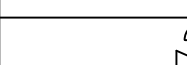

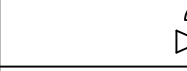
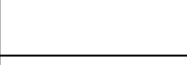
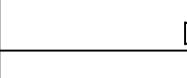
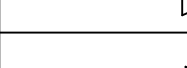
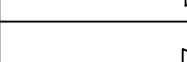
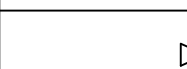


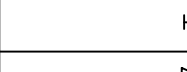
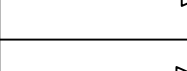
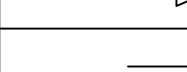

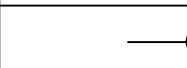

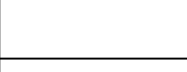
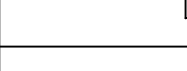
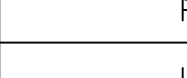
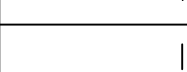
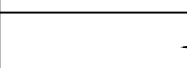
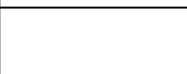
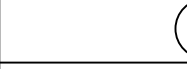
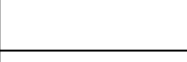
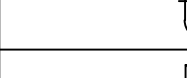
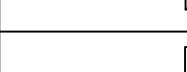
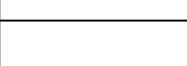
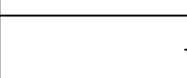

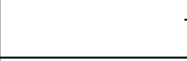

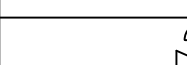

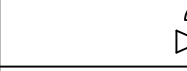
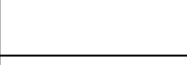
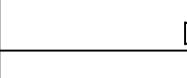
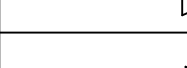
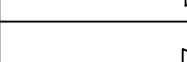
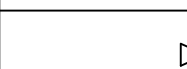


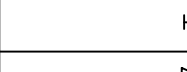
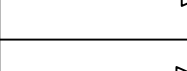
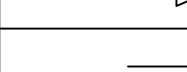

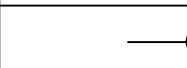

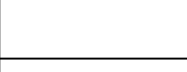
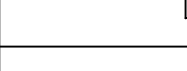
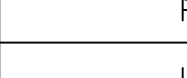
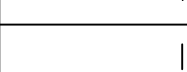
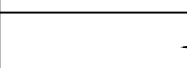
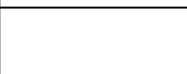
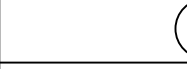
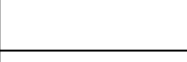
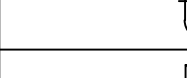
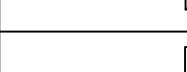
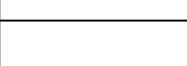
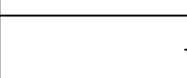

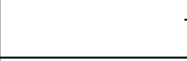

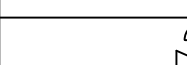

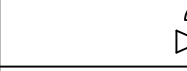
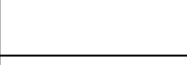
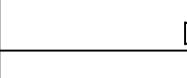
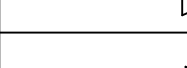
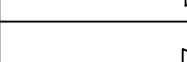
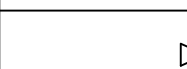


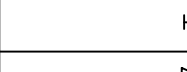
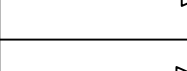
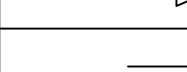

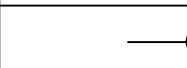

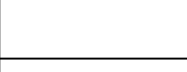
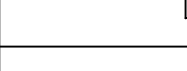
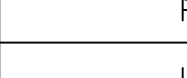
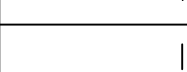
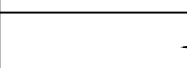
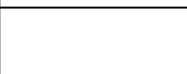
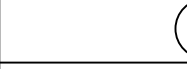
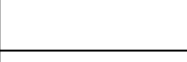
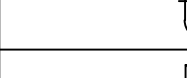
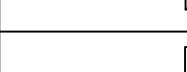
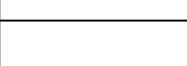
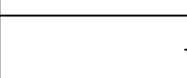

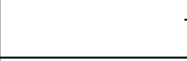

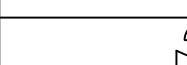

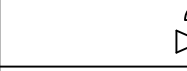
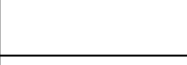
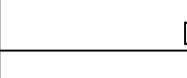
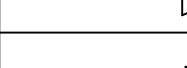
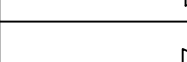
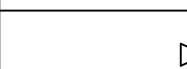


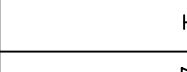
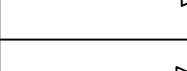
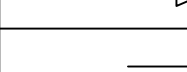

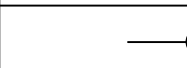

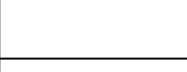
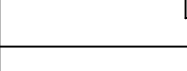
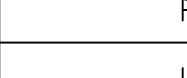
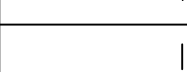
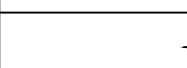
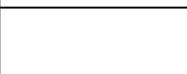
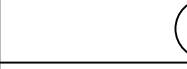
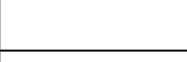
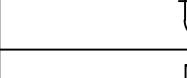
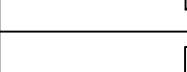
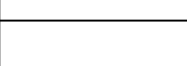
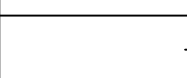

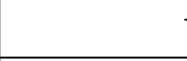




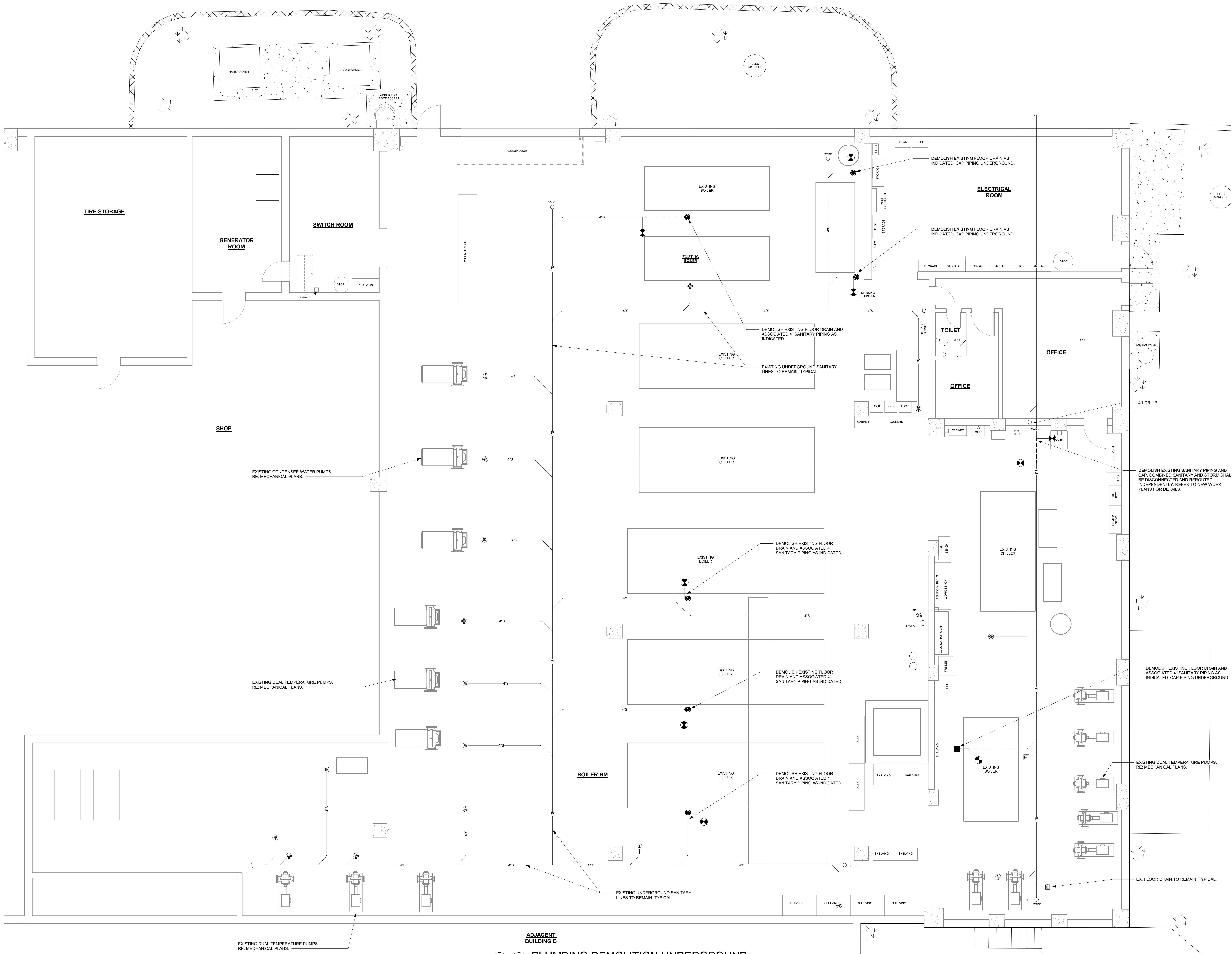


DESIGN INTENT NOTES																																																																																																																																																																	
<p>IT IS THE INTENT OF THIS PROJECT TO REPLACE THE EXISTING HEATING AND COOLING PLANT, STAND-BY POWER GENERATOR SYSTEM, THE ELECTRICAL DISTRIBUTION EQUIPMENT, PLANT AREA LIGHTING SYSTEMS AND FIRE ALARM SYSTEMS. THESE SYSTEMS SHALL BE REPLACED IN TOTALITY.</p> <p>THIS WORK SHALL TAKE PLACE IN A PHASED APPROACH THAT WILL ALLOW UNINTERRUPTED HEATING / COOLING AND POWER TO ALL THE BUILDINGS AND EQUIPMENT. THE CONTRACT DOCUMENTS INDICATE THE MINIMUM PHASING REQUIREMENTS TO CONVEY THE DESIGN INTENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL PHASING OF WORK INCLUDING ALL NECESSARY LABOR AND MATERIALS, TEMPORARY WORK, PIPING FEEDERS AND EQUIPMENT IN ORDER TO PROPERLY PHASE THE WORK AND MEET THE DESIGN INTENT.</p> <p>THE SCOPE OF WORK SHALL INCLUDE TEMPORARY SERVICES, THE CONTRACTOR SHALL PROCURE TEMPORARY BOILERS AND CHILLERS FOR AS LONG AS IS NECESSARY IN ORDER TO PROVIDE TEMPORARY HOT WATER AND CHILLED WATER. THE CONTRACTOR SHALL PROVIDE TEMPORARY POWER FOR EQUIPMENT INCLUDING GENERATORS FOR POWER AND ALL FUEL REQUIRED. PROVIDE TEMPORARY PIPING CONNECTIONS AND MODIFICATIONS TO EXISTING PIPING SYSTEMS. PROVIDE TEMPORARY CONTROLS AND MODIFICATIONS TO EXISTING CONTROLS IN ORDER TO FACILITATE THE INTEGRATION OF TEMPORARY AND NEW SYSTEMS SO THAT THE BUILDINGS ARE CONTINUALLY SERVED WITH HOT WATER AND OR CHILLED WATER. ALL TEMPORARY EQUIPMENT SHALL BE SIZED TO MATCH EXISTING EQUIPMENT INCLUDING FLOW RATES, PRESSURE REQUIREMENTS, ETC. SUCH THAT EXISTING BUILDING OPERATION IS MAINTAINED.</p> <p>IN GENERAL, IT WILL BE NECESSARY TO DEMOLISH ALL ABANDONED MECHANICAL, PLUMBING, AND ELECTRICAL EQUIPMENT PIPING AND CONDUITS IN THE MAIN PLANT AND IN THE ORIGINAL PLANT TO MAKE SPACE FOR NEW EQUIPMENT. THE INTENT IS TO INSTALL THE NEW CHILLER AND BOILER PLANT AS WELL AS THE NEW PRIMARY/SECONDARY PIPING SYSTEMS AS WELL AS ALL NECESSARY SUNDRY ITEMS SUCH AS PUMPS, COOLING TOWERS, BREECHING, COMBUSTION AIR DAMPERS, FUEL OIL PIPING, GAS PIPING, OIL PUMPS, POWER, AND CONTROLS SO THAT THE NEW PLANT IS FULLY FUNCTIONAL BEFORE REMOVAL OF THE TEMPORARY HEATING AND COOLING EQUIPMENT. THE EXISTING BUILDINGS AND SECONDARY PUMPS SHALL REMAIN CONNECTED TO EXISTING PIPING AND TEMPORARY HEATING/COOLING PLANT UNTIL SUCH TIME AS THE PLANT IS OPERATIONAL.</p> <p>WHEN THE NEW HEATING/COOLING PLANT IS OPERATIONAL INCLUDING SECONDARY PUMPS AND CONTROLS, EACH BUILDING'S SECONDARY PIPING SYSTEM CAN BE CONNECTED TO THE NEW SECONDARY PIPING SYSTEMS AND PUMP SETS SO AS TO CAUSE THE MINIMUM AMOUNT OF SYSTEM DOWN TIME FOR EACH BUILDING. WHEN ALL BUILDINGS ARE CONNECTED TO THEIR NEW SECONDARY PUMP SETS AND THE NEW PLANT, DEMOLITION OF THE REMAINING EXISTING PUMPS, POWER AND CONTROLS CAN BEGIN.</p> <p>WHEN DEMOLITION OF THE EXISTING ABANDONED EQUIPMENT IS COMPLETE THE NEW DOMESTIC WATER HEATING SYSTEM SHALL BE CONSTRUCTED ALONG WITH MODIFICATIONS TO THE DOMESTIC WATER, SANITARY, STORM AND GAS SYSTEMS. WHEN THE NEW DOMESTIC WATER HEATING SYSTEM HAS BEEN CONSTRUCTED AND IS FULLY OPERATIONAL AND CONNECTED TO THE EXISTING DISTRIBUTION SYSTEM, THE EXISTING HEATING SYSTEM MAY BE DEMOLISHED.</p> <p>IN SUPPORT OF THE PROJECT'S MECHANICAL, PLUMBING AND ELECTRICAL WORK THERE IS A CERTAIN AMOUNT OF GENERAL CONSTRUCTION THAT IS REQUIRED. THIS WORK SHALL BE PHASED AS NECESSARY IN ORDER TO FACILITATE THE CONSTRUCTION OF NEW MECHANICAL, PLUMBING AND ELECTRICAL EQUIPMENT AND SYSTEMS. THIS SHALL INCLUDE SITE WORK AND RESTORATION AS WELL AS CUTTING, PATCHING, PAINTING, CONCRETE, FIRE STOPPING, DOORS AND HARDWARE.</p>																																																																																																																																																																	
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<ol style="list-style-type: none"><li>REFER TO SPECIFICATION SECTION 19113 FOR GENERAL CX REQUIREMENTS, AND SECTION 220800 FOR COMMISSIONING OF PLUMBING SYSTEMS. THE OWNER SHALL HIRE A THIRD PARTY COMMISSIONING AGENT.</li><li>PRIOR TO COMMISSIONING, THE CONTRACTOR SHALL PROVIDE A STATEMENT CONFIRMING THAT ALL SYSTEMS ARE FULLY OPERATIONAL AND ALL PRE-FUNCTIONAL TESTS AND CHECKS LISTED BELOW HAVE BEEN SUCCESSFULLY COMPLETED. SUBMIT A COPY OF ALL CHECK SHEETS FOR ENGINEER REVIEW AND APPROVAL.</li><li>PRE-FUNCTIONAL TESTS AND CHECKS (PREREQUISITES FOR COMMISSIONING):  THE CONTRACTOR SHALL PERFORM THE FOLLOWING INCLUDING BUT NOT LIMITED TO -<ul style="list-style-type: none"><li>ENSURE THAT ALL SUBMITTALS ARE COMPLETED AND APPROVED BY ENGINEER AND COMMISSIONING AGENT.</li><li>CERTIFY THAT ALL SYSTEMS TO BE COMMISSIONED, SUBSYSTEMS AND EQUIPMENT HAVE BEEN INSTALLED, CALIBRATED AND STARTED, ACCORDING TO THE CONTRACT DOCUMENTS COMPLETE. ALL MANUFACTURER STARTUP REQUIREMENTS.</li><li>CERTIFY THAT ALL RELEVANT INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED. ARE OPERATING ACCORDING TO CONTRACT DOCUMENTS; AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.</li><li>SET SYSTEMS, SUBSYSTEMS AND EQUIPMENT TO OPERATING MODE TO BE TESTED (E.G., NORMAL, SHUT DOWN, NORMAL AUTO POSITION, NORMAL MANUAL POSITION, AND ALARM CONDITIONS).</li><li>VERIFY EACH OF THE SYSTEMS ONCE IT IS OPERATING IN A STEADY STATE CONDITION. REFER TO THE SEQUENCE OF OPERATIONS.</li><li>INSPECT AND VERIFY THE POSITION OF EACH DEVICE AND INTERLOCK IDENTIFIED ON CHECKLISTS. SIGN OFF EACH ITEM AS ACCEPTABLE OR FAILED. REPEAT THIS TEST FOR EACH OPERATING CYCLE THAT APPLIES TO SYSTEM BEING TESTED.</li><li>SIMULATE CONDITIONS REQUIRED IN ORDER TO TEST ALL SAFETY CUTOUPS, ALARMS AND INTERLOCKS WITH LIFE SAFETY SYSTEMS DURING EACH MODE OF OPERATION WHEN APPLICABLE.</li><li>ANNOTATE CHECKLIST OR DATA SHEET WHEN A DEFICIENCY IS OBSERVED.</li><li>VERIFY EQUIPMENT INTERFACE WITH MONITORING AND CONTROL SYSTEM.</li></ul></li><li>AFTER PRE-FUNCTIONAL TESTING IS COMPLETE, THE CONTRACTOR SHALL PERFORM FUNCTIONAL TESTING IN THE PRESENCE OF THE COMMISSIONING AGENT FOR THE SYSTEMS LISTED BELOW IN ACCORDANCE WITH THE COMMISSIONING SPECIFICATIONS:<ul style="list-style-type: none"><li>HOT WATER HEATERS</li><li>HOT WATER CIRCULATION PUMPS</li><li>FUEL OIL PUMPS &amp; SYSTEM</li><li>GENERATOR FUEL SYSTEM / ALARMS / FUEL FILTRATION SYSTEM</li></ul></li><li>AFTER FUNCTIONAL TESTING, THE COMMISSIONING AGENT (CX) SHALL ISSUE A REPORT OF TEST RESULTS AND DOCUMENT ANY DEFICIENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTION OF ALL DEFICIENCIES. THE CONTRACTOR SHALL SEND A WRITTEN RESPONSE TO THE OWNER/ENGINEER/CX AGENT THAT AN OPEN ISSUE HAS BEEN RECTIFIED. THE DEFICIENCY SHALL NOT BE CONSIDERED RESOLVED UNTIL THE APPROPRIATE RETESTING IS PERFORMED WITH THE CX AGENT.</li><li>PRIOR TO TURNOVER (OWNER ACCEPTANCE), A COMPLETE AND SUCCESSFUL DEMONSTRATION OF ALL SYSTEM OPERATING FUNCTIONS AND ALARMS SHALL BE PERFORMED BY THIS CONTRACTOR IN THE PRESENCE OF THE OWNERS REPRESENTATIVE AND COMMISSIONING AGENT.</li><li>IN ADDITION TO THE ABOVE, THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:<ul style="list-style-type: none"><li>PARTICIPATE IN MAINTENANCE ORIENTATION AND INSPECTION MEETING.</li><li>PARTICIPATE IN PROCEDURES MEETING FOR TESTING.</li><li>EXECUTE INSTALLATION PRE-FUNCTIONAL CHECK SHEETS.</li><li>SUPPORT FUNCTIONAL TESTING WITH QUALIFIED TECHNICIANS.</li><li>RESPOND TO CX DEFICIENCIES IN ACCORDANCE WITH OWNER SCHEDULE.</li><li>PARTICIPATE IN FINAL REVIEW/TEST ACCEPTANCE MEETING.</li><li>NOTIFY COMMISSIONING AGENT AT MINIMUM TWO WEEKS IN ADVANCE OF ANY TESTING.</li></ul></li></ol>																																																																																																																																																																	

SYMBOL & ABBREVIATIONS		
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—————	CW	COLD WATER
—————	HW	HOT WATER
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---- V ----	V	VENT
—————	G	GAS LINES
———— PD ———	PD	PUMP DISCHARGE
———— S ———	S	SANITARY LINES
———— LDR ———	LDR	STORM PIPING
———— FOS ———	FOS	FUEL OIL SUPPLY
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	-	2-WAY VALVE
	-	PLUG VALVE
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	-	PIPE CAP
	-	CONCENTRIC REDUCER
	-	ECCENTRIC REDUCER
	-	STRAINER
	-	FLEXIBLE CONNECTION
	-	FLOW ARROW
	-	PRESSURE GAGE
	-	PUMP
	-	THERMOMETER
	-	BASKET STRAINER
	RD	ROOF DRAIN
	FD	FLOOR DRAIN
	-	UNION
—	AFF	ABOVE FINISHED FLOOR
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—	TYP	TYPICAL

GENERAL NOTES		
<ol style="list-style-type: none"><li>THE CONTRACT DRAWINGS INDICATE THE EXTENT AND GENERAL ARRANGEMENTS OF THE PLUMBING SYSTEMS. IF ANY DEPARTURES FROM THE DRAWINGS ARE DEEMED NECESSARY BY THE PLUMBING CONTRACTOR, DETAILS OF SUCH DEPARTURES AND THE REASONS THEREFORE SHALL BE SUBMITTED TO THE OWNER AND ENGINEER FOR APPROVAL. NO SUCH DEPARTURES SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE OWNER AND ENGINEER. EQUIPMENT AND PIPING ARRANGEMENTS SHALL PROVIDE ADEQUATE AND ACCEPTABLE CLEARANCES FOR ENTRY, SERVICE, AND MAINTENANCE. ANY CHANGES TO PIPING AND EQUIPMENT LOCATIONS NECESSARY TO AVOID INTERFERENCE WITH OTHER TRADES SHALL BE MADE AT NO EXTRA COST.</li><li>THE PLUMBING WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE LATEST EDITION OF THE PREVAILING NEW YORK STATE PLUMBING AND BUILDING CODES. IN CASE OF CONFLICT BETWEEN THE CONTRACT DOCUMENTS AND A GOVERNING CODE OR ORDINANCE, THE MORE STRINGENT STANDARD SHALL APPLY.</li><li>THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FOR PAYING RELATED FEES.</li><li>CONNECTIONS TO EXISTING UTILITIES AND SERVICES ARE SHOWN ACCORDING TO THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, INVERT ELEVATIONS, AND SIZES OF EXISTING PLUMBING SERVICES IN FIELD, AND SHALL CONNECT NEW PLUMBING SERVICES AS INDICATED ON DRAWINGS.</li><li>PRIOR TO FABRICATION, THIS CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND CONDITIONS ON JOB SITE, AND COORDINATE THIS WORK WITH THE WORK OF ALL OTHER TRADES.</li><li>THE CONTRACT'S SHALL SUBMIT FOR REVIEW AND APPROVAL A COMPOSITE SHOP DRAWING, FULLY COORDINATED WITH ALL OTHER TRADES INDICATING ALL DUCTWORK, MECHANICAL EQUIPMENT, PIPING, ELECTRICAL EQUIPMENT, PLUMBING PIPING AND EQUIPMENT, LIGHTS, CONDUITS, DIFFUSERS, GRILLES AND FIRE ALARM DEVICES.</li><li>PROVIDE DIELECTRIC FITTINGS OR COUPLINGS WHEREVER DISSIMILAR METALS ARE JOINED.</li><li>PROVIDE SHUTOFF VALVES AT ALL EQUIPMENT ON COLD WATER, HOT WATER, HOT WATER RECIRCULATION, FUEL OIL, AND GAS SUPPLY LINES.</li><li>ALL WORK SHALL BE PROPERLY TESTED, BALANCED, AND CLEANED AND DISINFECTED. PROVIDE A ONE YEAR WARRANTY FROM DATE OF FINAL INSPECTION ON ALL PARTS AND LABOR.</li><li>PROVIDE ALL PIPE OPENINGS THROUGH PARTITIONS WITH PIPE SLEEVES. FOR PIPES PENETRATING FIRE RATED PARTITIONS, THE SPACE BETWEEN THE PIPE AND THE SLEEVE SHALL BE SEALED WITH FIRE STOPPING MATERIAL. PENETRATIONS FOR PIPING SHALL BE MADE BY CORE DRILLING WHENEVER POSSIBLE. SLEEVE FOR SERVICE PIPE SHALL BE TWO (2) TIMES THE DIAMETER OF THE SERVICE PIPE.</li><li>THE PLUMBING CONTRACTOR SHALL PROVIDE ALL CUTTING, PATCHING, CORE DRILLING, PAINTING, ACCESS PANELS, AND FINAL RESTORATION REQUIRED TO FACILITATE THE INSTALLATION OF PLUMBING PIPING AND EQUIPMENT, INCLUDING ABOVE CEILINGS AND IN SHAFTS THAT WILL NOT BE REPLACED OR OPENED UNDER ANY OTHER SCOPE OF WORK RELATED TO THIS PROJECT. CONTRACTOR TO REMOVE AND REPLACE CEILINGS, AND OPEN AND PATCH SHAFTS AND WALLS, AS REQUIRED TO EXECUTE THE PLUMBING WORK.</li><li>MAINTAIN THE EXISTING DOMESTIC WATER, GAS, AND FUEL OIL SERVICES WHICH SERVE THE EXISTING BUILDING IN OPERATION DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE ANY SYSTEM SHUTDOWNS WITH THE OWNER AND GET APPROVAL IN WRITING PRIOR TO SHUT DOWNS.</li><li>CAPPING AND PLUGGING OF ALL PIPING SHALL BE DONE USING THE SAME MATERIAL AS THE PIPING.</li><li>REMOVE ALL PLUMBING PIPING NO LONGER USED OR CURRENTLY ABANDONED WHEREVER IT IS ACCESSIBLE.</li><li>ALL MOTOR STARTERS AND DISCONNECT SWITCHES FOR PLUMBING EQUIPMENT SHALL BE FURNISHED BY THE PLUMBING CONTRACTOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED. DISCONNECT SWITCHES FURNISHED BY THE PLUMBING CONTRACTOR FOR PLUMBING EQUIPMENT SHALL BE HEAVY DUTY TYPE.</li><li>THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING TEMPORARY VENTILATION AND EXHAUST AIR WHEN WELDING OR SOLDERING OPERATIONS ARE PERFORMED, AS REQUIRED BY OSHA.</li><li>WHERE EXISTING BUILDING STRUCTURAL COMPONENTS HAVE FIREPROOF MATERIAL, ANY AREA THAT IS DISTURBED OR DAMAGED AS A RESULT OF PLUMBING WORK, INCLUDING THE INSTALLATION OF HANGERS FOR PIPING OR EQUIPMENT, SHALL BE PATCHED WITH UL AND FM APPROVED FIREPROOFING TO MATCH EXISTING.</li><li>DO NOT RUN PIPING OVER ELECTRICAL EQUIPMENT. MAINTAIN IN 3'-0" CLEARANCE IN FRONT. COORDINATE WITH ELECTRICAL PLANS.</li></ol>		
EQUIPMENT NOTES		
<ol style="list-style-type: none"><li>BOILER FUEL OIL TRANSFER PUMP SET: SHALL BE POWERFLAME MODEL DPS-5-25, RATED AT 564 GPM AT 25 PSIG FOR #2 FUEL OIL, 1/4 HP, 208V/3PH/60HZ. SYSTEM SHALL INCLUDE DUPLEX PUMP SET, DUPLEX BASKET TYPE STRAINERS AND ALL SPECIALTIES AS SHOWN IN THE PIPING DIAGRAM ON THE PLANS AS WELL AS H-O-A SWITCH, MOTOR CONTROL CENTER, MOTOR STARTERS MOUNTED AT CONTROL PANEL. PROVIDE THE FOLLOWING FACTORY OPTIONS: DUAL OIL STRAINERS; FUSIBLE LINK WITH INLET CHECK; LOW OIL FLOW SWITCH W/ DELAY ON MAKE TIMER; FLOODED BASIN FLOAT SWITCH; 2-1/2" LIQUID FILLED DIAL PRESSURE GAUGES; 2-1/2" LIQUID FILLED CMPL. PRESSURE GAUGES; SS BRAIDED FLEXIBLE HOSE; FLOODED BASIN PROTECTION; ALARM PACKAGE INCLUDING LIGHTS, ALARM BUZZER, RELAYS, AND PUSH-BUTTON RESET/SILENCER.</li><li>HOT WATER MIXING VALVE: PROVIDE HEAT-TIMER 3-WAY VALVE AND ETV PLATINUM PLUS CONTROL PANEL WITH BAGNET. PROVIDE 120V, 20A, 1-POLE CIRCUIT. PROVIDE 24VAC POWER FROM THE CONTROL PANEL TO THE 3-WAY VALVE. PROVIDE OPTIONAL SAFETY VALVE AND BAGNET OUTPUT. VALVE AND CONTROLS SHALL BE ASSE LISTED TO BE COMPLIANT WITH BUILDING WIDE TEMPERING DEVICES FOR DOMESTIC SYSTEMS.</li><li>DOMESTIC HOT WATER RE-CIRCULATION PUMP, HWCP-182: SHALL BE BASED ON ARMSTRONG MODEL 1060-1 (SD, 100% LEAD FREE, 1.5 HP, 208-1 PHASE-60 HERTZ, 1750 RPM AND 30 GPM @ 50 FEET HEAD. FURNISH DISCONNECT SWITCH.</li><li>DOMESTIC WATER EXPANSION TANK: SHALL BE BASED ON AMTROL POTABLE WATER EXPANSION TANK MODEL ST-446C. 125 PSI MAX. PRESSURE, 33 GALLON STEEL TANK, 19" DIAMETER, 45" HIGH AND 236 POUNDS.</li><li>DOMESTIC HOT WATER HEATERS (DHW-1&amp;2): SHALL BE BASED ON AO SMITH MODEL BTHS-1000A, 120 GALLON CAPACITY, RATED FOR 882 GPH @ 100 DEG RISE, GAS FIRED, 1000 MBH INPUT, 120V/1000 HZ, SINGLE POINT ELECTRICAL CONNECTION WITH LOCAL DISCONNECT, BAGNET CAPABILITY, 3/4"x24"x80" HIGH. PROVIDE CONDENSATE NEUTRALIZING KIT AND LOCAL DISCONNECT SWITCH.</li><li>EMERGENCY GENERATOR DIESEL TANK: SHALL BE HIGHLAND TANK DOUBLE WALL TYPE I ABOVE GROUND 15,000 GALLON HORIZONTAL STORAGE TANK WITH 20% OVERFILL PROTECTION TANK CHAMBER, CARBON STEEL CONSTRUCTION, 120" UL STYLE SADDLES, FREESTANDING STAIRS WITH YELLOW EPOXY, 24" CATWALK WITH HANDRAIL, AND FIBERGLASS GRATING. REFER TO SPECIFICATION SECTION 221323 FOR COMPLETE DETAILS AND ACCESSORIES.</li><li>FLOOR DRAIN (FD-1): SHALL BE WADE RW-1210-27 WITH CAST IRON BODY, CAST IRON DRAINAGE FLANGE, SEDIMENT BUCKET, FLASHING COLLAR, 4" PIPE SIZE, 12" ROUND HEAVY DUTY CAST IRON GRATE WITH SEDIMENT STRAINER.</li><li>HEAT TRACING: SHALL BE BASED ON NVENT RAYCHEM HEAT TRACING FOR LOW MAINTENANCE OF FUEL LINES. SKL2-CRCT TRACE SELF-REGULATING HEATING CABLE SYSTEM, RATED AT 208V/1000HZ, 5 WATTS/FT, 30 AMP PER CIRCUIT. LOCATE RTD ON AN ABOVE-GRADE SECTION OF PIPING OPPOSITE OF HEATER CABLE PLACEMENT. PROVIDE THERMOSTAT - MODEL OTSF-1 SINGLE POINT HEAT-TRACING CONTROL SYSTEM WITH ADJUSTABLE SET POINTS, INTEGRATED GROUND FAULT PROTECTION AND POWER CONTROL PANEL, MODEL ECW-GF. HEAT TRACING SHALL EXTEND THE ENTIRE LENGTH OF PIPE AND BE LOCATED ON BOTTOM SECTION OF PIPING. THE CONTRACTOR SHALL PROVIDE THE NUMBER OF CIRCUITS REQUIRED FOR EACH RUN OF PIPE AS REQUIRED TO PROPERLY TRACE EACH SEGMENT OF PIPE. LIMIT LENGTH AS PER MANUFACTURER'S SPECIFICATIONS. PROVIDE AN ALARM SIGNAL GENERATED BY THE HEAT TRACE PANEL TO THE BUILDING BMS SYSTEM. PROVIDE THE FOLLOWING SPECIALTIES FOR A SYSTEM:<ul style="list-style-type: none"><li>ADJUSTABLE TEMPERATURE SENSOR, ARRANGED TO ENERGIZE HEAT TRACING @ 40°F.</li><li>POWER AND END SEAL KIT(S) AS REQUIRED.</li><li>SPLICE AND TEE KIT(S) WITH END SEAL AS REQUIRED.</li><li>"ELECTRONIC TRACED" LABEL INSTALLED EVERY 10' O.C.</li><li>GLASS CLOTH ADHESIVE - FOR METAL PIPE.</li><li>ALL MOUNTING BRACKETS AND HARDWARE.</li><li>CONTROL PANEL IN NEMA 4X RATED ENCLOSURE MOUNTED ON UNISTRUT STAND.</li></ul>THE SYSTEM SHALL BE UL LISTED AND FM APPROVED. ALL NEW EXPOSED FUEL OIL PIPING SHALL BE HEAT TRACED.</li><li>FUEL OIL FILTRATION AND WATER REMOVAL TREATMENT SYSTEM: SHALL BE CRITICAL FUEL SYSTEMS, MODEL FMEZ1220. EQUIPMENT SHALL BE HOUSED IN A NEMA-4X ENCLOSURE MOUNTED TO THE CONCRETE EQUIPMENT PAD. INSTALL ALL EQUIPMENT AS PER MANUFACTURERS' INSTRUCTIONS.</li><li>WATER METER: SHALL BE BADGER METER MODMAG M40000. ELECTROMAGNETIC FLOW METER. METER SHALL BE LINE SIZE WITH DIGITAL AND ANALOG OUTPUTS, STAINLESS STEEL ELECTRODE, DIRECT DETECTOR MOUNT.</li><li>WATER HAMMER ARRESTOR: SHALL BE SIMILAR TO WATTS SERIES 15M2, PISTON TYPE WITH COPPER BODY, 150 PSI WORKING PRESSURE.</li><li>COOLING TOWER BACKFLOW PREVENTOR: SHALL BE WATTS MODEL 994 REDUCED PRESSURE ZONE (LEAD FREE) BACKFLOW PREVENTER. PROVIDE NON-RISING STEM SHUTOFF GATE VALVES. ASSEMBLY SHALL BE SUITABLE FOR PRESSURES UP TO 175 PSI AND TEMPERATURES UP TO 110°F (CONSTANT) AND 140°F (INTERMITTENT). THE ASSEMBLY SHALL HAVE SILICON SEATS AND LEAD FREE CAST COPPER SILICON ALLOY VALVE BODIES.</li><li>FUEL OIL AUTOMATIC FUSIBLE LINK SHUTOFF VALVE: SHALL BE PREFERRED UTILITIES MODEL 110 FIRE SAFETY FUEL SHUT-OFF VALVE WITH 165 DEGREE FUSIBLE LINKS.</li><li>WATER SOFTENER SYSTEM: SHALL BE CULLIGAN MODEL CSM-3NC DUPLEX VERTICAL PRESSURE TYPE WATER SOFTENER SYSTEM. PEAK FLOW OF 210 GPM @ 25 PSI LOSS. MINIMUM FLOW OF 5 GPM. MAX CAPACITY OF 300 KGR AT 150 LBS SALT. MAX SALT LOAD OF 1400 LBS, 150 LBS/REGEN. 120V/1000HZ. CONTRACTOR SHALL PERFORM WATER SAMPLING AND TESTING AND SHALL CONFIRM EQUIPMENT PERFORMANCE AND CHEMICAL REQUIREMENTS WITH THE MANUFACTURER. PROVIDE WATER TEST REPORT TO THE ENGINEER FOR RECORD.</li></ol>		
COMMISSIONING SCOPE NOTES		
<ol style="list-style-type: none"><li>REFER TO SPECIFICATION SECTION 19113 FOR GENERAL CX REQUIREMENTS, AND SECTION 220800 FOR COMMISSIONING OF PLUMBING SYSTEMS. THE OWNER SHALL HIRE A THIRD PARTY COMMISSIONING AGENT.</li><li>PRIOR TO COMMISSIONING, THE CONTRACTOR SHALL PROVIDE A STATEMENT CONFIRMING THAT ALL SYSTEMS ARE FULLY OPERATIONAL AND ALL PRE-FUNCTIONAL TESTS AND CHECKS LISTED BELOW HAVE BEEN SUCCESSFULLY COMPLETED. SUBMIT A COPY OF ALL CHECK SHEETS FOR ENGINEER REVIEW AND APPROVAL.</li><li>PRE-FUNCTIONAL TESTS AND CHECKS (PREREQUISITES FOR COMMISSIONING):  THE CONTRACTOR SHALL PERFORM THE FOLLOWING INCLUDING BUT NOT LIMITED TO -<ul style="list-style-type: none"><li>ENSURE THAT ALL SUBMITTALS ARE COMPLETED AND APPROVED BY ENGINEER AND COMMISSIONING AGENT.</li><li>CERTIFY THAT ALL SYSTEMS TO BE COMMISSIONED, SUBSYSTEMS AND EQUIPMENT HAVE BEEN INSTALLED, CALIBRATED AND STARTED, ACCORDING TO THE CONTRACT DOCUMENTS COMPLETE. ALL MANUFACTURER STARTUP REQUIREMENTS.</li><li>CERTIFY THAT ALL RELEVANT INSTRUMENTATION AND CONTROL SYSTEMS HAVE BEEN COMPLETED AND CALIBRATED. ARE OPERATING ACCORDING TO CONTRACT DOCUMENTS; AND THAT PRETEST SET POINTS HAVE BEEN RECORDED.</li><li>SET SYSTEMS, SUBSYSTEMS AND EQUIPMENT TO OPERATING MODE TO BE TESTED (E.G., NORMAL, SHUT DOWN, NORMAL AUTO POSITION, NORMAL MANUAL POSITION, AND ALARM CONDITIONS).</li><li>VERIFY EACH OF THE SYSTEMS ONCE IT IS OPERATING IN A STEADY STATE CONDITION. REFER TO THE SEQUENCE OF OPERATIONS.</li><li>INSPECT AND VERIFY THE POSITION OF EACH DEVICE AND INTERLOCK IDENTIFIED ON CHECKLISTS. SIGN OFF EACH ITEM AS ACCEPTABLE OR FAILED. REPEAT THIS TEST FOR EACH OPERATING CYCLE THAT APPLIES TO SYSTEM BEING TESTED.</li><li>SIMULATE CONDITIONS REQUIRED IN ORDER TO TEST ALL SAFETY CUTOUPS, ALARMS AND INTERLOCKS WITH LIFE SAFETY SYSTEMS DURING EACH MODE OF OPERATION WHEN APPLICABLE.</li><li>ANNOTATE CHECKLIST OR DATA SHEET WHEN A DEFICIENCY IS OBSERVED.</li><li>VERIFY EQUIPMENT INTERFACE WITH MONITORING AND CONTROL SYSTEM.</li></ul></li><li>AFTER PRE-FUNCTIONAL TESTING IS COMPLETE, THE CONTRACTOR SHALL PERFORM FUNCTIONAL TESTING IN THE PRESENCE OF THE COMMISSIONING AGENT FOR THE SYSTEMS LISTED BELOW IN ACCORDANCE WITH THE COMMISSIONING SPECIFICATIONS:<ul style="list-style-type: none"><li>HOT WATER HEATERS</li><li>HOT WATER CIRCULATION PUMPS</li><li>FUEL OIL PUMPS &amp; SYSTEM</li><li>GENERATOR FUEL SYSTEM / ALARMS / FUEL FILTRATION SYSTEM</li></ul></li><li>AFTER FUNCTIONAL TESTING, THE COMMISSIONING AGENT (CX) SHALL ISSUE A REPORT OF TEST RESULTS AND DOCUMENT ANY DEFICIENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTION OF ALL DEFICIENCIES. THE CONTRACTOR SHALL SEND A WRITTEN RESPONSE TO THE OWNER/ENGINEER/CX AGENT THAT AN OPEN ISSUE HAS BEEN RECTIFIED. THE DEFICIENCY SHALL NOT BE CONSIDERED RESOLVED UNTIL THE APPROPRIATE RETESTING IS PERFORMED WITH THE CX AGENT.</li><li>PRIOR TO TURNOVER (OWNER ACCEPTANCE), A COMPLETE AND SUCCESSFUL DEMONSTRATION OF ALL SYSTEM OPERATING FUNCTIONS AND ALARMS SHALL BE PERFORMED BY THIS CONTRACTOR IN THE PRESENCE OF THE OWNERS REPRESENTATIVE AND COMMISSIONING AGENT.</li><li>IN ADDITION TO THE ABOVE, THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE FOLLOWING:<ul style="list-style-type: none"><li>PARTICIPATE IN MAINTENANCE ORIENTATION AND INSPECTION MEETING.</li><li>PARTICIPATE IN PROCEDURES MEETING FOR TESTING.</li><li>EXECUTE INSTALLATION PRE-FUNCTIONAL CHECK SHEETS.</li><li>SUPPORT FUNCTIONAL TESTING WITH QUALIFIED TECHNICIANS.</li><li>RESPOND TO CX DEFICIENCIES IN ACCORDANCE WITH OWNER SCHEDULE.</li><li>PARTICIPATE IN FINAL REVIEW/TEST ACCEPTANCE MEETING.</li><li>NOTIFY COMMISSIONING AGENT AT MINIMUM TWO WEEKS IN ADVANCE OF ANY TESTING.</li></ul></li></ol>		

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**ADJACENT BUILDING D**  
**PLUMBING DEMOLITION UNDERGROUND**  
SCALE: 1/4" = 1'-0"

NOTE:  
UNDERGROUND PIPING IS APPROXIMATE. PRIOR TO TRENCHING FLOOR, CONTRACTOR SHALL FIELD VERIFY ROUTING OF UNDERGROUND PIPING. REFER TO GC PLANS FOR ALL TRENCHING REQUIRED FOR DEMOLITION OF UNDERGROUND PIPING.

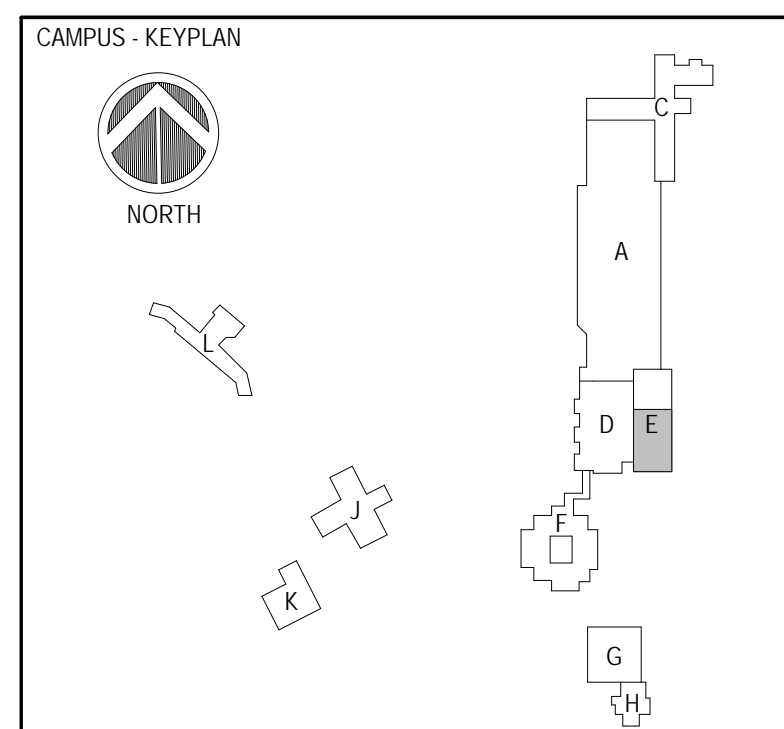
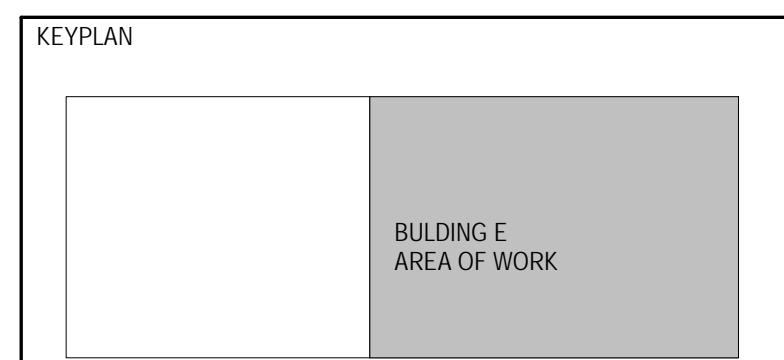
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1	ISSUED FOR BID	11/01/2021

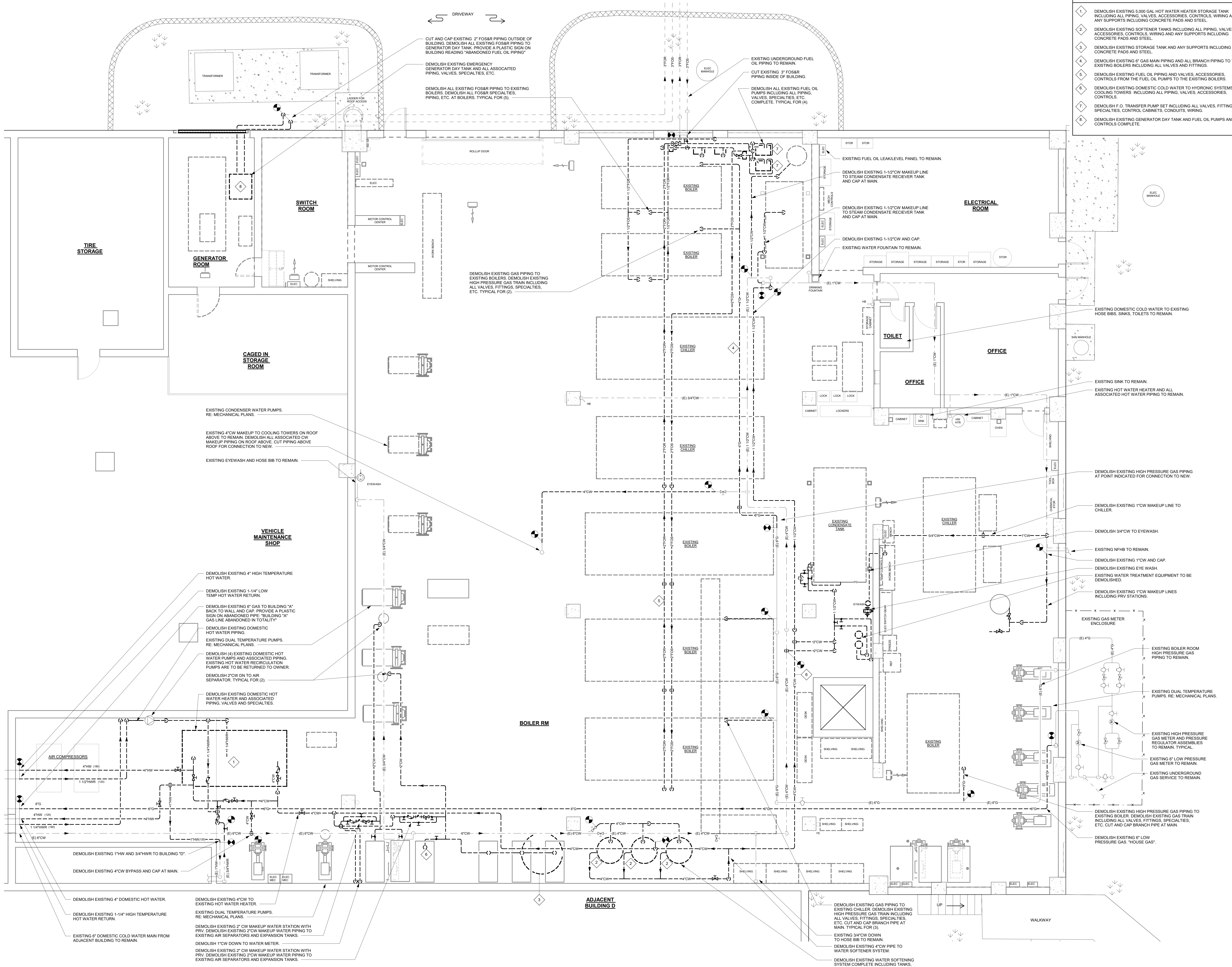
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**PROJECT**  
CAPITAL PROJECT 4466  
BUILDING E UTILITY PLANT  
RENOVATION & IMPROVEMENTS  
DR. ROBERT L. YEAGER HEALTH CENTER  
50 SANATORIUM ROAD,  
POMONA, NY 10970

**DRAWING TITLE**  
PLUMBING DEMOLITION  
UNDERGROUND

SCALE 1/4" = 1'-0"	DRAWN BY JRT	PROJECT NO. NRCK0016.00
CHECKED BY RS	DATE 04-28-2020	DRAWING NO. <b>P1.0</b>





PLUMBING DEMOLITION NOTES

- DEMOLISH EXISTING 5,000 GAL HOT WATER HEATER STORAGE TANK INCLUDING ALL PIPING, VALVES, ACCESSORIES, CONTROLS, WIRING AND ANY SUPPORTS INCLUDING CONCRETE PADS AND STEEL.
- DEMOLISH EXISTING SOFTENER TANKS INCLUDING ALL PIPING, VALVES, ACCESSORIES, CONTROLS, WIRING AND ANY SUPPORTS INCLUDING CONCRETE PADS AND STEEL.
- DEMOLISH EXISTING STORAGE TANK AND ANY SUPPORTS INCLUDING CONCRETE PADS AND STEEL.
- DEMOLISH EXISTING 6" GAS MAIN PIPING AND ALL BRANCH PIPING TO THE EXISTING BOILERS INCLUDING ALL VALVES AND FITTINGS.
- DEMOLISH EXISTING FUEL OIL PIPING AND VALVES, ACCESSORIES, CONTROLS FROM THE FUEL OIL PUMPS TO THE EXISTING BOILERS.
- DEMOLISH EXISTING DOMESTIC COLD WATER TO HYDRONIC SYSTEMS AND COOLING TOWERS INCLUDING ALL PIPING, VALVES, ACCESSORIES, CONTROLS.
- DEMOLISH F.O. TRANSFER PUMP SET INCLUDING ALL VALVES, FITTINGS, SPECIALTIES, CONTROL CABINETS, CONDUITS, WIRING.
- DEMOLISH EXISTING GENERATOR DAY TANK AND FUEL OIL PUMPS AND CONTROLS COMPLETE.

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KEYPLAN  
BUILDING E  
AREA OF WORK

CAMPUS KEYPLAN  
NORTH  
A  
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G

2	RE-ISSUED FOR BID	07/24/2022
1	ISSUED FOR BID	11/01/2021
NO.	DESCRIPTION	DATE

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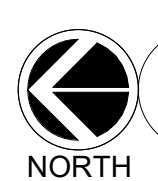
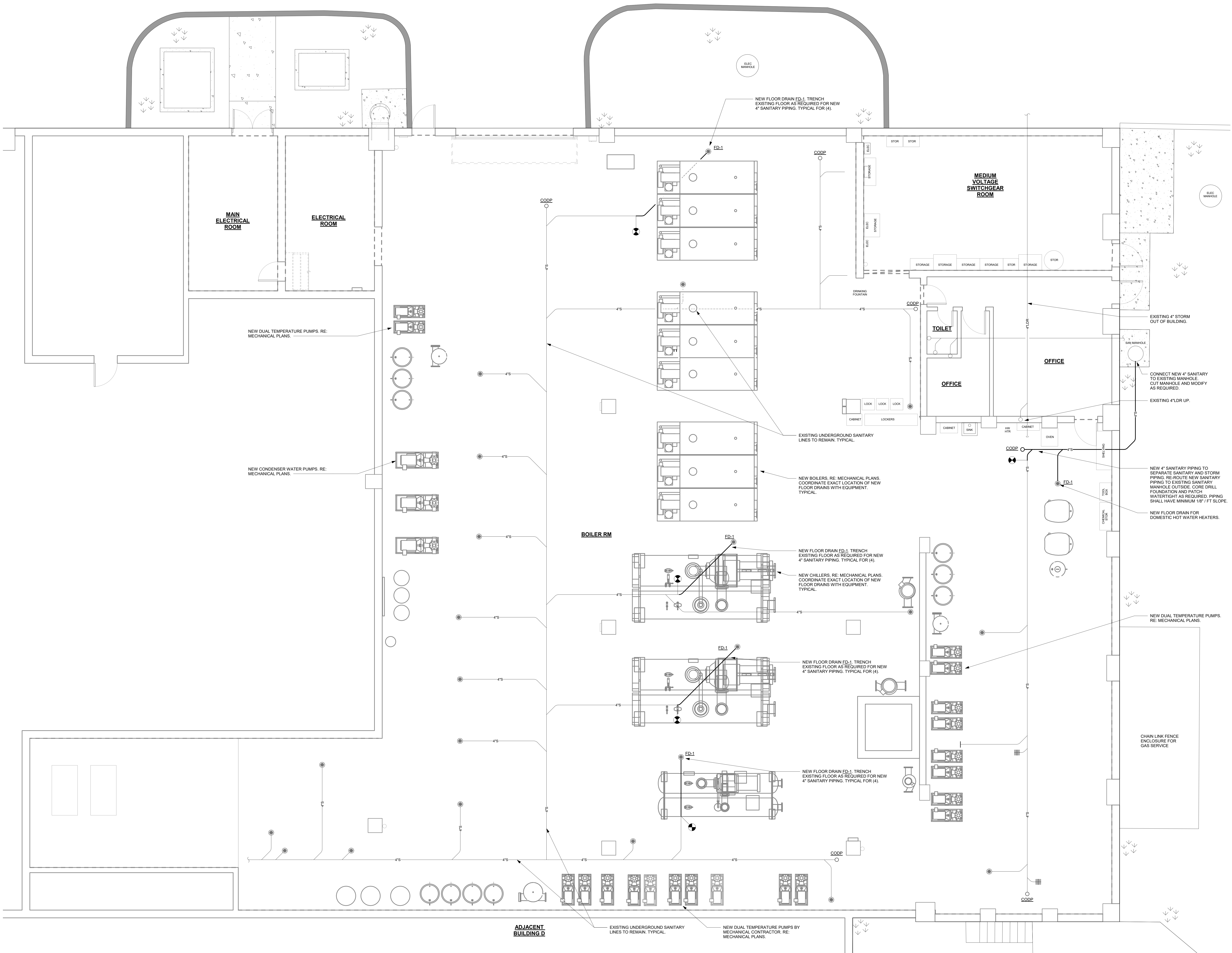
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DRAWING TITLE  
**PLUMBING DEMOLITION  
FLOOR PLAN**

SEAL  
SCALE  
1/4" = 1'-0"  
DRAWN BY  
JRT  
CHECKED BY  
RS  
DATE  
04-28-2020

PROJECT NO.  
NRCK0016.00  
DRAWING NO.  
**P1.1**

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



1

## PLUMBING NEW WORK UNDERGROUND

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

### NOTES:

1. UNDERGROUND PIPING IS APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY ROUTING OF UNDERGROUND PIPING. REFER TO GC PLANS FOR ALL TRENCHING REQUIRED FOR NEW UNDERGROUND PIPING. FLOORS SHALL BE PATCHED TO MATCH EXISTING.
2. ALL WORK IS NEW UNLESS OTHERWISE NOTED.
3. COORDINATE ALL NEW UNDERGROUND PIPING WITH EXISTING TO ENSURE MINIMUM 1/8" / FT SLOPE.

CLIENT

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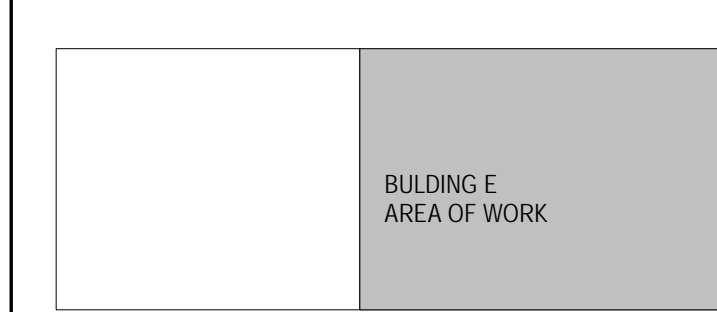
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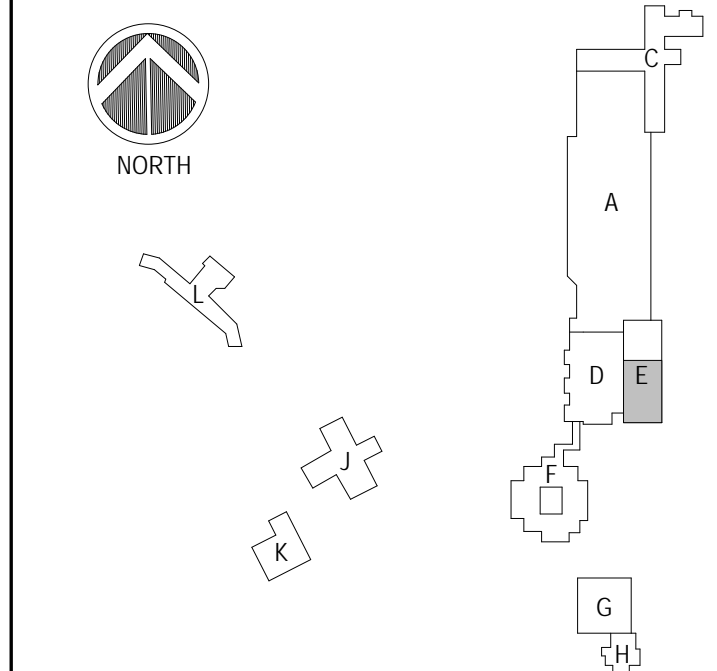
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KEYPLAN



CAMPUS KEYPLAN



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DRAWING TITLE

**PLUMBING NEW WORK UNDERGROUND**

SEAL

SCALE

1/4" = 1'-0"

DRAWN BY

JRT

CHECKED BY

RS

DATE

04-28-2020

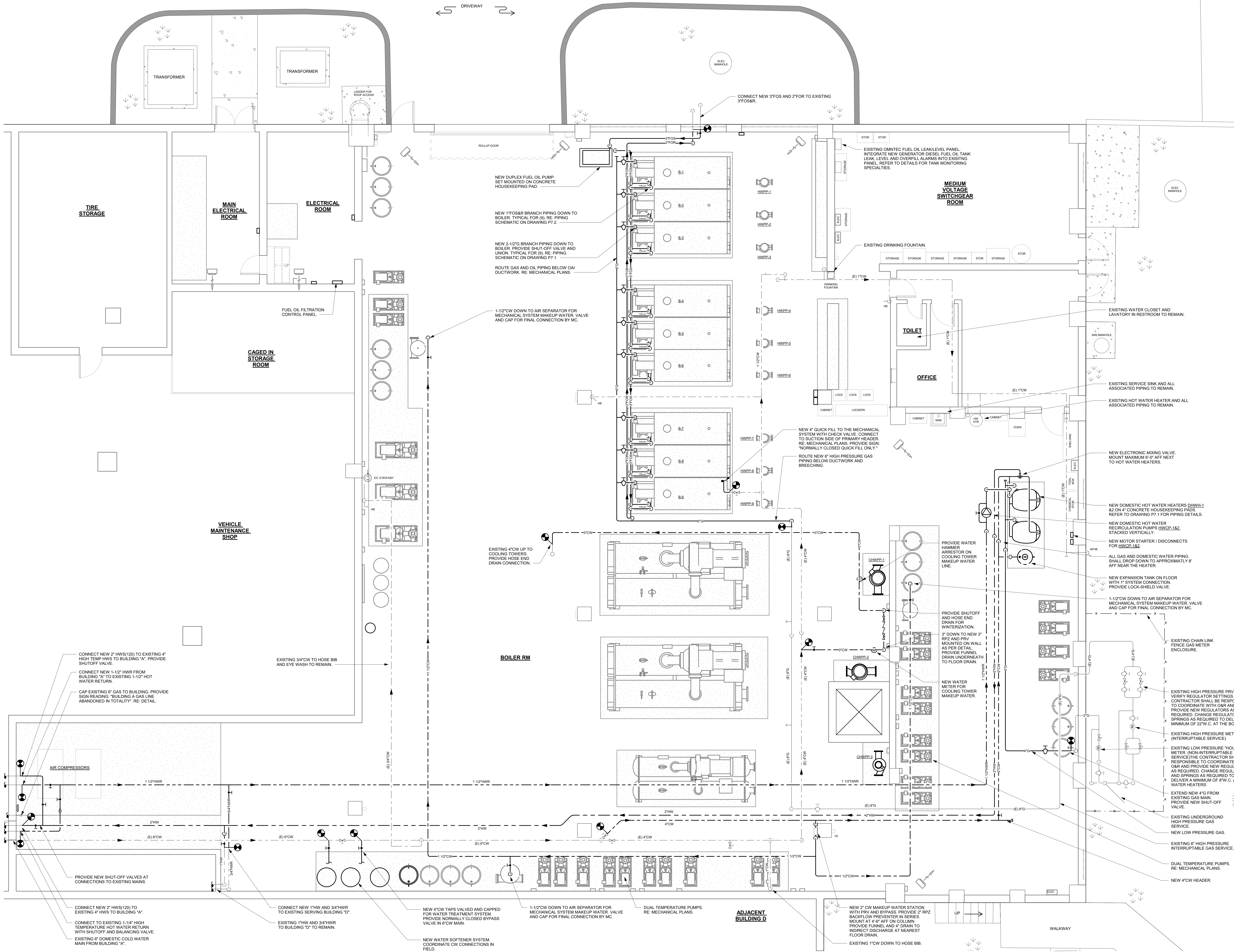
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**PLUMBING NEW WORK FLOOR PLAN**  
SCALE: 1/4" = 1'-0"

NOTES:  
1. ALL WORK IS NEW UNLESS OTHERWISE NOTED.

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**KEYPLAN**  
BUILDING E AREA OF WORK

**CAMPUS KEYPLAN**  
NORTH

NO.	DESCRIPTION	DATE
2	RE-ISSUED FOR BID	07/24/2022
1	ISSUED FOR BID	11/01/2021

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**PROJECT**  
CAPITAL PROJECT 4466  
BUILDING E UTILITY PLANT  
RENOVATION & IMPROVEMENTS  
DR. ROBERT L. YEAGER HEALTH CENTER  
50 SANATORIUM ROAD,  
POMONA, NY 10970

**DRAWING TITLE**  
PLUMBING NEW WORK FLOOR PLAN

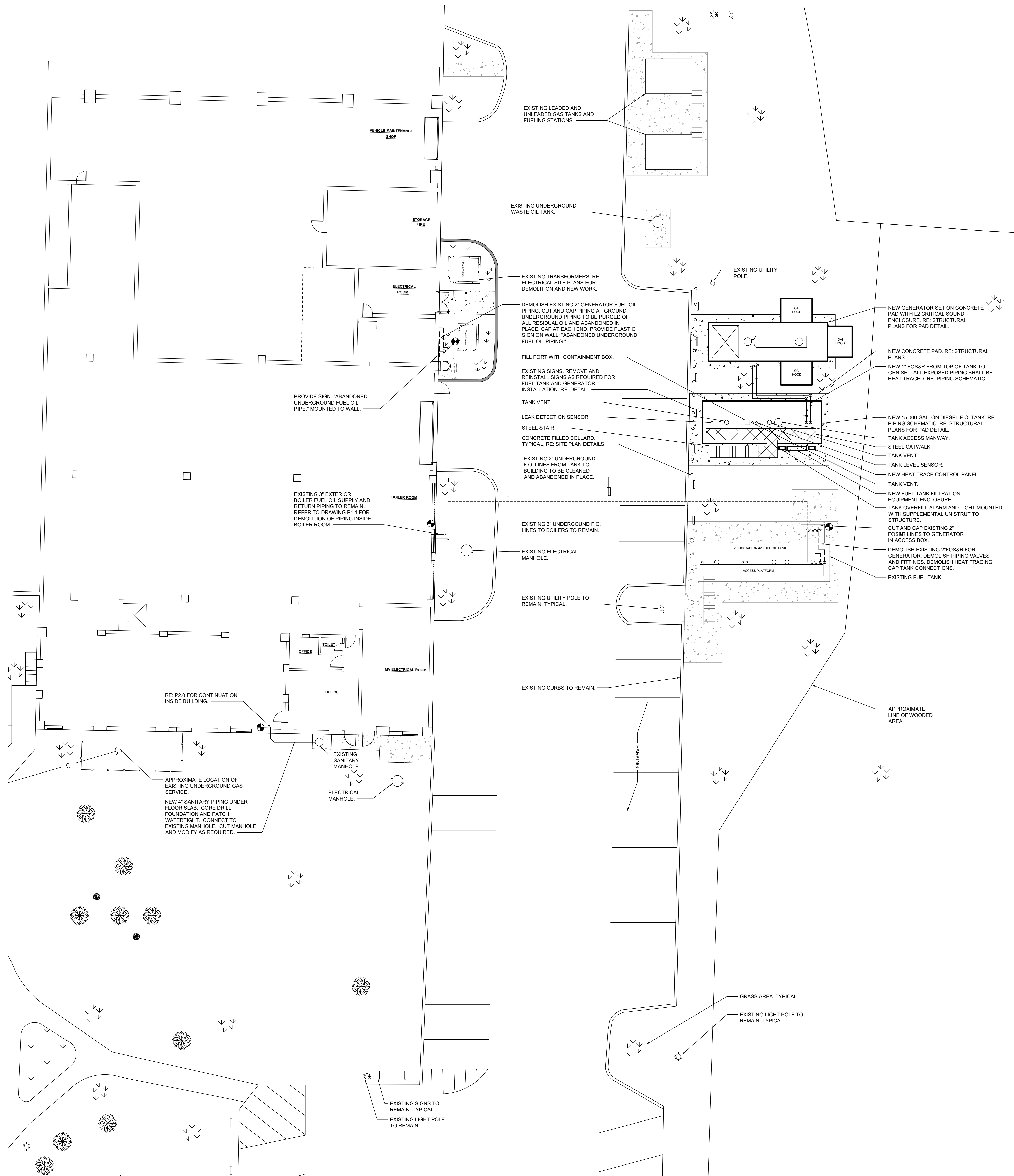
SCALE	DRAWN BY	CHECKED BY	DATE
1/4" = 1'-0"	Author	Checker	04-28-2020

**PROJECT NO.**  
NRCK0016.00

**DRAWING NO.**  
**P2.1**







1 PLUMBING SITE PLAN  
SCALE: 1" = 10'-0"

**Rockland County**  
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**KEYPLAN**

**CAMPUS - KEYPLAN**

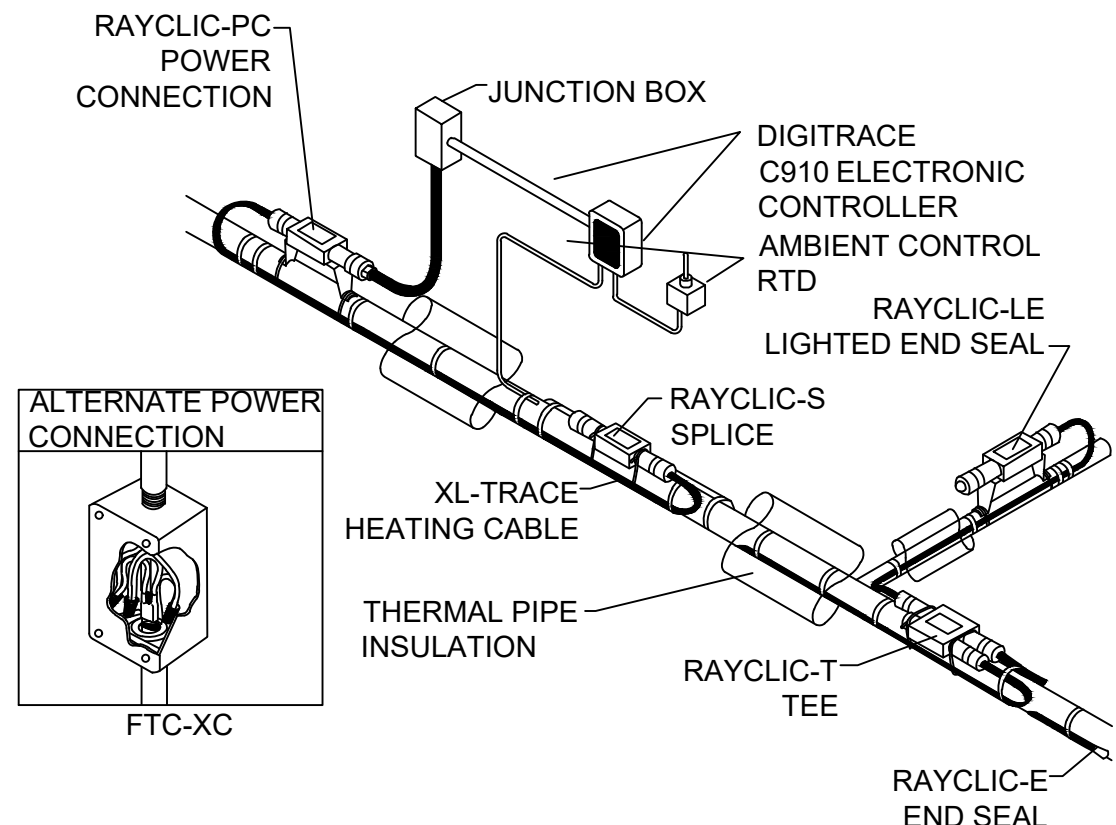
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**DRAWING TITLE**  
PLUMBING SITE PLAN

SEAL	SCALE	PROJECT NO.
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CHECKED BY RS		P3.1
DATE 04-28-2020		

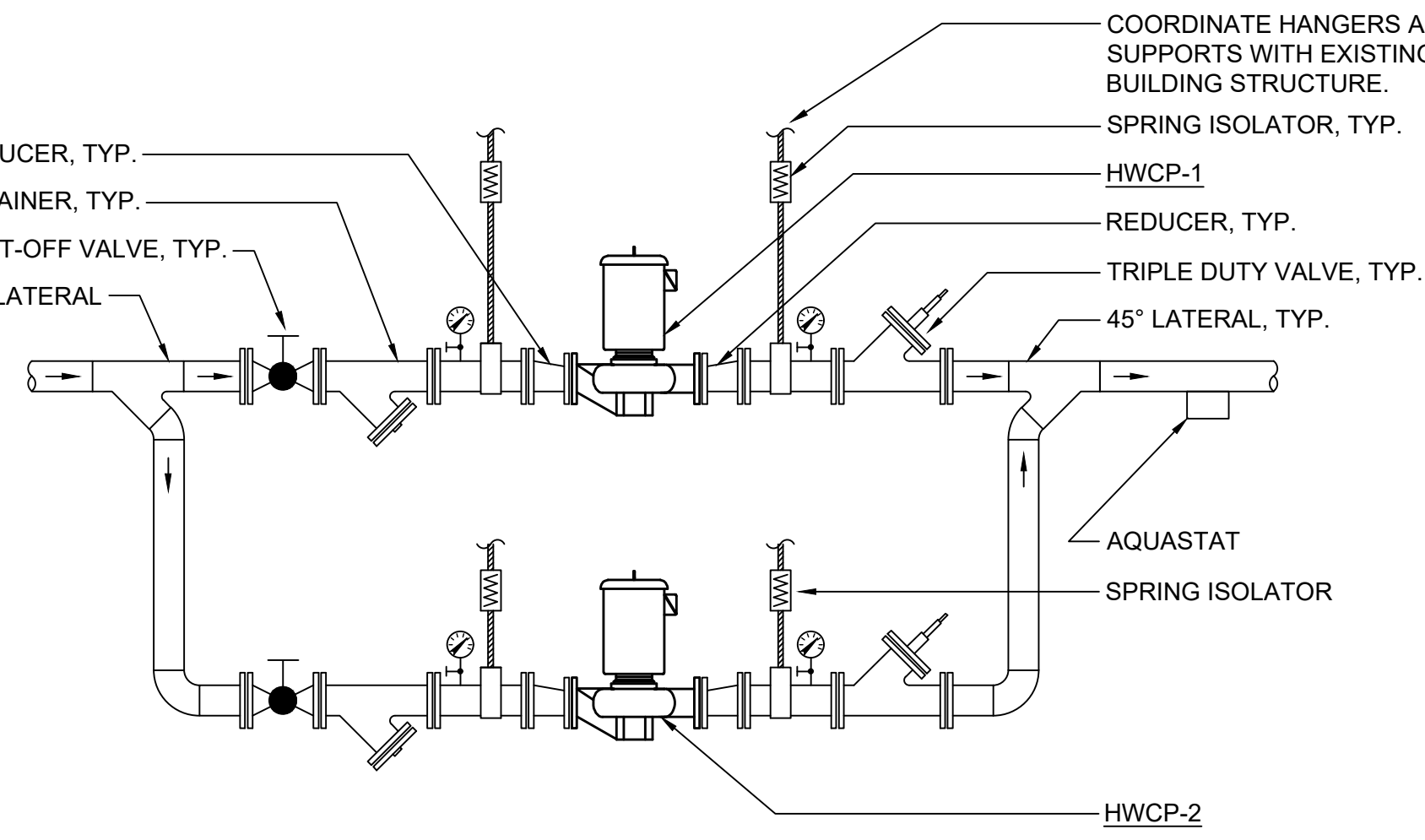


GENERAL PIPE FREEZE PROTECTION  
TYPICAL ABOVE GROUND PIPING  
INSTALLATION DETAIL

- NOTE:
1. SYSTEM BASED ON PENTAIR RAYCHEM XL TRACE.
  2. REFER TO ELECTRICAL DRAWINGS FOR POWER & CIRCUITING OF HEAT TRACE SYSTEM.
  3. ELECTRICAL HEAT TRACE CONTROLLER LOCATED IN NEMA 4X ENCLOSURE MOUNTED ON STAND NEXT TO NEW FUEL OIL TANK.

7 **HEAT TRACE SYSTEM SCHEMATIC**

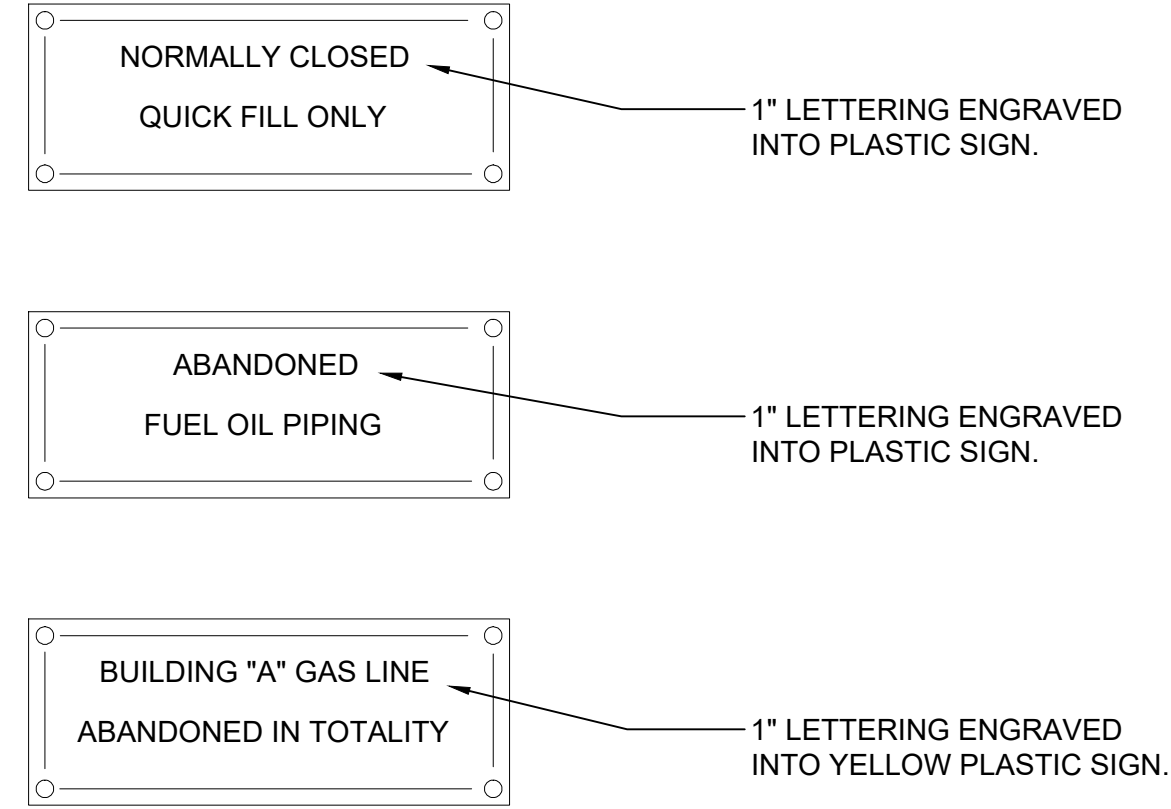
SCALE: NONE



- NOTES:
1. HANG PUMPS FROM BUILDING STRUCTURE WITH SPRING-TYPE VIBRATION ISOLATORS.
  2. NEW PIPING NEAR NEW DOMESTIC HOT WATER HEATERS SHALL BE 7'-6" AFF.

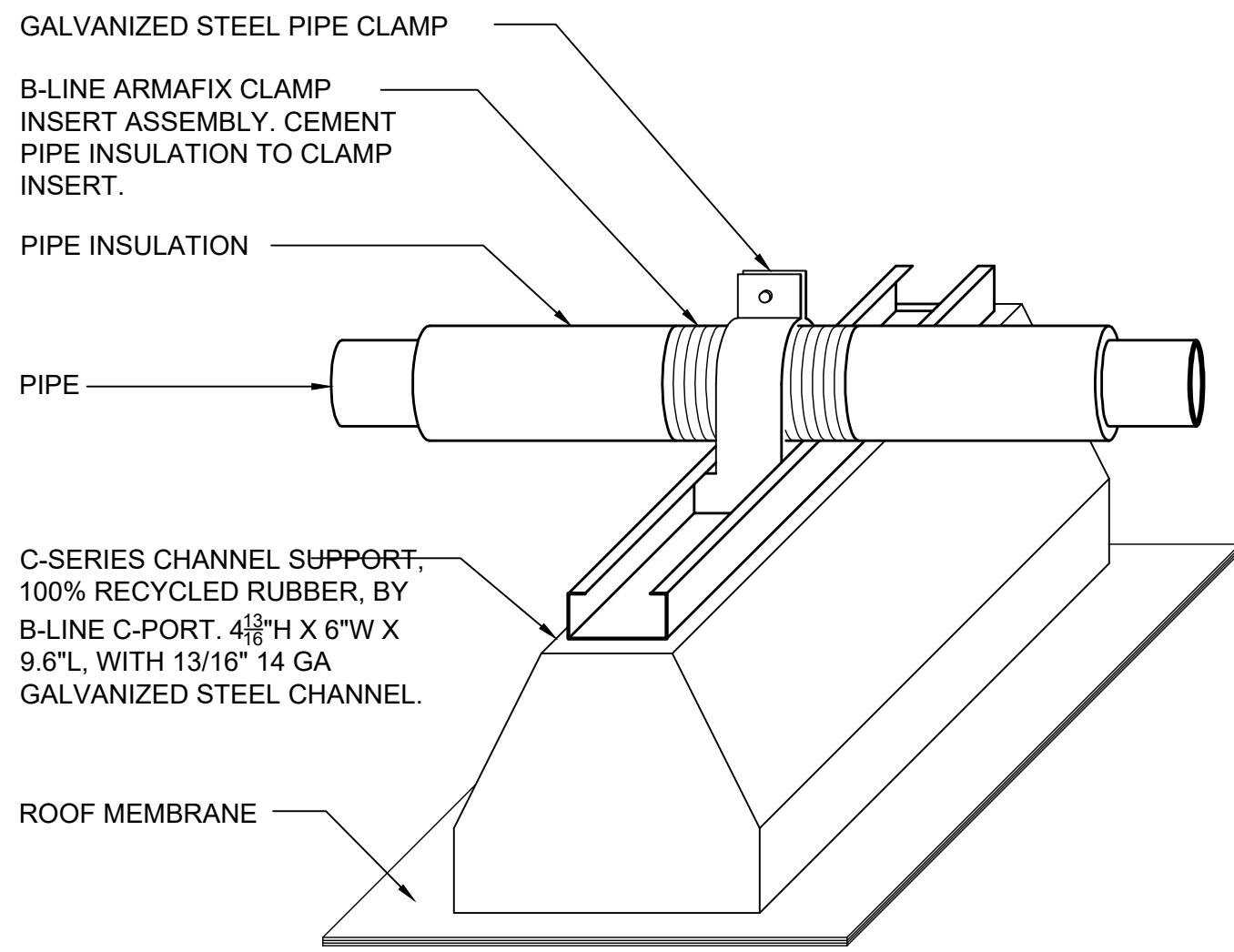
4 **INLINE DOMESTIC HOT WATER  
RECIRCULATING PUMP SCHEMATIC**

SCALE: NONE



3 **TYPICAL SIGNS**

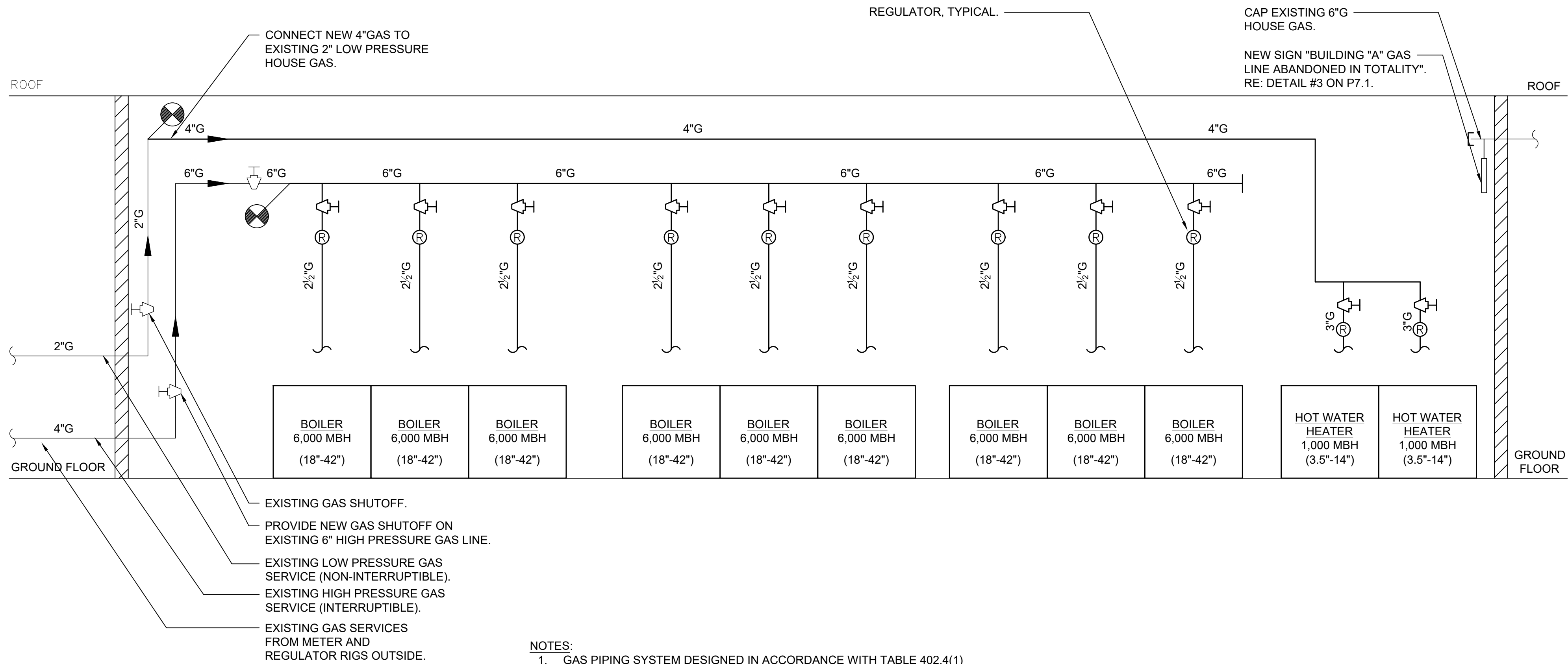
SCALE: NONE



- NOTES:
1. ALL BRACKETS, HANGERS, AND FASTENERS SHALL BE GALVANIZED STEEL.
  2. CLAMP INSERT ASSEMBLY SHALL INCLUDE GALVANIZED STEEL PIPE CLAMP, ARMAFLEX INSULATION WITH PAINTED ALUMINUM JACKET, AND INTERIOR SUPPORTS.
  3. CEMENT RUBBER SUPPORT BLOCKS TO ROOF - USE ONLY MATERIALS COMPATIBLE WITH THE ROOFING SYSTEM.

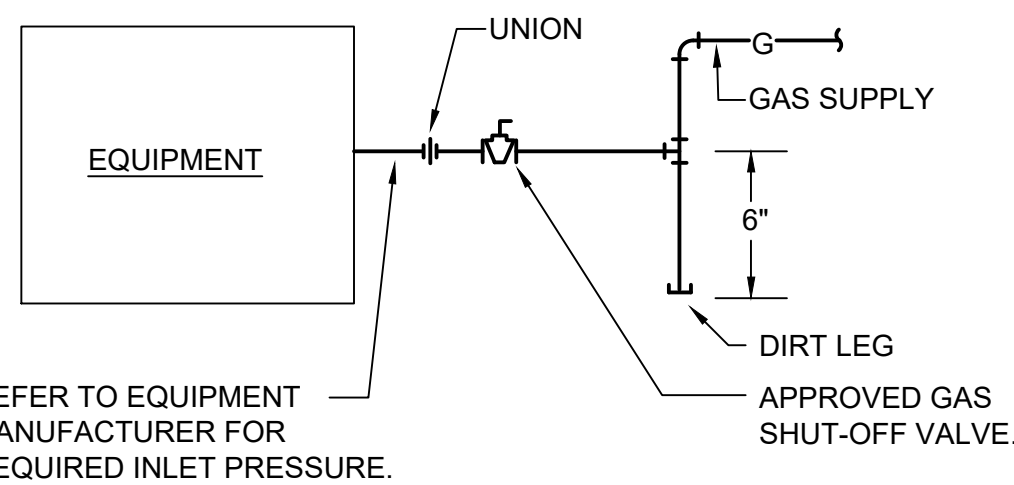
6 **ROOF PIPE SUPPORT DETAIL**

SCALE: NONE



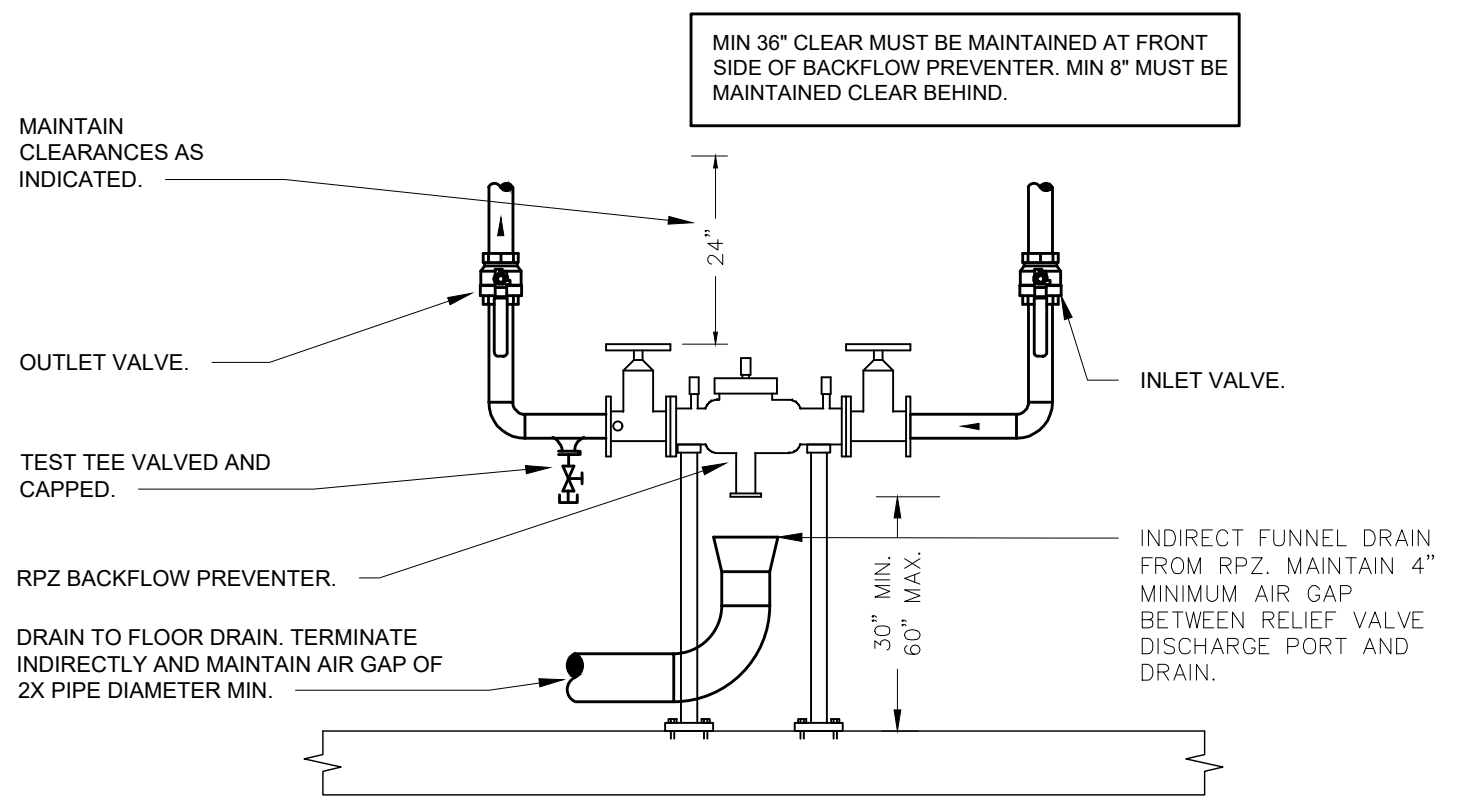
2 **PLUMBING GAS RISER SCHEMATIC**

SCALE: NONE



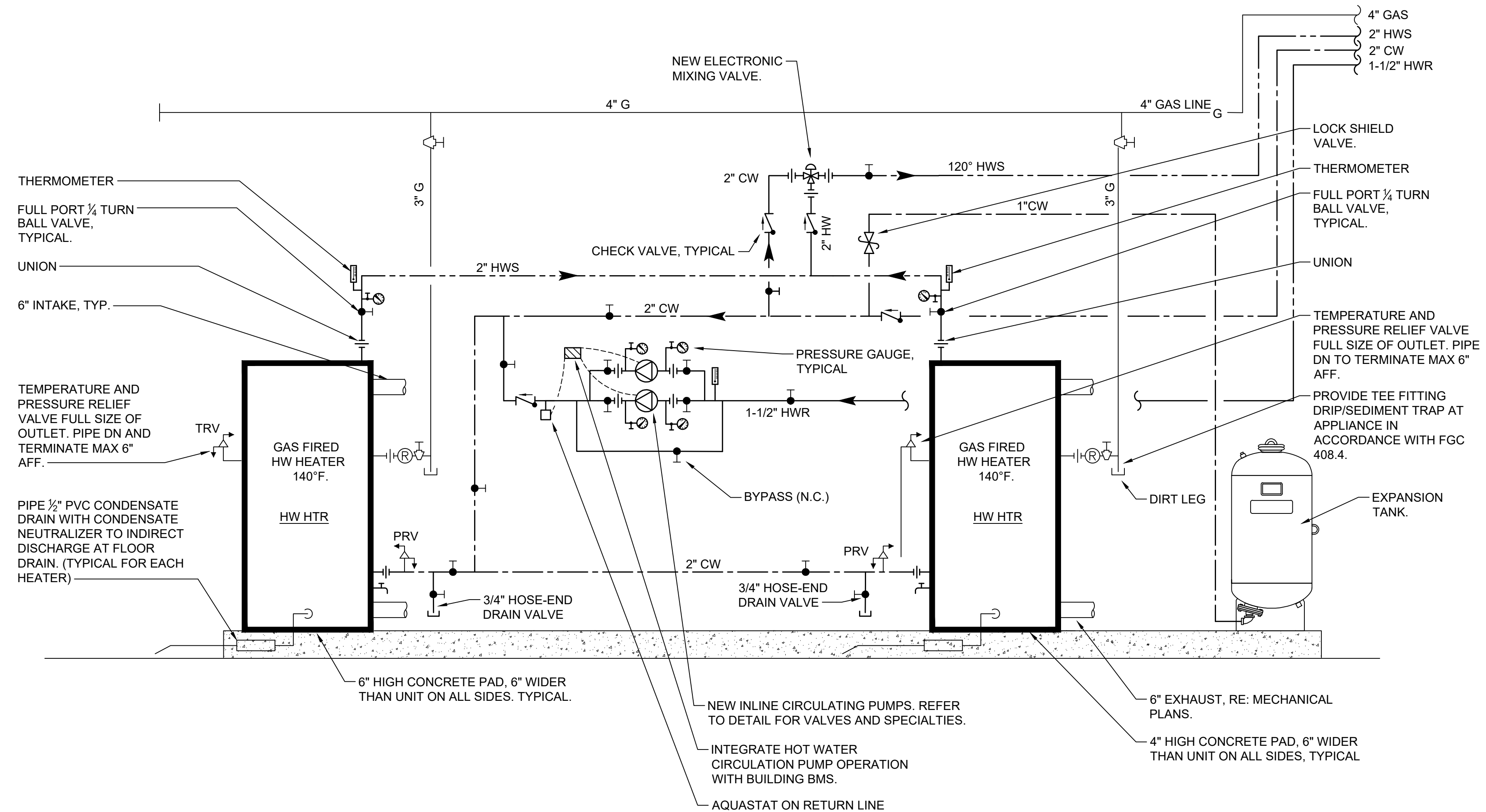
# **GAS CONNECTION SCHEMATIC**

SCALE: NONE



5 **RPZ BACKFLOW PREVENTER DETAIL**

SCALE: NONE



1 **HOT WATER HEATER SCHEMATIC**

SCALE: NONE

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KEYPLAN

CAMPUS - KEYPLAN

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DRAWING TITLE  
**PLUMBING DETAILS**

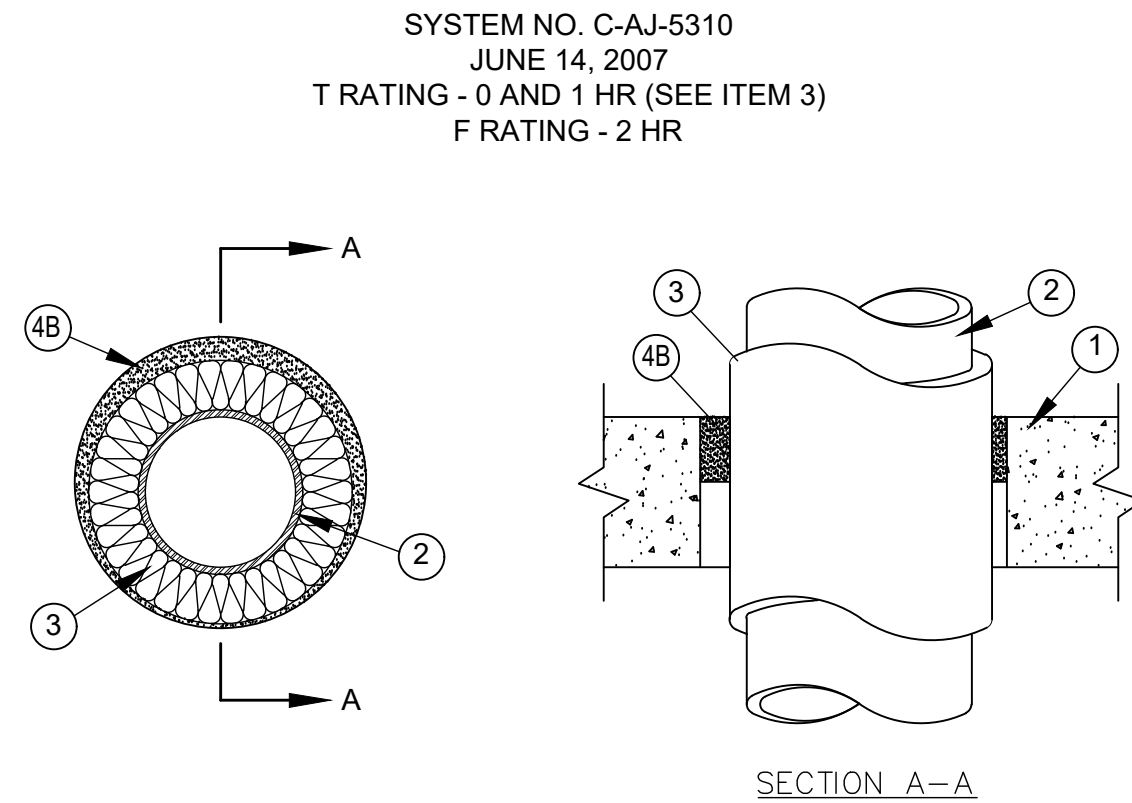
SCALE NONE	PROJECT NO. NRCK0016.00
DRAWN BY NIV	DRAWING NO.
CHECKED BY RS	<b>P7.1</b>
DATE 04-28-2020	



- NOTES:
- FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAX DIAM OF OPENING IS 26 IN.
    - SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
  - STEEL SLEEVE (OPTIONAL) - NOM 14 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY.
  - THROUGH PENETRANTS - ONE METALLIC PIPE, CONDUIT OR TUBING INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, CONDUIT OR TUBING AND PERIPHERY OF OPENING OR SLEEVE SHALL BE MIN 0 IN. (POINT CONTACT) TO MAX 2 IN. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
    - STEEL PIPE - NOM 24 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
    - IRON PIPE - NOM 24 IN. DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 24 IN DIAM (OR SMALLER) CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE.
    - CONDUIT - NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT OR NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING.
    - COPPER TUBING - NOM 6 IN. DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
    - COPPER PIPE - NOM 6 IN. DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
  - FIRESTOP SYSTEM - THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:
    - PACKING MATERIAL - MIN 4 IN. THICKNESS OF MIN 4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
    - FILL VOID OR CAVITY MATERIALS\* - CAULK OR SEALANT - MIN 1/4 IN. THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. MIN 1/4 IN. DIAM BEAD OF CAULK APPLIED TO THE PENETRANT/CONCRETE OR PENETRANT/SLEEVE INTERFACE AT THE POINT CONTACT LOCATION ON THE TOP SURFACE OF FLOOR OR BOTH SURFACES OF WALL.
- 3M COMPANY - CP 25WB+ CAULK OR FB-3000 WT SEALANT.  
(THE W RATING APPLIES ONLY WHEN FB-3000 WT IS USED.)
- \*BEARING THE UL CLASSIFICATION MARKING

6 UNINSULATED PIPE AND CONDUIT FIRE STOPPING DETAIL

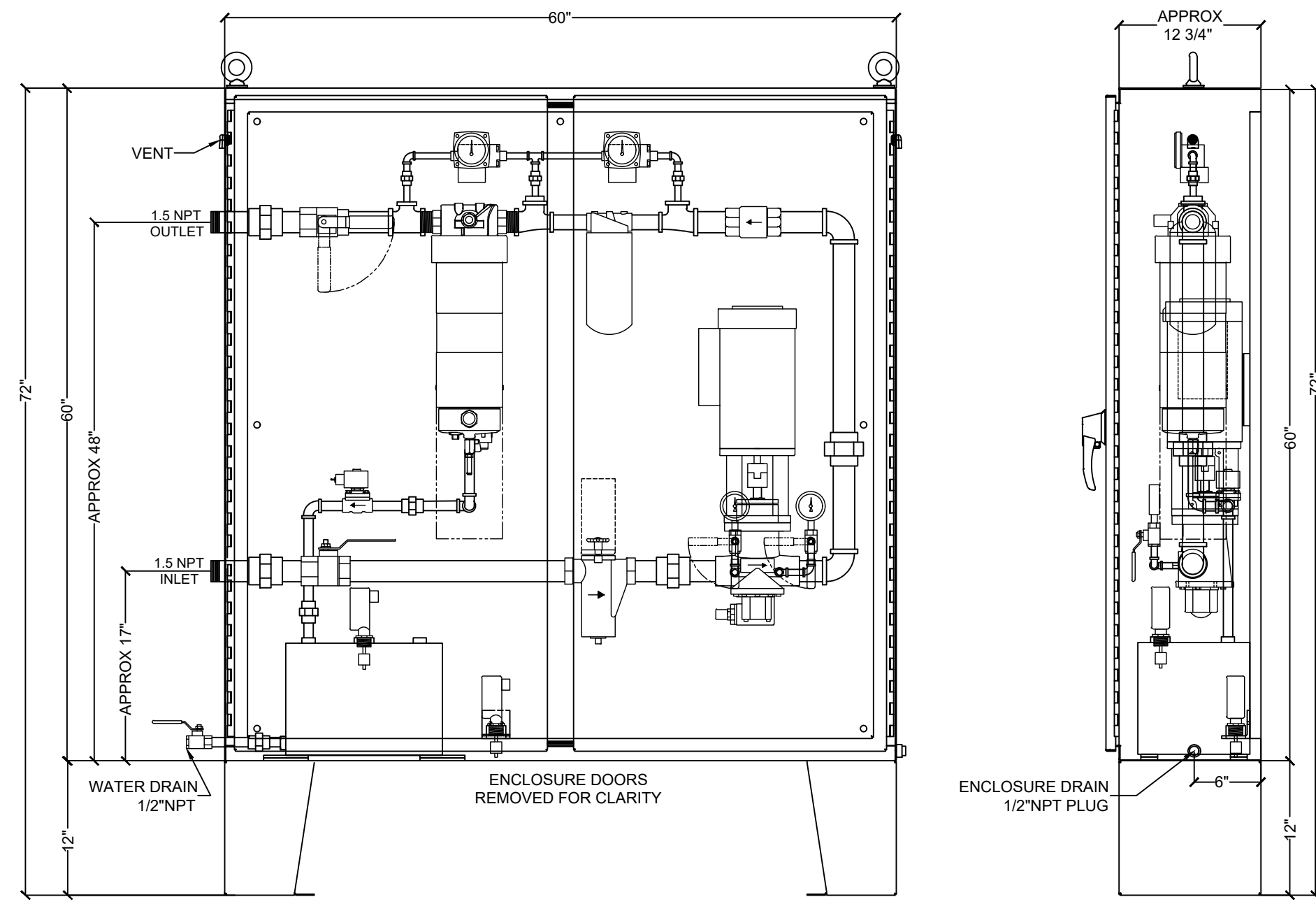
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1. FLOOR OR WALL ASSEMBLY - MIN 4-1/2 IN. (114 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600-2400 KG/M<sup>3</sup>) CONCRETE. FLOOR ASSEMBLY MAY ALSO BE CONSTRUCTED OF ANY MIN 6 IN. (152 MM) THICK UL CLASSIFIED HOLLOW-CORE PRECAST CONCRETE UNITS\*. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. DIAM OF OPENING TO BE NOM 2 IN. (51 MM) LARGER THAN OUTSIDE DIAM OF PIPE COVERING MATERIAL (ITEM 3). MAX DIAM OF OPENING 12 IN. (305 MM). MAX DIAM OF OPENING IN FLOORS CONSTRUCTED OF HOLLOW-CORE CONCRETE IS 7 IN. (178 MM).
- SEE CONCRETE BLOCKS (CAZT) AND PRECAST CONCRETE UNITS (CFTV) CATEGORIES IN FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
2. THROUGH PENETRANTS - ONE METALLIC PIPE OR TUBING TO BE INSTALLED CONCENTRICALLY OR ECCENTRICALLY WITHIN OPENING. PENETRANT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR TUBES MAY BE USED:
- STEEL PIPE - NOM 4 IN. (102 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
  - IRON PIPE - NOM 4 IN. (102 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.
  - COPPER TUBING - NOM 4 IN. (102 MM) DIAM (OR SMALLER) TYPE M (OR HEAVIER) COPPER TUBE.
  - COPPER PIPE - NOM 4 IN. (102 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. PIPE COVERING - NOM 3 IN. (76 MM) THICK (OR LESS) HOLLOW CYLINDRICAL HEAVY DENSITY GLASS FIBER UNITS JACKETED ON THE OUTSIDE WITH AN ALL SERVICE JACKET. LONGITUDINAL JOINTS SEALED WITH METAL FASTENERS OR FACTORY-APPLIED SELF-SEALING LAP TAPE. TRANSVERSE JOINTS SECURED WITH METAL FASTENERS OR WITH BUTT TAPE SUPPLIED WITH PRODUCT. ANNULAR SPACE BETWEEN THE PIPE COVERING AND PERIPHERY OF OPENING OR SLEEVE SHALL BE MIN 3/8 IN. (10 MM) TO MAX 1-1/2 IN. (38 MM). WHEN PIPE COVERING MATERIAL THICKNESS IS LESS THAN 3 IN. (76 MM), T RATING IS 0 HR.
- SEE PIPE AND EQUIPMENT COVERING - MATERIALS (BRGU) CATEGORY IN THE BUILDING MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS. ANY PIPE COVERING MATERIAL MEETING THE ABOVE SPECIFICATIONS AND BEARING THE UL CLASSIFICATION MARKING WITH A FLAME SPREAD INDEX OF 25 OR LESS AND A SMOKE DEVELOPED INDEX OF 50 OR LESS MAY BE USED.
4. FIRESTOP SYSTEM - THE DETAILS OF THE FIRESTOP SYSTEM SHALL BE AS FOLLOWS:
- PACKING MATERIAL - (OPTIONAL, NOT SHOWN) - POLYETHYLENE BACKER ROD OR NOM 1 IN. (25 MM) THICKNESS OF TIGHTLY-PACKED MINERAL WOOL BATT OR GLASS FIBER INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL. IN FLOORS CONSTRUCTED OF HOLLOW-CORE CONCRETE, PACKING MATERIAL TO BE RECESSED FROM TOP AND BOTTOM SURFACES OF FLOOR OR SLEEVE AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
  - FORMING MATERIAL\* - AS AN ALTERNATE TO THE PACKING MATERIAL IN ITEM 5A, NOM 4 IN. (102 MM) WIDE STRIPS OF MIN 1/2 IN. (13 MM) THICK COMPRESSIBLE MAT FOLDED IN HALF LENGTHWISE AND STACKED TO A THICKNESS GREATER THAN THE WIDTH OF THE ANNULAR SPACE AND COMPRESSION-FITTED, EDGE-FIRST, TO FILL THE ANNULAR SPACE TO A MIN 2 IN. (51 MM) DEPTH. TOP OF FORMING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS NECESSARY TO ACCOMMODATE THE REQUIRED THICKNESS OF CAULK FILL MATERIAL. IN FLOORS CONSTRUCTED OF HOLLOW-CORE CONCRETE, FORMING MATERIAL TO BE RECESSED FROM TOP AND BOTTOM SURFACES OF FLOOR OR SLEEVE AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
- 3M COMPANY - FIRE BARRIER PACKING MATERIAL
- FILL VOID OR CAVITY MATERIALS\* - SEALANT - MIN 2 IN. (51 MM) THICKNESS OF SEALANT APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. IN FLOORS CONSTRUCTED OF HOLLOW-CORE CONCRETE, MIN 2 IN. (51 MM) THICKNESS OF SEALANT APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP AND BOTTOM SURFACES OF FLOOR OR SLEEVE.
- 3M COMPANY - FB-3000 WT
- \*BEARING THE UL CLASSIFICATION MARK

5 INSULATED PIPE FIRE STOPPING DETAIL

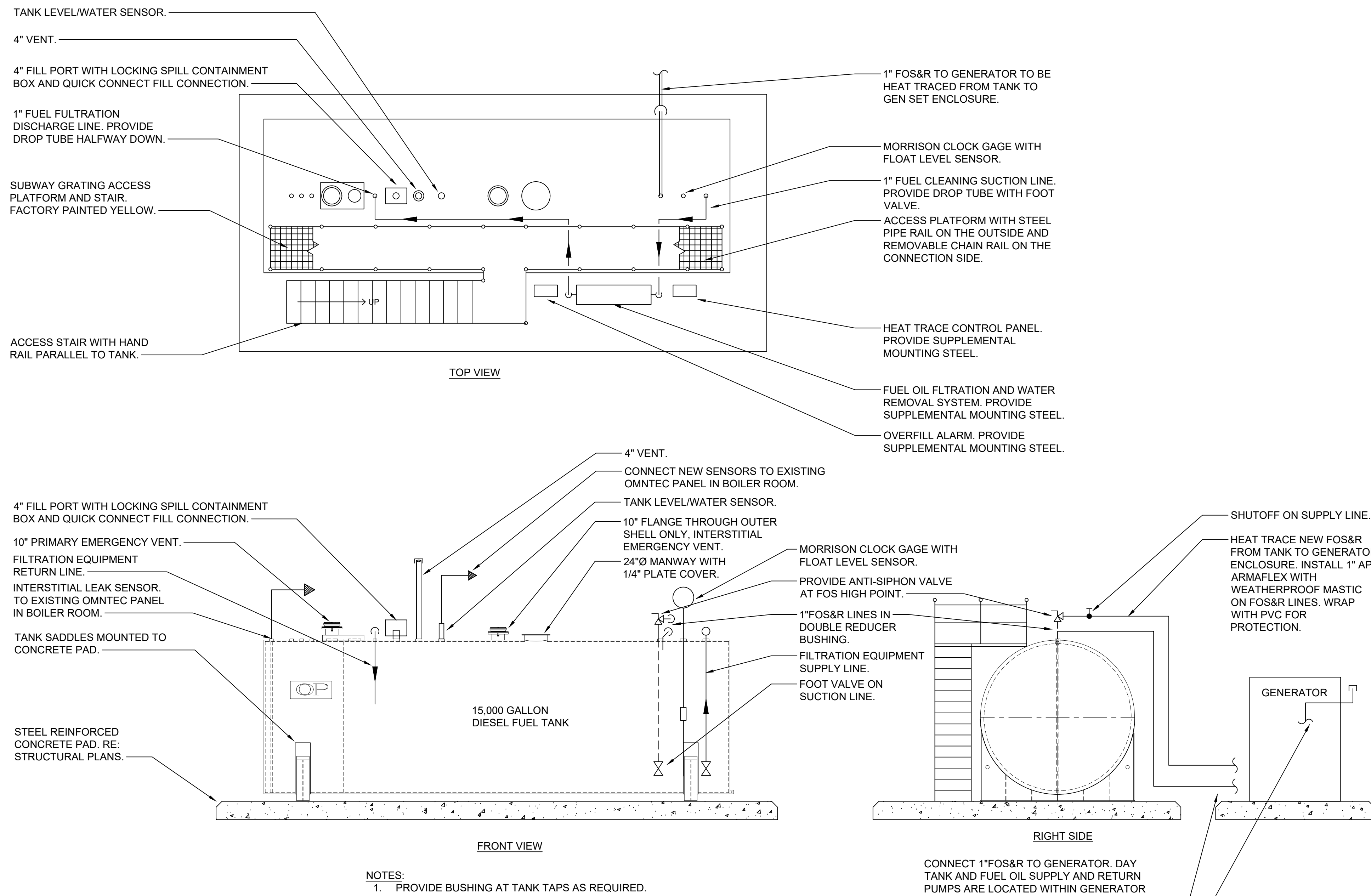
SCALE: NONE



- NOTES:
- BASED ON CRITICAL FUEL SYSTEMS MODEL FMEZ1220.
  - INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.

4 FUEL OIL FILTRATION EQUIPMENT SCHEMATIC

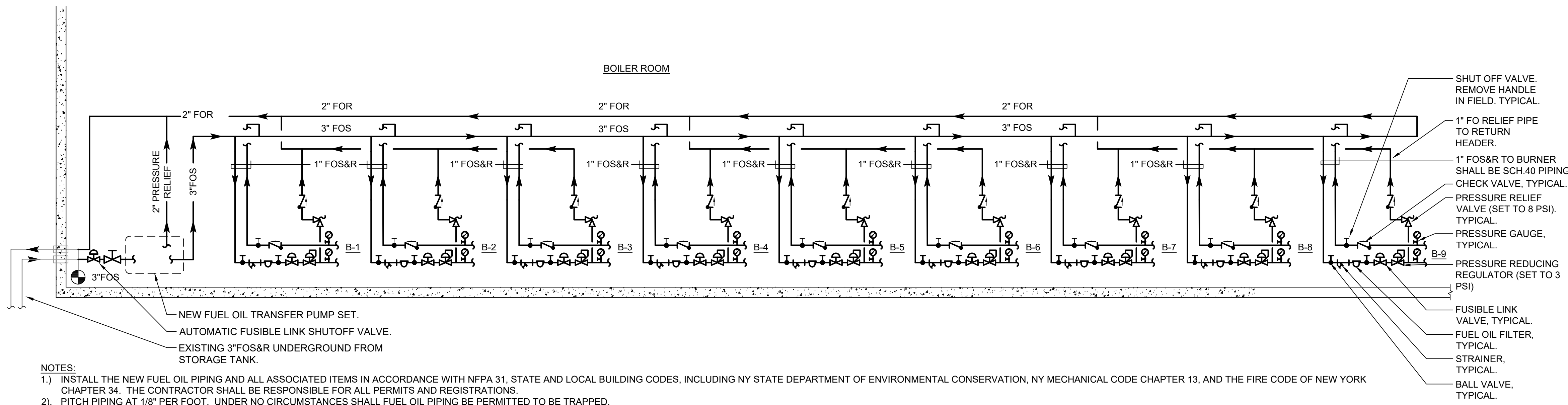
SCALE: NONE



- NOTES:
- PROVIDE BUSHING AT TANK TAPS AS REQUIRED.

2 GENERATOR FUEL TANK PIPING SCHEMATIC

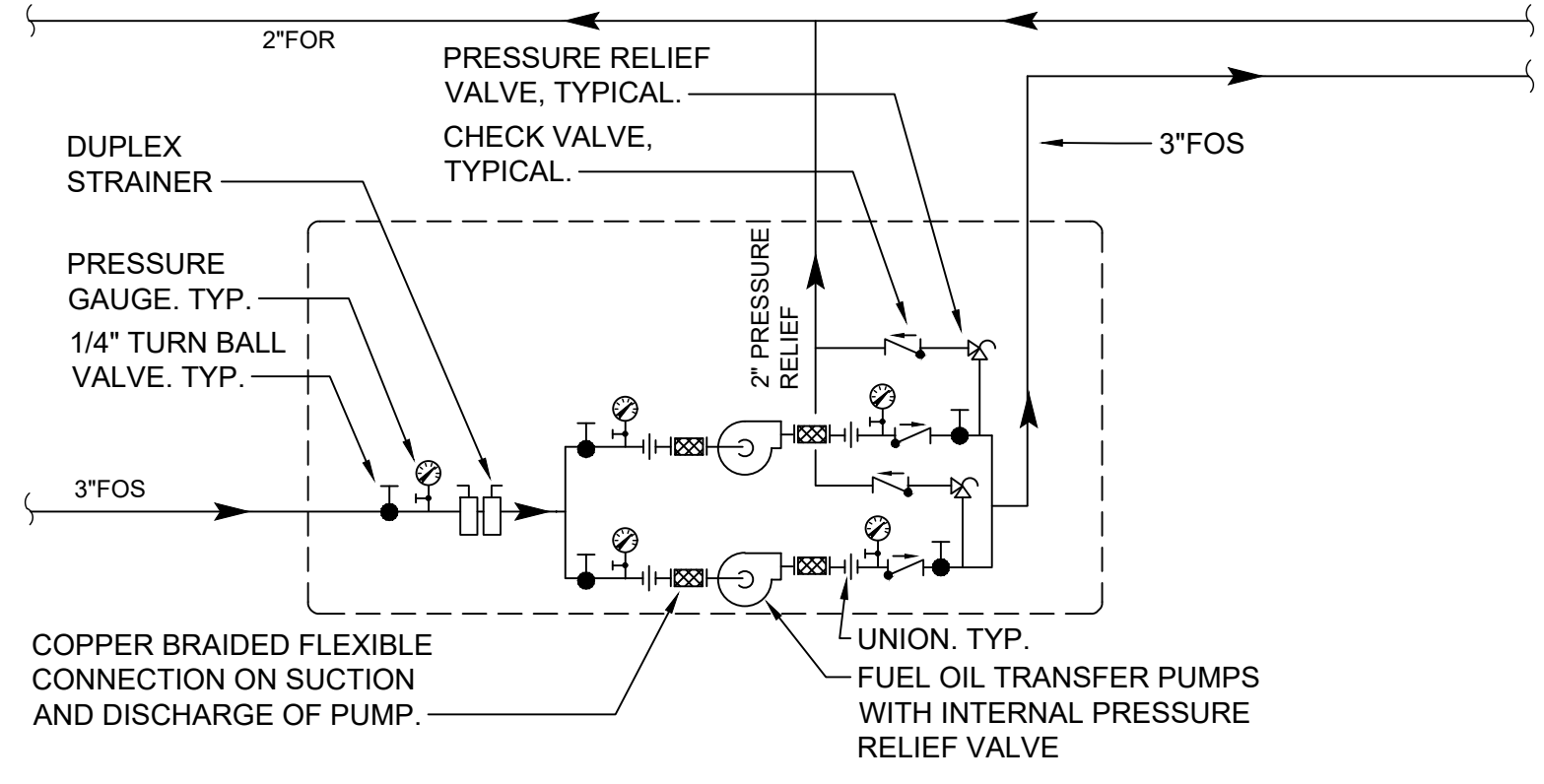
SCALE: NONE



- NOTES:
- INSTALL THE NEW FUEL OIL PIPING AND ALL ASSOCIATED ITEMS IN ACCORDANCE WITH NFPA 31, STATE AND LOCAL BUILDING CODES, INCLUDING NY STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NY MECHANICAL CODE CHAPTER 13, AND THE FIRE CODE OF NEW YORK CHAPTER 34. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND REGISTRATIONS.
  - PITCH PIPING AT 1/8" PER FOOT. UNDER NO CIRCUMSTANCES SHALL FUEL OIL PIPING BE PERMITTED TO BE TRAPPED.

1 FUEL OIL PIPING SCHEMATIC

SCALE: NONE



- NOTES:
- FUEL OIL PUMPS SHALL BE A FACTORY ASSEMBLED PACKAGE, SKID MOUNTED IN A STEEL DRAIN PAN. REFER TO SPECIFICATION.

3 FUEL OIL TRANSFER PUMP PIPING SCHEMATIC

SCALE: NONE

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