRK METALBESTOS OR EQUAL. VENT SYSTEM SHALL BE WARRANTED BY THE MANUFACTURER AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF FIFTEEN (15) YEARS FROM THE DATE OF MANUFACTURE. SUBMIT INSTALLATION DRAWINGS, MATERIAL LIST AND INSTALLATION MANUAL.

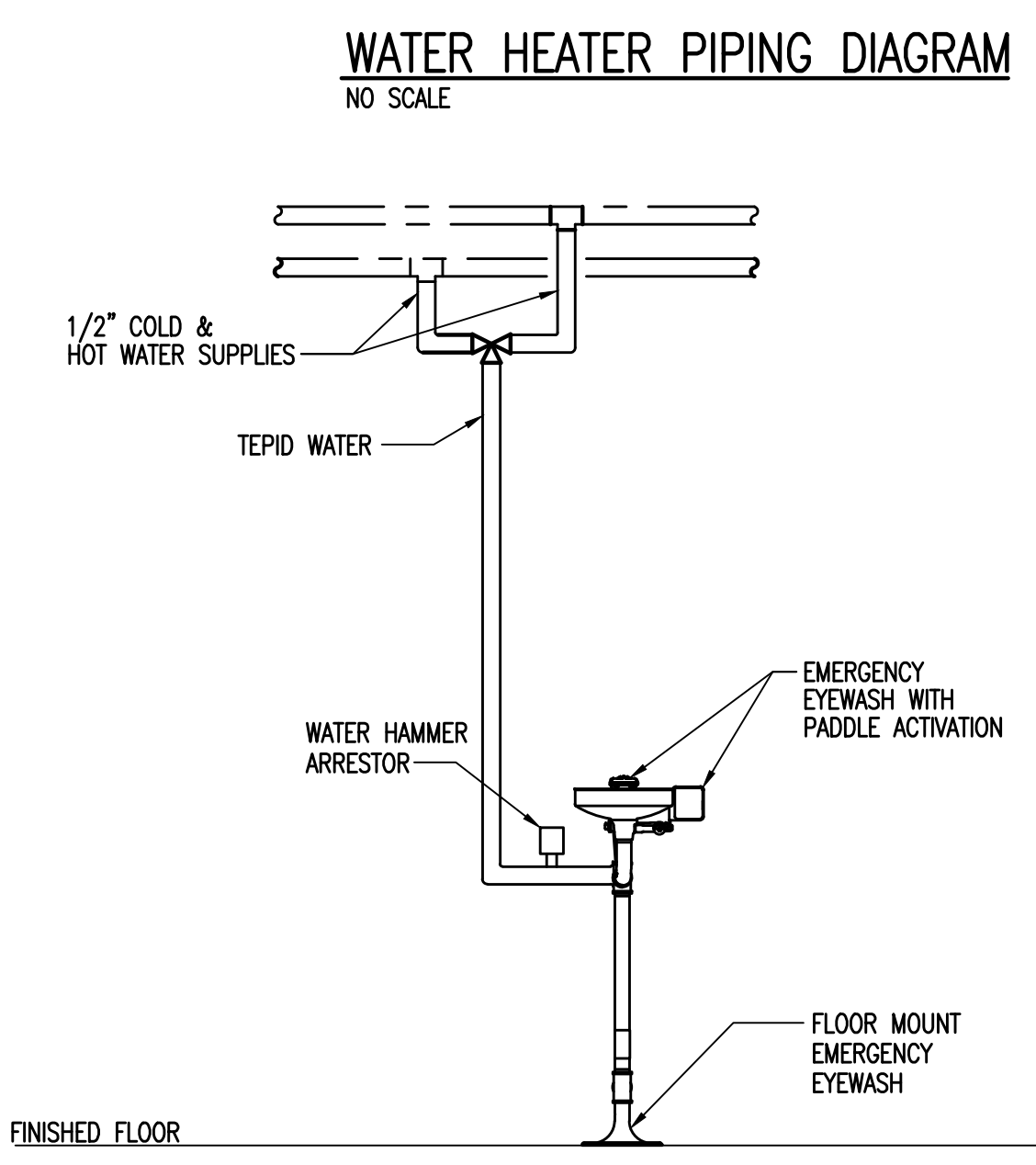


GAS METER MANIFOLD PIPING DIAGRAM
 NO SCALE

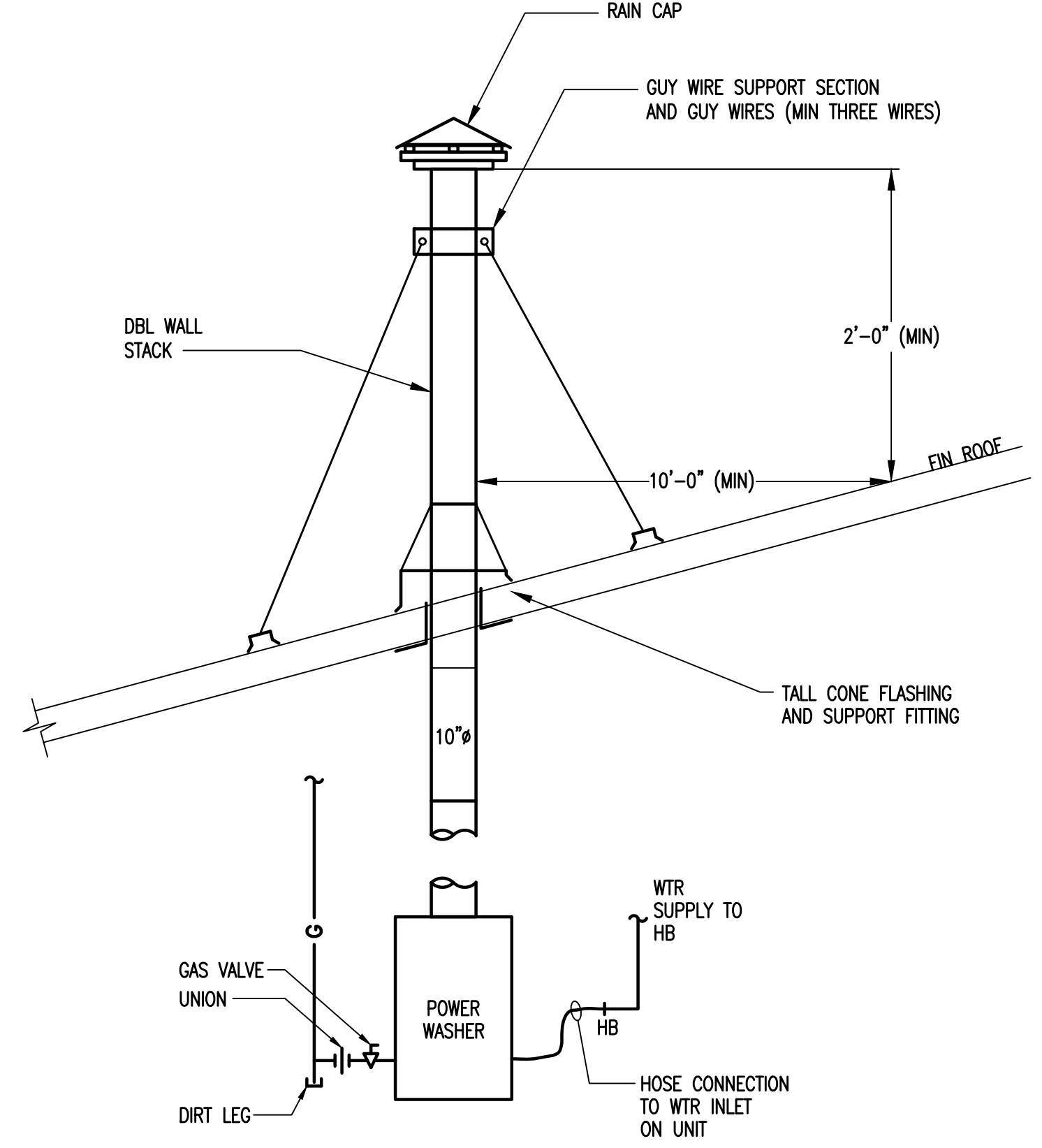
THIS CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF NATURAL GAS SERVICE METER UPGRADE WITH THE GAS UTILITY COMPANY (UGI 353812). VERIFY ALL SERVICE REQUIREMENTS AND SERVICE EQUIPMENT WITH THE GAS SUPPLIER AND OWNER PRIOR TO START OF ANY WORK. GAS LOADS ESTIMATE BREAKDOWN IS AS FOLLOWS:

EXISTING BUILDING.....	384 MBH
NEW BUILDING.....	1,546 MBH
TOTAL.....	1,930 MBH

7 INCH WC IS REQUIRED AT EACH PIECE OF EQUIPMENT.
 NEW BUILDING PIPE SIZING IS BASED ON 2018 INTERNATIONAL FUEL GAS CODE TABLE 402.4(1), 400 EQUIVALENT FEET LENGTH OF PIPE FOR INLET PRESSURE UNDER TWO POUNDS AT 0.3 INCH WATER COLUMN PRESSURE DROP, AND GAS WITH 0.60 SPECIFIC GRAVITY.



EMERGENCY EYEWASH PIPING DIAGRAM
 NO SCALE



WIDE STAINLESS STEEL DOUBLE WALL INSULATED VENT PIPE AND ACCESSORIES, MODEL SAF-T-CI PLUS AS MANUFACTURED BY HEAT-FAB, INC. ACCESSORIES SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING: HEATER ADAPTOR, INSULATED DOUBLE WALL PIPE (ONE INCH INSULATION) DOUBLE WALL ELBOW FITTINGS, STAINLESS STEEL TALL CONE- FLASHING AND STAINLESS SUPPORT FITTING, STAINLESS GUY WIRE SUPPORT SECTION AND INNESS GUY WIRES AND RAIN CAP, ALL IN ACCORDANCE WITH THE MANUFACTURERS INSTALLATION INSTRUCTIONS, PROVIDE MANUFACTURERS LAYOUT WINGS PRIOR TO INSTALLATION.

1. OF THE ROOF CAP SHALL BE (2) TWO FEET HIGHER THAN TOP OF ADJACENT ROOFTOP SLOPE 2. COORDINATE WITH THE MECHANICAL TRACTOR.

GAS WATER HEATER SCHEDULE											
REF NO	MANUFACTURER/ MODEL NO	MODEL NO	TANK CAPACITY GALLON	GAS MBH INPUT	TEMP RISE DEGREES F	GALLON PER HOUR RECOVERY	VENT PIPE	ELECTRICAL		REMARKS	
								VOLTS	PHASE	HERTZ	
WTR HTR	BRADFORD WHITE	LC2PDV50H765N	48	76	100	81	3 IN	120	1	60	SEE NOTES

NOTE:
 1. FACTORY INSTALLED TEMPERATURE AND PRESSURE RELIEF VALVE.
 2. COORDINATE WATER HEATER VENT CONFIGURATION AND SIZING WITH EXISTING FIELD CONDITIONS ENCOUNTERED AND INSTALL IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS.
 3. 5-YEAR WARRANTY

PLUMBING PUMP SCHEDULE										
REF NO	MANUFACTURER/ MODEL NO	SYSTEM SERVED	FLOW (GPM)	TDH FEET	MOTOR		ELECTRICAL CHARACTERISTICS			REMARKS
					(WATT)	(RPM)	VOLTS	PHASE	HERTZ	
PP-1	BELL & GOSSETT / NBF-10	WATER HEATER	1	15	52	2800	115	1	60	SEE NOTE 1

NOTES: 1. PROVIDE AQUASTAT AND SEVEN DAY TIME CLOCK.

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PLUMBING
"DIAGRAMS & SCHEDULES
" PUBLIC WORKS FACILITY "
 WYOMISSING BOROUGH
 BERKS COUNTY, PENNSYLVANIA
 Date: JULY 18, 2023

DESIGN BY:	EPG	PROJ. MANAGER:	NEC
PRINCIPAL:	JCM	SCALE:	AS NOTED
DRAWING NO.:	P-5		
PROJECT NO.:	230004		

PLUMBING SPECIFICATIONS:

PLUMBING SPECIFICATIONS

- 1.1 THE ARCHITECTURAL GENERAL CONDITIONS SHALL APPLY TO AND FORM A PART OF THIS SECTION OF THESE SPECIFICATIONS.
1.2 PROVIDE ALL MATERIALS, LABOR, EQUIPMENT, TOOLS AND SUPERVISION AND PERFORMANCE ALL OPERATIONS NECESSARY FOR THE PROPER AND COMPLETE EXECUTION OF ALL PLUMBING WORK IN STRICT ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS.
1.3 ALL WORK SHALL BE IN ACCORDANCE WITH PENNSYLVANIA UNIFORM CONSTRUCTION CODE AND ALL APPLICABLE SECTIONS OF THE NATIONAL FIRE PROTECTION ASSOCIATION, NATIONAL ELECTRIC CODE, OSHA, 2015 INTERNATIONAL PLUMBING CODE, 2015 INTERNATIONAL FUEL GAS CODE AND ALL OTHER STATE AND LOCAL AUTHORITIES HAVING JURISDICTION AND APPLICABLE MANUFACTURER'S RECOMMENDATIONS.
1.4 THE CONTRACTOR SHALL VISIT THE SITE, EXAMINE ALL CONDITIONS, AND MAKE ALLOWANCES FOR DIFFICULTIES AND CONTINGENCIES AFFECTING THE PROPER EXECUTION OF THIS CONTRACT.
1.5 THE CONTRACTOR SHALL OBTAIN AND PAY ALL FEES NECESSARY FOR PERMITS AND INSPECTIONS REQUIRED WITH THIS WORK.
1.6 THE CONTRACTOR SHALL VERIFY ALL UTILITY SERVICE INFORMATION SHOWN ON THE DRAWINGS WITH THE LOCAL UTILITY COMPANY PRIOR TO SUBMITTING A BID. ANY CHANGES OR SERVICE CHARGES IMPOSED BY THE UTILITY COMPANY SHALL BE QUALIFIED AND INCLUDED IN THE BID.
1.7 ALL EQUIPMENT SHALL BE TESTED, LISTED AND LABELED BY AN APPROVED AUTHORITY (UL, AGA, ETC) AND SHALL BE INSTALLED IN ACCORDANCE WITH ITS LISTING.
1.8 ALL EQUIPMENT, MATERIALS, AND WORKMANSHIP SHALL BE GUARANTEED FOR A MINIMUM OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY THE OWNER.
1.9 WHERE PRODUCTS ARE SPECIFIED BY BRAND NAME, CATALOG NUMBERS OR BY NAMES OF MANUFACTURERS, THE REFERENCE IS INTENDED TO BE DESCRIPTIVE AND NOT RESTRICTIVE AND IS SOLELY FOR THE PURPOSE OF INDICATING THE TYPE AND QUALITY OF ITEM. AN APPROVED EQUAL WILL BE GIVEN CONSIDERATION UNLESS INDICATED OTHERWISE. SUBSTITUTIONS FOR SPECIFIED EQUIPMENT WILL BE UNDER THE CONDITIONS THAT NO ADDITIONAL CHARGE TO THE PROJECT IS PERMITTED FOR ASSOCIATED CHANGES IN POWER REQUIREMENTS, PIPE SIZE, GAS CONSUMPTION, WEIGHT, SUPPORT, ETC. THE CONTRACTOR SHALL FULLY REVEAL THE PROPOSED SUBSTITUTION TO ENSURE ALL ASPECTS OF PERFORMANCE, SERVICE CLEARANCE, PHYSICAL SUPPORT, POWER FEEDS, ETC. COORDINATE AND ARE ACCOUNTED FOR PRIOR TO SUBMITTING THE ALTERNATIVE EQUIPMENT FOR REVIEW.
1.10 SUBMIT SHOP DRAWINGS FOR REVIEW PRIOR TO ORDERING ANY EQUIPMENT
1.11 THE CONTRACTOR RESPONSIBLE FOR WORK COVERED BY THESE SPECIFICATIONS SHALL COORDINATE AND COOPERATE WITH ALL OTHER TRADES. TRADES THAT HAVE WORK CONNECTED WITH THE PLUMBING WORK SHALL BE NOTIFIED FOR INSTALLATION REQUIREMENTS AND SCHEDULING. THE CONTRACTOR SHALL SCHEDULE HIS WORK TO AVOID ANY INTERRUPTION OF ANY UTILITY SERVICES TO THE OPERATING AREAS OF THE BUILDING DURING NORMAL WORKING HOURS. INTERRUPTION OF SERVICES SHALL BE DONE DURING OFF HOURS AT NO ADDITIONAL COST TO THE OWNER.
1.12 THE CONTRACTOR SHALL PERFORM ALL DEMOLITION AS REQUIRED AND SHALL CUT AND PATCH AS REQUIRED TO REPAIR THE DEMOLITION WORK. ALL OPENINGS MUST BE REPAIRED TO MATCH ADJACENT FINISHES. THE OWNER SHALL BE GIVEN THE OPPORTUNITY TO RETAIN OWNERSHIP OF ALL REMOVED MATERIALS AND EQUIPMENT.
1.13 ALL CUTTING AND PATCHING OF EVERY NATURE REQUIRED IN CONNECTION WITH THIS CONTRACT SHALL BE DONE BY THIS CONTRACTOR WITH MECHANICS EXPERIENCED IN THEIR RESPECTIVE TRADES. ALL PATCHING SHALL MATCH ADJACENT FINISHES. ALL WORK SHALL BE COORDINATED TO AVOID CUTTING OF WORK IN PLACE AND INTERFERING WITH OTHER OPERATIONS.
1.14 IN COMPLIANCE WITH ACT 38, CONTACT INDIVIDUAL COMPANIES TO HAVE UTILITY LOCATIONS MARKED IN THE FIELD AND TO OTHERWISE LOCATE UNDERGROUND OBJECTS AS MAY BE NECESSARY PRIOR TO THE START OF CONSTRUCTION. PENNSYLVANIA LAW REQUIRES THREE WORKING DAYS NOTICE FOR THE CONSTRUCTION PHASE AND TEN WORKING DAYS IN DESIGN STAGE. CALL PENNSYLVANIA ONE CALL SYSTEM, INC. (1-800-242-1776, AS OF THIS WRITING).
1.15 ALL EXCAVATIONS REQUIRED FOR INSTALLATION OF PIPE SHALL HAVE SOLID, UNDISTURBED BOTTOMS, AND SHALL BE SUBJECT TO APPROVAL BY THE OWNER'S REPRESENTATIVE PRIOR TO PIPING PLACEMENT. SHOULD BOTTOMS BECOME SOFT OR WET BEFORE PIPING IS PLACED, ALL SUCH UNSUITABLE BOTTOMS SHALL BE REMOVED AT NO COST TO THE OWNER AND FILLED WITH CONCRETE.
1.16 BACKFILL ALL EXCAVATIONS PERFORMED UNDER THIS CONTRACT AS REQUIRED TO SATISFY FINISHED GRADE REQUIREMENTS.
1.17 FURNISH AND INSTALL ALL NECESSARY HANGERS, INSERTS, SUPPORTS SUPPLEMENTARY STEEL, ETC., TO PROPERLY SUPPORT ALL EQUIPMENT AND PIPING IN AN APPROVED MANNER AND IN FULL ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
1.18 ALL DOMESTIC COLD, HOT AND HOT WATER CIRCULATION WATER PIPING WITHIN THE BUILDING SHALL BE HARD DRAWN TYPE "L" COPPER TUBING IN ACCORDANCE WITH ASTM-B88. FITTINGS SHALL BE WROUGHT COPPER OR CAST BRASS. VALVES SHALL BE CAST BRASS UNLESS NOTED OTHERWISE. HANGERS FOR SUPPORTING COPPER TUBING SHALL BE COPPERIZED. ALL WATER PIPING BELOW FINISH FLOOR SHALL BE TYPE "K" COPPER ASTM B-88. FITTINGS SHALL BE WROUGHT COPPER. ALL JOINTS SHALL BE MADE WITH SOLDER AND FLUX HAVING A LEAD CONTENT OF NOT MORE THAN 0.2 PERCENT.
1.19 ALL SANITARY AND VENT PIPING ABOVE THE FINISHED FLOOR SHALL BE NO-HUB SERVICE WEIGHT CAST IRON IN ACCORDANCE WITH ASTM A74. JOINTS SHALL BE A NEOPRENE GASKET WITH STAINLESS STEEL CLAMP AND SHIELD ASSEMBLY, INSTALL IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. SANITARY AND VENT PIPING LOCATED BELOW THE FLOOR SHALL BE SERVICE WEIGHT CAST IRON WITH HUB AND SPOUT ENDS. JOINTS SHALL BE CONNECTED WITH NEOPRENE PUSH-ON COMPRESSION GASKETS. INSTALL IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
A. WHERE PERMITTED BY THE LOCAL AUTHORITY, SANITARY AND VENT PIPING SCHEDULE 40 PVC, ASTM D2245, D2949, WITH PVC FITTINGS (DOW TYPE) AND SOLVENT WELD JOINTS WILL BE GIVEN CONSIDERATION. PVC PIPING SHALL NOT BE USED IN RETURN AIR PLENUM TYPE CEILING OR IN FIRE-RATED CEILING ASSEMBLIES (CONTRACTOR TO VERIFY THESE AREAS WITH ARCHITECT). PVC PIPING SHALL NOT BE USED WITHOUT WRITTEN AUTHORIZATION FROM THE LOCAL AUTHORITY HAVING JURISDICTION, THE LOCAL FIRE MARSHAL AND OWNERS APPROVAL.
1.20 FUEL GAS PIPING ABOVE THE FLOOR INSIDE THE BUILDING SHALL BE SCHEDULE 40 BLACK STEEL WITH MECHANICAL JOINTS UP TO 2-1/2 INCHES INSTALLED IN ACCORDANCE WITH THE INTERNATIONAL FUEL GAS CODE, WELDED FOR THREE (3) INCHES AND ABOVE. ALL FUEL GAS PIPING LOCATED OUTSIDE THE BUILDING BELOW GRADE SHALL BE POLYETHYLENE WITH HEAT-FUSION JOINTS IN ACCORDANCE WITH THE INTERNATIONAL FUEL GAS CODE. BRANCH PIPING TO APPLIANCES SHALL BE COMPLETE WITH A SHUTOFF VALVE, UNION, DIRT LEG AND ANY REGULATORS NECESSARY TO ENSURE PROPER EQUIPMENT OPERATION (COORDINATE WITH THE RECOMMENDATIONS OF THE EQUIPMENT MANUFACTURER).

- 2.1 WHERE PIPING PASSES THROUGH FIRE RESISTING PORTIONS OF THE STRUCTURE, AN APPROVED FIRE-STOPPING DEVICE SHALL BE INSTALLED TO MAINTAIN THE FIRE RATING OF THAT PORTION OF THE STRUCTURE. ALL FIRE STOPPING DEVICES USED SHALL BE LISTED INTUMESCENT MATERIALS SUCH AS A CAULK, SEALANT, PUTTY, WRAP STRIPS, ETC. AS REQUIRED TO PROPERLY FIRE STOP ALL VOIDS. FIRE STOPPING MATERIAL SHALL BE AS MANUFACTURED BY 3M, HULI, PRO-SET SYSTEMS OR EQUAL.
2.22 ALL SHUTOFF VALVES SHALL BE BALL VALVES. ALL BALL AND CHECK VALVES SHALL BE ALL BRONZE, SWEATED PATTERN SUITABLE FOR 125-PSI WORKING PRESSURE.
A. ALL VALVES AND PIPING EXPOSED TO VIEW SHALL BE CHROME PLATED BRASS.
B. GAS SHUTOFF VALVES SHALL HAVE A QUARTER-TURN OPERATION AND SHALL BE AGA APPROVED AND U.L. LISTED FOR SYSTEM PRESSURE. INSTALL IN ACCORDANCE WITH THE NATIONAL FUEL GAS CODE REQUIREMENTS.
C. FOR GAS SYSTEMS THAT EXCEED 14 INCHES W.C. (0.5 PSIG), INSTALL A GAS PRESSURE REGULATING VALVE, IN ADDITION TO THE REGULATOR SUPPLIED WITH THE EQUIPMENT. INSTALL AN INLINE REGULATOR JUST UPSTREAM OF THE REGULATOR THAT IS SUPPLIED WITH THE EQUIPMENT. REGULATOR SHALL BE CAPABLE OF REDUCING THE HIGH PRESSURE IN THE SUPPLY LINE DOWN TO 11 INCHES W.C. VENT EACH REGULATOR INDIVIDUALLY TO OUTSIDE THE BUILDING IN ACCORDANCE WITH THE NATIONAL FUEL GAS CODE AND ALL LOCAL REQUIREMENTS. GAS PRESSURE REGULATING VALVES SHALL BE AS MANUFACTURED BY MAXITROL (OR APPROVED EQUAL) AND SHALL BE SIZED IN ACCORDANCE WITH THE MANUFACTURER'S REQUIREMENTS.
D. VACUUM RELIEF VALVE (WATER HEATERS ONLY) SHALL BE BRONZE CONSTRUCTION WITH A SILICONE DISC. MAXIMUM WATER PRESSURE, 200 POUNDS; MAXIMUM WATER TEMPERATURE, 250 DEGREES F; MODEL 36A, MANUFACTURED BY WAITS.
2.23 WATER HAMMER ARRESTORS SHALL BE ZURN, MODEL NO. Z-1700 OR EQUAL AND SHALL BE INSTALLED WHERE INDICATED ON THE DRAWINGS.
2.24 INSULATION
A. INSULATE ALL COLD WATER, HOT WATER, HOT WATER RECIRCULATION PIPING, PIPE FITTINGS, BACKFLOW ASSEMBLIES, AND VALVES WITH MATERIALS HAVING A "K" FACTOR OF 0.27 AT 75 DEGREES F MEAN TEMPERATURE, A FLAME SPREAD RATING OF 25 OR LESS AND SMOKE DEVELOPED RATING OF 50 OR LESS.
1. THICKNESS:
- COLD WATER AND HOT WATER RUNOUTS UP TO TWO INCHES = 1/2-INCH THICK
- COLD WATER MAINS UP TO ONE INCH = 1/2-INCH THICK
- COLD WATER MAINS 1-1/4 TO 2 INCHES = 3/4-INCH THICK
- HOT WATER MAINS UP TO 2 INCHES = 1 INCH THICK
2. MATERIALS:
- VAPOR BARRIER ALL SERVICE JACKETED FIBERGLASS WITH FITTINGS COVERED WITH PRE-SHAPED PLASTIC COVERS.
- FOAMED CELLULAR FLEXIBLE ELASTOMERIC INSULATION WITH MITER CUT FITTINGS WITH VAPOR BARRIER JACKET FOR THICKNESS UP TO ONE INCH). ALL JOINTS SHALL BE GLUED IN ACCORDANCE WITH THE INSULATION MANUFACTURER'S RECOMMENDATIONS.
3. MANUFACTURERS - CERTAINTEED, MANVILLE, OWENS CORNING, KNAUF, ARMSTRONG OR APPROVED EQUAL.
2.25 CLEANOUT FITTINGS SHALL BE INSTALLED WHERE INDICATED AND AS REQUIRED. CLEANOUTS SHALL BE MADE BY MEANS OF LONG SWEPT ELBOW AND BEND. CLEANOUTS SHALL BE THE SAME SIZE PIPING UP TO AND INCLUDING 4 INCH SIZE. CLEANOUTS SHALL BE PROVIDED IN HORIZONTAL RUNS AT NOT OVER 50 FEET INTERVALS, CLEANOUTS IN FLOORS FOR CONCEALED PIPING SHALL BE ADJUSTABLE COATED CAST IRON BODY, TAPERED THREADED BRONZE PLUG, HEAVY-DUTY NICKALLOY DECK TYPE, SCORiated COVER WITH VANDALPROOF SCREWS. CLEANOUTS IN WALLS FOR CONCEALED PIPING SHALL BE CAST IRON T BRANCH CLEANOUT WITH BRONZE RAISED HEAD PLUG, LEAD SEAL AND VANDALPROOF POLISHED STAINLESS-STEEL ROUND ACCESS COVER.
2.26 PLUMBING FIXTURES
A. INCLUDES THE FOLLOWING PLUMBING FIXTURES AND RELATED COMPONENTS:
1. WATER CLOSETS.
2. URINALS
3. LAVATOIRES.
4. HAND WASH FOUNTAIN
5. SHOWERS
6. SINKS
7. MOP SERVICE BASIN
8. UTILITY SINK
9. FAUCETS FOR LAVATOIRES, SHOWERS AND SINKS.
10. FLUSHMETER VALVES FOR URINALS
11. TOILET SEATS
12. PROTECTIVE SHIELDING GUARDS
B. FIXTURES SHALL BE OF THE TYPE AND QUALITY INDICATED. FIXTURES SHALL BE COMPLETE WITH ALL NECESSARY TRIM AND APPURTENANCES NECESSARY FOR A COMPLETE INSTALLATION. ALL TRIM AND PIPING SHALL BE 17-GAUGE CHROME-PLATED BRASS. TRIM INCLUDES ONE-PIECE CHROME-PLATED ESCUTCHEONS ON ALL EXPOSED WATER SUPPLY AND WASTE PIPING PENETRATING WALLS OR FLOORS. ALL SUPPLY PIPING SHALL BE VALVED AT EACH FIXTURE. STOP VALVES SHALL BE CHROME-PLATED BRASS WITH T-HANDLE.
C. ALL FAUCET CONTROL VALVES, ETC., NOT INCLUDING STOPS IN WATER SUPPLIES, SHALL HAVE RENEWABLE SEATS OR REMOVABLE BARRELS CONTAINING SEATS. ALL FAUCETS SHALL BE REQUIRED TO MEET THE REQUIREMENTS OF ANSI/NSF STANDARD #61, DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS, SHALL BE CERTIFIED TO MEET THE COMMERCIAL REQUIREMENTS AND SUBMITTAL DATA SHALL INDICATE CERTIFICATION RATING.
D. FIXTURES SHALL BE SET PLUMB AND SQUARE. JOINTS FORMED WHERE ADJUSTABLE SHALL BE IN CONTACT WITH WALLS AND/OR FLOORS SHALL BE SEALED AND GROUDED.
E. FIXTURES SHALL BE TURNED OVER TO THE OWNER ABSOLUTELY SOLID IN ITS POSITION AND POLISHED AND CLEANED CONDITION.
F. DEFINITIONS
1. ABS: ACRYLONITRILE-BUTADIENE-STYRENE PLASTIC.
2. ACCESSIBLE FIXTURE: PLUMBING FIXTURE THAT CAN BE APPROACHED, ENTERED, AND USED BY PEOPLE WITH DISABILITIES.
3. CAST POLYMER: CAST-FILLED-POLYMER-PLASTIC MATERIAL. THIS MATERIAL INCLUDES CULTURED-MARBLE AND SOLID-SURFACE MATERIALS.
4. CULTURED MARBLE: CAST-FILLED-POLYMER-PLASTIC MATERIAL WITH SURFACE COATING.
5. FITTING: DEVICE THAT CONTROLS THE FLOW OF WATER INTO OR OUT OF THE PLUMBING FIXTURE. FITTINGS SPECIFIED IN THIS SECTION INCLUDE SUPPLIES AND STOPS, FAUCETS AND SPOUTS, SHOWER HEADS AND TUB SPOUTS, DRAINS AND TAILPIECES, AND TRAPS AND WASTE PIPES. PIPING AND GENERAL-DUTY VALVES ARE INCLUDED WHERE INDICATED.
6. FRP: FIBERGLASS-REINFORCED PLASTIC.
7. PVC: POLYVINYL CHLORIDE PLASTIC.
8. MMA: POLYMETHYL METHACRYLATE (ACRYLIC) PLASTIC.
9. SOLID SURFACE: NONPOROUS, HOMOGENEOUS, CAST-POLYMER-PLASTIC MATERIAL WITH HEAT-, IMPACT-, SCRATCH-, AND STAIN-RESISTANCE QUALITIES.

- 6. QUALITY ASSURANCE
1. SOURCE LIMITATIONS: OBTAIN PLUMBING FIXTURES, FAUCETS, AND OTHER COMPONENTS OF EACH CATEGORY THROUGH ONE SOURCE FROM A SINGLE MANUFACTURER. EXCEPTION: IF FIXTURES, FAUCETS, OR OTHER COMPONENTS ARE NOT AVAILABLE FROM A SINGLE MANUFACTURER, OBTAIN SIMILAR PRODUCTS FROM OTHER MANUFACTURERS SPECIFIED FOR THAT CATEGORY.
2. ELECTRICAL COMPONENTS, DEVICES, AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, ARTICLE 100, BY A TESTING AGENCY ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION, AND MARKED FOR INTENDED USE.
3. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN ICC A117.1, "ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES"; PUBLIC LAW 90-480, "ARCHITECTURAL BARRIERS ACT"; AND PUBLIC LAW 101-336, "AMERICANS WITH DISABILITIES ACT"; FOR PLUMBING FIXTURES FOR PEOPLE WITH DISABILITIES.
4. REGULATORY REQUIREMENTS: COMPLY WITH REQUIREMENTS IN PUBLIC LAW 102-486, "ENERGY POLICY ACT," ABOUT WATER FLOW AND CONSUMPTION RATES FOR PLUMBING FIXTURES.
5. NSF STANDARDS: COMPLY WITH NSF 61, "DRINKING WATER SYSTEM COMPONENTS-HEALTH EFFECTS," FOR FIXTURE MATERIALS THAT WILL BE IN CONTACT WITH POTABLE WATER.
6. SELECT COMBINATIONS OF FIXTURES AND TRIM, FAUCETS, FITTINGS, AND OTHER COMPONENTS THAT ARE COMPATIBLE.
H. FIXTURES AND MISCELLANEOUS TRIM
1. VITREOUS CHINA FIXTURES (WATER CLOSET, URINAL, LAVATORY)
a. COMPLY WITH THE FOLLOWING APPLICABLE STANDARDS AND OTHER REQUIREMENTS SPECIFIED FOR PLUMBING FIXTURES: ASME A112.19.2M.
b. AVAILABLE MANUFACTURES SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: AMERICAN STANDARD, KOHLER, MANSFIELD OR EQUAL.
2. STAINLESS STEEL FIXTURES (HAND WASH FOUNTAIN AND SINK)
a. COMPLY WITH THE FOLLOWING APPLICABLE STANDARDS AND OTHER REQUIREMENTS SPECIFIED FOR PLUMBING FIXTURES: ASME A112.19.3, ASME A112.18.1, ICC/ANSI 117.1.
b. AVAILABLE MANUFACTURES SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: SINK - AMERICAN STANDARD, KOHLER, JUST OR EQUAL. HAND WASH FOUNTAIN - BRADLEY, ACORN, WILLOUGHBY OR EQUAL.
3. SHOWER ENCLOSURE
a. COMPLY WITH THE FOLLOWING APPLICABLE STANDARDS AND OTHER REQUIREMENTS SPECIFIED FOR PLUMBING FIXTURES: PLASTIC SHOWER ENCLOSURES; ANSI Z124.2. SLIP-RESISTANT BATHING SURFACES; ASTM F 462.
b. AVAILABLE MANUFACTURES SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: AQUATIC BATH, AQUA BATH, AQUARIUS, COMFORT DESIGNS, LASSCO BATHWARE OR EQUAL.
4. SHOWER VALVE
a. COMPLY WITH THE FOLLOWING APPLICABLE STANDARDS AND OTHER REQUIREMENTS SPECIFIED FOR PLUMBING FIXTURES. SHOWER VALVE; ASME A112.18.1, ASSE 1016
b. AVAILABLE MANUFACTURES SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: POWERS, STIMMONS OR EQUAL.
5. PLASTIC PLUMBING FIXTURES
a. COMPLY WITH THE FOLLOWING APPLICABLE STANDARDS AND OTHER REQUIREMENTS SPECIFIED FOR PLUMBING FIXTURES: PLASTIC PLUMBING FIXTURES; WMPD 2124-11
b. AVAILABLE MANUFACTURES SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: DUPONT, FAT OR APPROVED EQUAL.
6. FAUCETS
a. COMPLY WITH THE FOLLOWING APPLICABLE STANDARDS AND OTHER REQUIREMENTS SPECIFIED FOR FAUCETS AND SUPPLY FITTINGS; ASME A112.18.1
b. AVAILABLE MANUFACTURES SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: MOEN COMMERCIAL, DELTA, SLOAN OR APPROVED EQUAL.
7. FLUSHMETER VALVES
a. COMPLY WITH THE FOLLOWING APPLICABLE STANDARDS AND OTHER REQUIREMENTS SPECIFIED FOR FLUSH VALVES AND SPOUTS FOR URINALS; ASME A112.15.5
b. AVAILABLE MANUFACTURES SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: SLOAN OR APPROVED EQUAL.
8. FLOOR DRAINS
a. DURA-COATED CAST IRON BODY WITH TWO INCH BOTTOM OUTLET, SEEPAGE PAN, SIX (6) INCH DIAMETER STRAINER.
b. AVAILABLE MANUFACTURES SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY ONE OF THE FOLLOWING: JAY R. SMITH, MADE, ZURN OR EQUAL.
9. PROVIDE TRAP SEALING COMPONENT AT ALL FLOOR DRAINS AND FUNNEL DRAINS. THE INSTALLATION OF A SEALING COMPONENT ON THE FIXTURE DRAIN OUTLET TO REDUCE TRAP SEAL LOSS SHALL BE PERMITTED IN LIEU OF A TRAP PRIMER WHERE APPROVED BY THE LOCAL AUTHORITY.
a. TRAP SEALING COMPONENT SHALL BE PROSET TRAP GUARD, MANUFACTURED BY PROSET SYSTEMS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
1.27 GAS FIRED WATER HEATER
A. FURNISH AND INSTALL A COMMERCIAL GAS WATER HEATER WHERE SHOWN ON THE DRAWINGS IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS. WATER HEATER SHALL BE UL LISTED AND AGA CERTIFIED AS AN AUTOMATIC STORAGE TYPE UNIT AND ASME STAMPED WORKING PRESSURE. WATER HEATER STORAGE TANK SHALL MEET OR EXCEED THE THERMAL CAPACITY AND STANDBY LOSS REQUIREMENTS OF ASHRAE STANDARD 90.1B-2001
B. GAS FIRED WATER HEATER SHALL BE SUITABLE FOR SEALED COMBUSTION DIRECT VENTING USING A FOUR INCH DIAMETER GAS AIR INTAKE PIPE AND FOUR INCH DIAMETER GAS EXHAUST PIPE FOR A TOTAL DISTANCE OF 120 EQUIVALENT FEET OF VENT AND 120 EQUIVALENT FEET OF INTAKE. THE HEATER SHALL BE FACTORY ASSEMBLED AND TESTED. THE POWER BURNER SHALL BE OF A DESIGN THAT REQUIRES NO SPECIAL CALIBRATIONS ON START-UP. THE HEATER SHALL BE APPROVED FOR ZERO INCH CLEARANCES TO COMBUSTIBLES. THE CONTROL SHALL BE AN INTEGRATED SOLID-STATE TEMPERATURE AND IGNITION CONTROL DEVICE WITH INTEGRAL DIAGNOSTICS, LED FAULT DISPLAY CAPABILITY AND A DIGITAL DISPLAY OF TEMPERATURE SETTINGS. THE TANK SHALL BE FOAM INSULATED AND EQUIPPED WITH A FACTORY INSTALLED ASME RATED TEMPERATURE PRESSURE RELIEF VALVE. THIS HEATER SHALL BE LISTED BY SCAQMD RULE 1146.2 LOW NOx WATER HEATER SHALL BE OF THE SEAMLESS GLASS LINED STEEL TANK CONSTRUCTION IN WHICH THE GLASS COATING IS APPLIED TO THE WATERSIDE SURFACES OF THE TANK AFTER THE TANK HAS BEEN ASSEMBLED AND WELDED. THE CONDENSING FLUE COIL SHALL BE COATED ON THE FLUE GAS SIDE WITH ACID RESISTANT GLASS LINING DESIGNED FOR USE IN CONDENSING HEATERS. PIPE THE DISCHARGE FROM RELIEF VALVE TO NEAREST FLOOR DRAIN. PROVIDE BALL TYPE DRAIN VALVE ON HEATER FOR DRAINING PURPOSES.

- C. WATER HEATER SHALL BE AS MANUFACTURED BY A.O. SMITH, BRADFORD WHITE OR STATE INDUSTRIES. SET MIXING VALVES TO DRAWING FOR CAPACITIES, MODEL NUMBER AND ADDITIONAL ACCESSORIES.
1.28 TANKLESS ELECTRIC WATER HEATER
A. FURNISH AND INSTALL COMMERCIAL ELECTRIC TANKLESS WATER HEATERS WHERE SHOWN ON THE PLANS. THE ELEMENTS SHALL BE SIZED SPECIFICALLY FOR THE VOLTAGE GIVEN.
B. TANKLESS WATER HEATER SHALL BE COMPLETE WITH DIGITAL MICROPROCESSING TEMPERATURE CONTROL CAPABLE OF MAINTAINING OUTLET TEMPERATURE OF +/-1°F ACCURACY AND USES AN ASSE 1070 APPROVED INTEGRATED MIXING VALVE TO CONFORM TO UPC 407.3. ELEMENT SHALL BE REPLACEABLE CARTRIDGE INSERT. UNIT SHALL HAVE REPLACEABLE FILTER IN THE INLET CONNECTION. ELEMENT SHALL BE IRON FREE, NICKEL CHROME MATERIAL. HEATER SHALL BE FITTED WITH 1/2" PIPE COMPRESSION FITTINGS (5/8" OD) OR 3/8" (1/2" OD) FITTINGS, TO ELIMINATE NEED FOR SOLDERING. MAXIMUM OPERATING PRESSURE OF 150 PSI.
C. TANKLESS WATER HEATER SHALL BE AS MANUFACTURED BY EMAX OR APPROVED EQUAL. MODEL AND CAPACITIES SHALL BE AS LISTED IN SCHEDULE ON DRAWINGS.
1.29 EXPANSION TANK
A. WELDED STEEL TESTED AND STAMPED IN ACCORDANCE WITH ASME LUBRICATED TYPE SPECIFICALLY DESIGNED AND GUARANTEED FOR QUIET OPERATION. THE PUMP BODY SHALL BE LEAD-FREE BRONZE SUITABLE FOR 230°F (110°C) AND OPERATE AT 150 PSIG WORKING PRESSURE. PUMP SHALL HAVE A CERAMIC SHIRT SUPPORTED BY CARBON BEARINGS. BEARINGS ARE TO BE LUBRICATED BY THE CIRCULATING FLUID. MOTOR STATOR TO BE ISOLATED FROM CIRCULATING FLUID THROUGH USE OF STAINLESS-STEEL CAN. ROTOR TO BE SHEATHED IN STAINLESS STEEL. MOTORS TO HAVE BUILT-IN IMPEDANCE PROTECTION.
B. PUMP CONTROL SHALL BE AN AQUASTAT AND TIME CLOCK. COORDINATE ALL ELECTRICAL CHARACTERISTICS AND WIRING WITH THE ELECTRICAL CONTRACTOR.
C. PUMP SHALL BE AS MANUFACTURED BY XYLEM - BELL & GOSSETT OR APPROVED EQUAL OF TACO OR GROUNDFORM. PUMP MODEL, CAPACITIES AND ELECTRICAL CHARACTERISTICS SHALL BE AS LISTED IN SCHEDULE ON DRAWINGS.
1.31 THERMOSTATIC MIXING VALVES
A. MIXING VALVE SHALL BE THERMOSTATIC TYPE WITH UNION INLET STRAINERS, CHECK STOPS, THERMOMETER, SHUTOFF VALVES AND ROUGH BRONZE FINISH; MODEL LFC480, MANUFACTURED BY POWERS. VALVE SHALL BE ASSE 1017 COMPLIANT. INSTALL AND SET UP SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SET MIXING VALVE TO SUPPLY DOMESTIC HOT WATER AT 140 DEGREES F.
B. INDIVIDUAL MIXING VALVES SHALL BE PROVIDED AT ALL LAVATORIES AND SINKS. MIXING VALVE SHALL BE THERMOSTATIC TYPE WITH UNION INLET STRAINERS, CHECK STOPS, THERMOMETER, SHUTOFF VALVES AND ROUGH BRONZE FINISH; MODEL LFC480, MANUFACTURED BY POWERS. VALVE SHALL BE ASSE 1070 COMPLIANT DOWN TO 0.25 GPM. INSTALL AND SET UP SYSTEM IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. SET MIXING VALVE TO SUPPLY DOMESTIC HOT WATER AT 110 DEGREES F.
C. THE EMERGENCY MIXING VALVE SHALL BE IN COMPLIANCE WITH ANSI Z358.1 TO CONTROL AND MAINTAIN THE TEMPERATURE OF THE TEPID WATER TO THE SAFETY STATION. MIXING VALVE WILL CLOSE DOWN ON FAILURE OF COLD-WATER SUPPLY AND INCLUDE SPECIAL INTERNAL COLD-WATER BYPASS CAPABLE OF 20 GPM AT 30 PSI UNIFORM FLOW. EMERGENCY MIXING VALVE UNIT SHALL BE SELF-CONTAINED AND INCLUDE A THERMOSTATIC WATER MIXING VALVE, A DIAL THERMOMETER ON THE OUTLET, UNION ANGLE CHECKSTOPS, WALL MOUNTING BRACKET, PIPING AND FITTINGS FACTORY ASSEMBLED AND TESTED. TOP INLETS AND TOP OUTLET. EMERGENCY MIXING VALVE SHALL BE MODEL TM-800-1E, MANUFACTURED BY LEONARD VALVE, POWERS' MODEL ETV2000-00 APPROVED EQUAL.
1.32 GENERAL PIPE INSTALLATION
A. IN GENERAL, INSTALL ALL PIPING SO AS TO PRESERVE ACCESS TO ALL VALVES, TRAPS, EQUIPMENT, ETC. ALL PIPING, VALVES, FITTINGS, ETC., SHALL BE KEPT A SUFFICIENT DISTANCE FROM THE OTHER WORK TO PERMIT A CLEARANCE OF NOT LESS THAN 1 INCH BETWEEN THE FINISHED COVERINGS ON SUCH PIPING AND ALL ADJACENT WORK. WEATHER UNDER THIS OR OTHER TRADES. ALL PIPING SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO WALLS, CEILING, COLUMNS (CONSISTENT WITH PROPER SPACE FOR COVERING, REMOVAL OF PIPE, ETC. SO AS TO OCCUPY THE MINIMUM OF SPACE. HORIZONTAL RUNS OF PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE BUILDING STRUCTURE TO MAINTAIN THE REQUIRED PITCH AND THE PIPE LINES. HANGER RODS SHALL BE CONNECTED TO THE BEAM CLAMPS, INSERTS OR HANGER CLIPS WELDED TO THE STRUCTURAL STEEL. THE HANGING OF ONE PIPE FROM ANOTHER SHALL NOT BE PERMITTED. PROPER CARE SHALL BE EXERCISED IN THE ERECTION OF ALL PIPING TO ENSURE PROPER DRAINAGE AND CIRCULATION, INCLUDING PROPER PROVISION FOR EXPANSION AND CONTRACTION OF PIPING. POCKETS OR TRAPS WHEREIN AIR CAN COLLECT SHALL NOT BE PERMITTED. ALL PIPING SHALL BE REAMED TO REMOVE CUTTING BURRS AND SHARP EDGES. ALL COPPER TUBING SHALL BE CUT WITH SQUARE ENDS AND ALL BURRS AND FINIS REMOVED. TUBING SHALL BE CAREFULLY HANDLED AND PROTECTED TO AVOID DAMAGE. REDUCING FITTINGS SHALL BE USED WHEREVER POSSIBLE. THE USE OF BUSHINGS SHALL BE PROHIBITED. ECCENTRIC REDUCERS SHALL BE USED. THREADS FOR SCREW FITTINGS SHALL BE AMERICAN STANDARD TAPER PIPE THREADS. ALL PIPING SHALL BE CAPPED DURING INSTALLATION TO KEEP THE SYSTEM CLEAN. LOCATE ALL WATER PIPING WITHIN HEATED SPACES WITH PROVISIONS FOR DRAINING ALL LINES.
B. DURING CONSTRUCTION, THE CONTRACTOR SHALL MAINTAIN A RECORD SET OF INSTALLATION PRINTS. RECORD THESE PRINTS, ALL DEVIATIONS FROM THE CONTRACT DRAWINGS, INCLUDING BUT NOT LIMITED TO, PIPE ROUTING, SYSTEM CONNECTION POINTS, PIPE SIZES AND EQUIPMENT LOCATION CHANGES. AT THE COMPLETION OF THE WORK, THE CONTRACTOR SHALL TRANSFER THIS NEATLY ON TO THREE SETS OF PRINTS AND FORWARD THESE PRINTS AND THE AS-BUILT PRINTS TO THE OWNER AND TENANT.
1.33 BALANCING
A. PROVIDE BALANCING OF HOT WATER RECIRCULATION PIPING UNDER THE DIRECT SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER WITH ACCURATELY CALIBRATED INSTRUMENTS AND SUBMIT SIX COPIES OF COMPLETE TEST DATA FOR REVIEW PRIOR TO FINAL INSPECTION ON ABC OR NEBB FORMS. AFTER THE COMPLETION OF THE INSTALLATION OF ALL PIPING AND CIRCUIT SETTERS AND FLUSHING OF THE SYSTEM, OPERATE THE SYSTEM AND MAKE ALL REQUIRED ADJUSTMENTS AND ALTERATIONS TO DELIVER THE FLOWS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE NECESSARY GAUGE CONNECTIONS, TEMPERATURE CONNECTIONS, FLOW FITTINGS, TEST EQUIPMENT, ETC. TO OBTAIN THE DATA REQUIRED. CHECK, ADJUST AND RECORD THE FLOW RATES AND DELTA PRESSURES AT EACH CIRCUIT SETTER. CHECK AND RECORD THE PUMP SUCTION AND DISCHARGE PRESSURES, TOTAL DYNAMIC HEAD, SYSTEM FLOWS AND ZONE FLOWS. CHECK AND RECORD THE INLET WATER TEMPERATURE, FLOW AND OUTLET TEMPERATURES AT ALL THERMOSTATIC MIXING VALVES. SUBMIT A STARTUP REPORT INDICATING FLOW CONDITIONS, PRESSURES AND TEMPERATURES.

- B. SET UP EACH MASTER MIXING VALVE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS. SET MIXING VALVES TO DRAWING FOR CAPACITIES, MODEL LISTED. ENGAGE THE SERVICES OF THE VALVE MANUFACTURE REPRESENTATIVE TO CONFIRM PROPER SETUP FLOWS.
C. CHECK AND SET OPERATION OF ALL ELECTRONIC FAUCETS AND FLUSH VALVES. SET FAUCET TIME OUT ADJUSTMENT SETTINGS TO MEET EACH INDIVIDUAL APPLICATION. VERIFY SETTING WITH OWNERS' REPRESENTATIVE.
D. THE "START-UP" OF THE WATER HEATER SYSTEM SHALL BE CARRIED OUT BY THE CONTRACTOR. THE CONTRACTOR SHALL CHECK THE OPERATION OF ALL WATER HEATER THERMOSTAT SETPOINTS AND OPERATIONS.
E. THE CONTRACTOR SHALL CHECK THE OUTLET TEMPERATURE AT LAVATORY AND SINK FIXTURES, THERMOSTATIC MIXING VALVE(S) AND WATER HEATER THERMOSTAT SETPOINTS AND OPERATIONS.
1.34 STERILIZATION OF DOMESTIC WATER SYSTEM
A. BEFORE BEING PLACED IN SERVICE, ALL DOMESTIC WATER LINES SHALL BE CHLORINATED USING A METHOD THAT IS SATISFACTORY TO THE WATER AUTHORITY OR THE AUTHORITY HAVING JURISDICTION. IN THE ABSENCE OF A PRESCRIBED METHOD, THE PROCEDURE AS DESCRIBED BELOW SHALL BE USED.
B. PRIOR TO CHLORINATION, ALL DIRT AND FOREIGN MATTER SHALL BE REMOVED BY A THOROUGH FLUSHING. THIS SHALL BE DONE AFTER THE PRESSURE TEST AND LEAKAGE TEST.
C. A CHLORINE HYPOCHLORITE SOLUTION SHALL BE APPLIED BY MEANS OF A SOLUTION FEED DEVICE OR THE GAS SHALL BE FED DIRECTLY FROM A CHLORINE CYLINDER EQUIPPED WITH PROPER DEVICES FOR REGULATING THE RATE OF FLOW AND THE EFFECTIVE DIFFUSE OF GAS WITHIN THE PIPE.
D. WATER SHALL BE CONTROLLED TO FLOW SLOWLY INTO THE SYSTEM DURING THE APPLICATION OF CHLORINE IN SUCH PROPORTIONS THAT THE CHLORINE DOSE APPLIED TO THE WATER ENTERING THE PIPE SHALL BE AT LEAST 40 TO 50 PARTS PER MILLION.
E. TREATED WATER SHALL BE RETAINED IN THE SYSTEM LONG ENOUGH TO DESTROY ALL NON-SPORE FORMING BACTERIA. THIS PERIOD SHALL BE AT LEAST TWENTY-FOUR HOURS. A LONGER CHLORINE CONTACT TIME MAY BE REQUESTED BY THE OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST TO THE OWNER.
F. AFTER THE CHLORINE TREATED WATER HAS BEEN RETAINED FOR THE REQUIRED TIME, THE CHLORINE RESIDUAL AT THE PIPE EXTREMITIES AND AT OTHER REPRESENTATIVE POINTS SHALL BE AT LEAST FIVE PARTS PER MILLIONS.
G. FOLLOWING CHLORINATION, ALL TREATED WATER SHALL BE THOROUGHLY FLUSHED FROM THE SYSTEM AT ITS EXTREMITIES UNTIL THE REPLACEMENT WATER THROUGHOUT ITS LENGTH SHALL, UPON TEST, BE EQUAL TO THE WATER QUALITY SERVED FROM THE WATER SUPPLY SYSTEM.
H. SHOULD THE INITIAL TREATMENT IN THE OPINION OF THE OWNER'S REPRESENTATIVE BE INEFFECTIVE, THE CHLORINATION PROCEDURE SHALL BE REPEATED UNTIL CONFIRMED TESTS SHOW THAT WATER SAMPLED FROM THE SYSTEM CONFORMS TO THE REQUIREMENTS.
1.35 TEST OF DRAINAGE SYSTEM
A. ALL PLUMBING AND DRAINAGE PIPING SHALL BE TESTED BY PLUGGING ALL OPENINGS AND FILL SYSTEM WITH WATER TO THE TOP OF ALL VENT PIPES. THE WATER SHALL STAND FOR 30 MINUTES FOR INSPECTION. ALL TESTS MUST COMPLY WITH LOCAL AUTHORITY REQUIREMENTS.
1.36 TEST OF DOMESTIC WATER PIPING
A. ALL WATER LINES SHALL BE TESTED TO A HYDROSTATIC PRESSURE EQUAL TO 1-1/2 TIMES THE MAXIMUM OPERATING PRESSURE. THE SYSTEM SHALL BE LEAK-FREE FOR 24 HOURS AT THIS PRESSURE.
1.37 TEST OF GAS PIPING
A. ALL GAS LINES SHALL BE TESTED TO A HYDROSTATIC PRESSURE OF 60 PSIG FOR A MINIMUM OF EIGHT (8) HOURS WITHOUT A LOSS OF PRESSURE. FOLLOWING INSTRUCTIONS 2.11 AND 2.12 IN NFPA MANUAL 54.
1.38 THE CONTRACTOR SHALL FURNISH THREE SETS OF INSTRUCTION MANUALS TO THE OWNER AT COMPLETION OF CONSTRUCTION.
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Project No. 230004

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