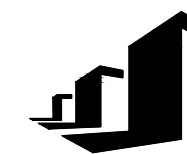




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**SCANNELL**  
PROPERTIES

LEE'S SUMMIT LOGISTICS  
BUILDING C LOT 3

X CORNER OF  
NE TUDOR RD & MAIN ST  
LEE'S SUMMIT, MO 64086

PRELIMINARY SET	07.01.22
PERMIT SET	08.24.22
REVISION #1 - COMMENTS	04.10.24

220018

PLUMBING PLAN  
AREA A

P300

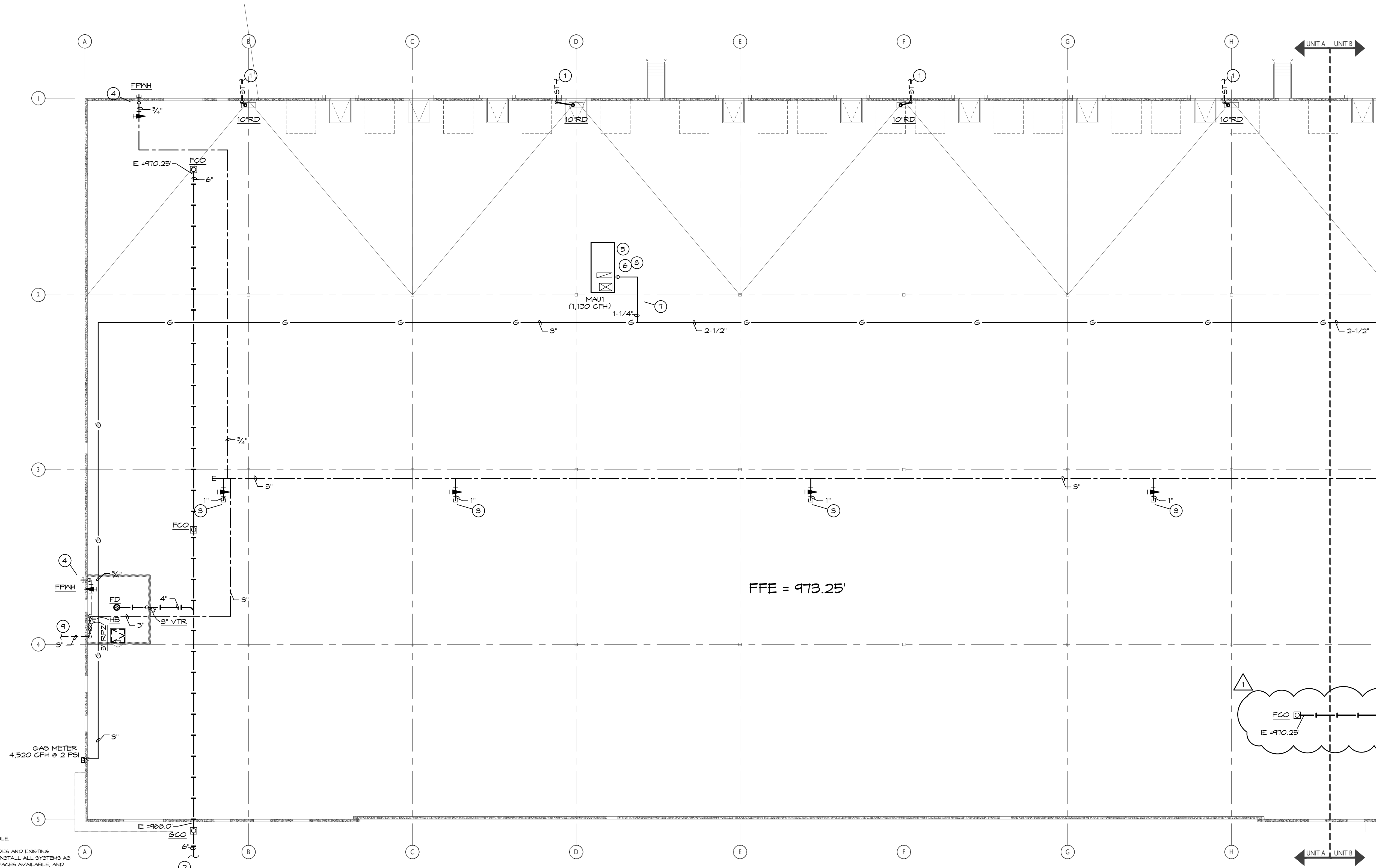
BC PROJECT #:22522  
MISSOURI PE COA #2009003629

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816-942-6355

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#### PLUMBING GENERAL NOTES:

1. INSTALL ALL PIPE, ETC., AS HIGH AS POSSIBLE.
2. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
3. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS AND MOUNTING HEIGHTS OF FIXTURES.
4. REFER TO ARCHITECTURAL & STRUCTURAL DRAWINGS FOR REQUIREMENTS FOR SUPPORTING PIPING, EQUIPMENT, ETC., FROM THE STRUCTURE. PROVIDE ADDITIONAL STEEL AS REQUIRED TO PROPERLY SUPPORT SYSTEMS FROM THE STRUCTURE.
5. NO PIPING SHALL BE ROUTED OVER THE TOP OF ELECTRICAL PANELS.

#### PLUMBING SYMBOLS

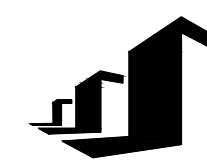
	SOL AND WASTE PIPING BELOW FLOOR/GRADE
	SOL AND WASTE PIPING ABOVE FLOOR/GRADE
	SANITARY VENT PIPING ABOVE GRADE
	SANITARY VENT PIPING BELOW GRADE
	DOMESTIC COLD WATER PIPING
	GAS PIPING
	FORCE MAIN PIPING BELOW FLOOR/GRADE
	PIPING TURNING DOWN
	PIPING TURNING UP
	TEE TOP CONNECTION
	UNION
	FLOOR CLEAN OUT
	WALL CLEAN OUT
	GRADE CLEAN OUT
	VALVE
	PRESSURE REGULATOR
	CONNECT TO EXISTING
	INVERT ELEVATION OF PIPE

#### PLUMBING PLAN NOTES:

1. REFER TO CIVIL FOR 8" STORM PIPE. MAINTAIN A MIN. OF 24" COVER.
2. REFER TO CIVIL FOR 8" WASTE PIPE. MAINTAIN A MIN OF 30" COVER.
3. CAP 1" WATER PIPE WITH SHUT-OFF VALVE FOR FUTURE CONNECTION.
4. INSTALL FREEZE PROOF WALL HYDRANT 18" ABOVE GRADE.
5. CONNECT GAS PIPING TO EQUIPMENT AS DETAILED.
6. GAS PIPE UP THROUGH ROOF TO MAU CONNECTION. SEAL PENETRATION WEATHER TIGHT.
7. GAS PIPING BELOW ROOF SUPPORT AS REQUIRED.
8. GAS PIPING ON ROOF. SUPPORT AS REQUIRED AND DETAILED.
9. REFER TO CIVIL FOR CONTINUATION OF 3" DOMESTIC WATER. MAINTAIN A MIN. 48" COVER.



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**SCANNELL**  
PROPERTIES

LEE'S SUMMIT LOGISTICS  
BUILDING C LOT 3  
X CORNER OF  
NE TUDOR RD & MAIN ST  
LEE'S SUMMIT, MO 64086

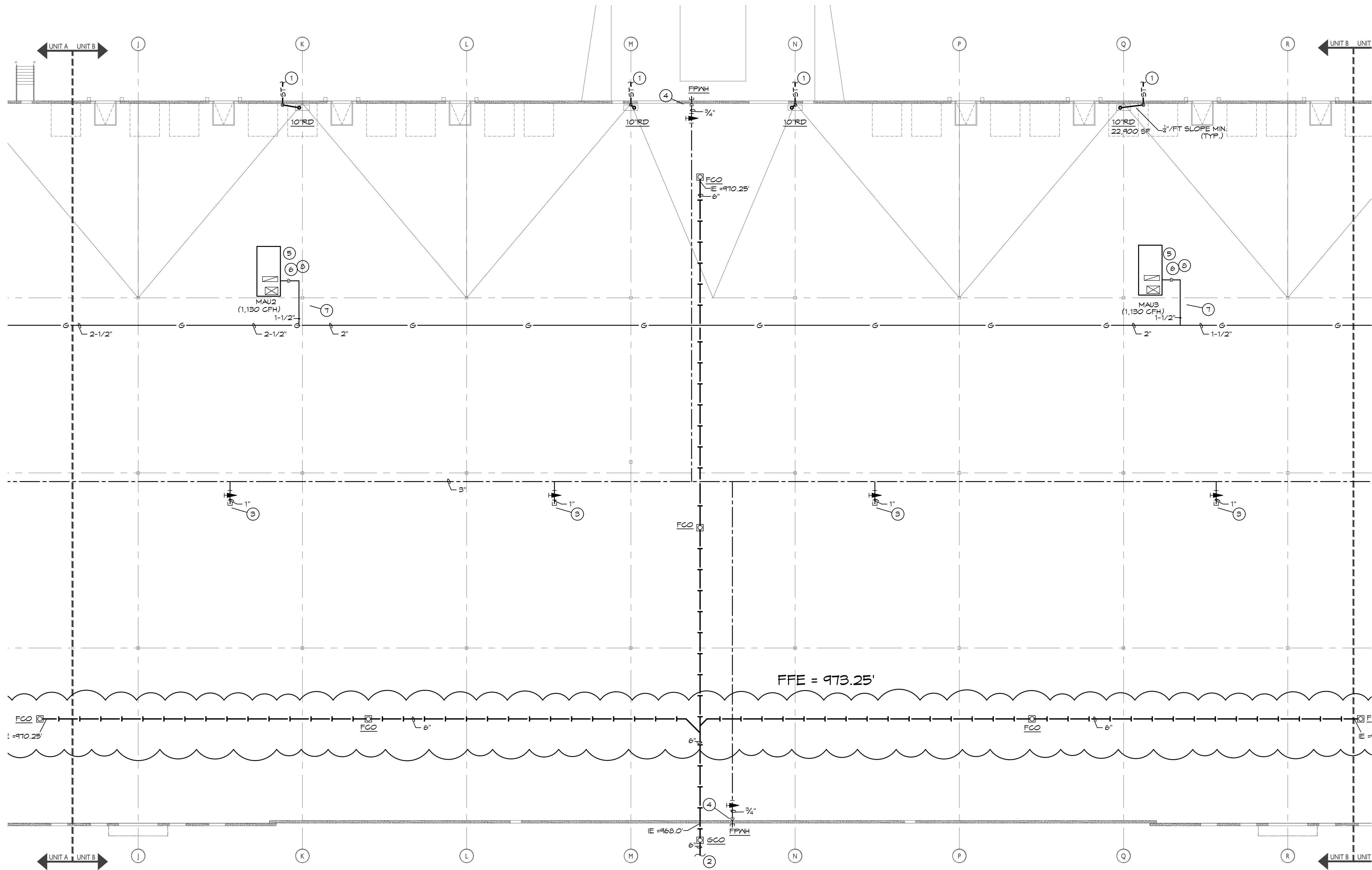
PRELIMINARY SET	07.01.22
PERMIT SET	08.24.22
REVISION #1 - COMMENTS	04.10.24


220018  
PLUMBING PLAN  
AREA B

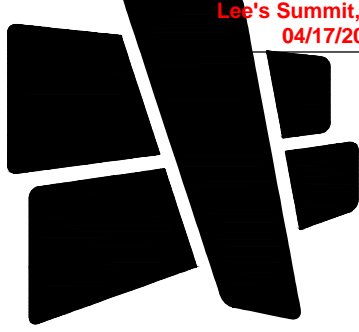
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- PLUMBING PLAN NOTES:
- 1 REFER TO CIVIL FOR 8" STORM PIPE. MAINTAIN A MIN. OF 24" COVER.
  - 2 REFER TO CIVIL FOR 8" WASTE PIPE. MAINTAIN A MIN OF 30" COVER.
  - 3 CAP 1" WATER PIPE WITH SHUT-OFF VALVE FOR FUTURE CONNECTION.
  - 4 INSTALL FREEZE PROOF WALL HYDRANT 18" ABOVE GRADE.
  - 5 CONNECT GAS PIPING TO EQUIPMENT AS DETAILED.
  - 6 GAS PIPE UP THROUGH ROOF TO MAU CONNECTION. SEAL PENETRATION WEATHER TIGHT.
  - 7 GAS PIPING BELOW ROOF SUPPORT AS REQUIRED.
  - 8 GAS PIPING ON ROOF. SUPPORT AS REQUIRED AND DETAILED.



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**SCANNELL**  
PROPERTIES

LEE'S SUMMIT LOGISTICS  
BUILDING C LOT 3

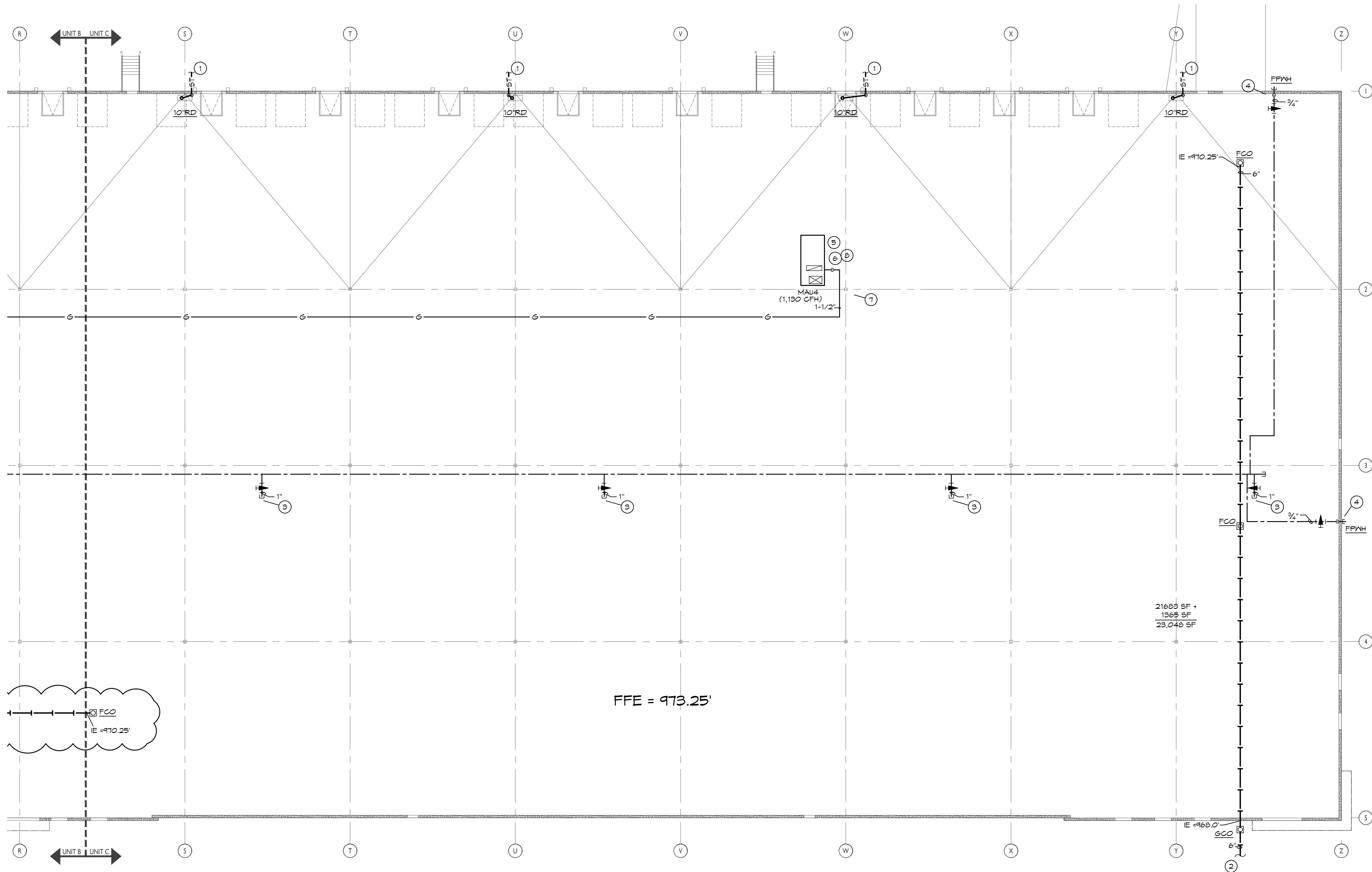
X CORNER OF  
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PRELIMINARY SET	07.01.22
PERMIT SET	08.24.22
REVISION #1 - COMMENTS	04.10.24

220018

PLUMBING PLAN  
AREA C

P302



**PLUMBING PLAN NOTES:**

- REFER TO CIVIL FOR 8" STORM PIPE. MAINTAIN A MIN. OF 24" COVER.
- REFER TO CIVIL FOR 8" WASTE PIPE. MAINTAIN A MIN OF 30" COVER.
- CAP 1" WATER PIPE WITH SHUT-OFF VALVE FOR FUTURE CONNECTION.
- INSTALL FREEZE PROOF WALL HYDRANT 18" ABOVE GRADE.
- CONNECT GAS PIPING TO EQUIPMENT AS DETAILED.
- GAS PIPE UP THROUGH ROOF TO MAU CONNECTION. SEAL PENETRATION WEATHER TIGHT.
- GAS PIPING BELOW ROOF SUPPORT AS REQUIRED.
- GAS PIPING ON ROOF. SUPPORT AS REQUIRED AND DETAILED.



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**BC PROJECT #:22522**  
**MISSOURI PE COA #2009003629**  
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# SCANNELL PROPERTIES

## LEE'S SUMMIT LOGISTICS BUILDING C LOT 3

X CORNER OF  
NE TUDOR RD & MAIN ST  
LEE'S SUMMIT, MO 64086

PRELIMINARY SET	07.01.22
PERMIT SET	08.24.22
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220018

PLUMBING  
SPECIFICATIONS

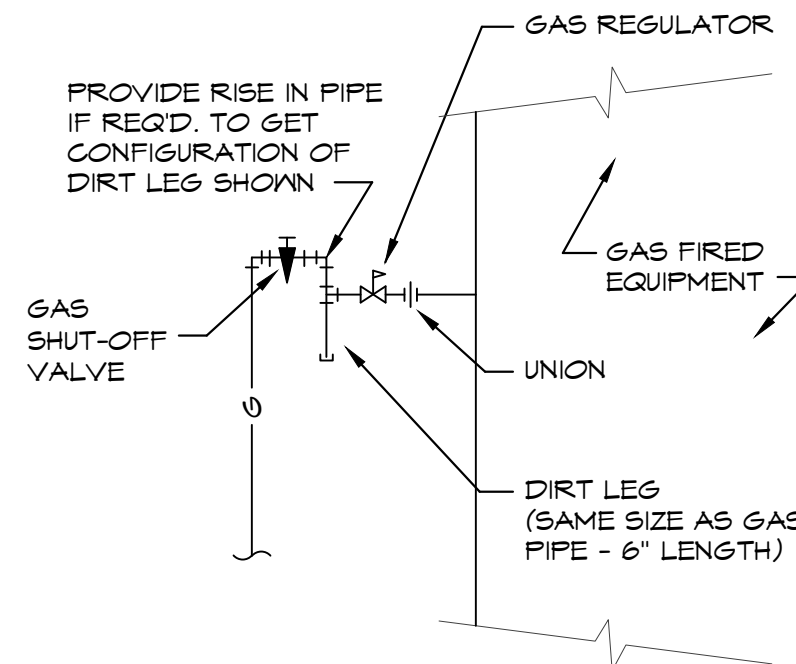
P303

## PLUMBING SPECIFICATIONS

- GENERAL PROVISIONS:
    - PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE PLUMBING AND MECHANICAL SYSTEMS OUTLINED.
    - OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES.
    - ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.
    - ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.
    - DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERINGS SHALL BE REMOVED BEFORE FINAL ACCEPTANCE.
    - PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE MAINTAINED.
    - CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
  - OPERATION AND MAINTENANCE MANUALS:
    - DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
    - ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS.
    - ALL LITERATURE LISTED ABOVE AND ALL PARTS LISTS, WARRANTIES, ETC. SHALL BE BOUND IN A 3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC.
  - MANUFACTURERS:
    - MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE.
  - TESTING, BALANCING, AND CLEANING:
    - ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR COVERED WITH INSULATION.
    - SEWER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 18 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS.
    - DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 60 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.
    - NATURAL GAS PIPING SHALL BE PNEUMATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 30 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.
  - PLUMBING:
    - PROVIDE AN APPROVED WATER HAMMER ARRESTOR FOR EACH PLUMBING FIXTURE SUPPLY AS REQUIRED BY FIXTURE MANUFACTURER.
    - ALL EXPOSED WASTE PIPE SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.
    - PROVIDE CLEANOUTS AT EACH CHANGE OF DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS.
    - PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS.
    - CLEANOUTS:
      - VINYL TILE FLOOR: JR SMITH #4140, OR EQUAL.
      - QUARRY TILE FLOOR: JR SMITH #4200, OR EQUAL.
      - CARPETED FLOOR: JR SMITH #4020-Y, OR EQUAL.
      - UNFINISHED FLOOR: JR SMITH #4020, OR EQUAL.
      - WALL: JR SMITH #4410, OR EQUAL, 24" ABOVE THE FLOOR.
      - WAREHOUSE FLOORS/FORK TRUCK AREAS: JR SMITH #4100, OR EQUAL, WITH HEAVY DUTY CAST IRON BODY AND ROUND ADJUSTABLE SCORRATED EXTRA HEAVY DUTY NICKEL BRONZE TOP.
      - GRADE: JR SMITH #4250, OR EQUAL, WITH HEAVY DUTY CAST IRON BODY AND COVER.
    - PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS TO MATCH THE PIPE SYSTEM IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED). PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION TANKS.
    - WATER HEATERS:
      - EVERY WATER HEATER SHALL HAVE AN APPROVED MEANS INSTALLED ON THE COLD WATER SUPPLY LINE ABOVE THE EQUIPMENT TO PREVENT SIPHONING OF A STORAGE WATER HEATER OR TANK.
      - BOTTOM FED WATER HEATERS AND TANKS CONNECT TO WATER HEATERS SHALL HAVE A VACUUM RELIEF VALVE INSTALLED, ANSI Z21.22.
      - STORAGE HEATERS OPERATING ABOVE ATMOSPHERIC PRESSURE SHALL HAVE AN APPROVED PRESSURE RELIEF VALVE AND/OR TEMPERATURE RELIEF VALVE.
    - ALL SEWER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES:
      - INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.
      - INSTALL 3" - 6" PIPE AT 1/8" PER FOOT FALL.
      - INSTALL 8" AND LARGER PIPE AT 1/16" PER FOOT FALL.
    - PIPING:
      - DOMESTIC COLD, HOT, AND HOT WATER REGULATOR(S) (ABOVEGROUND).
        - TYPE L HARD DRAWN COPPER TUBING, ASTM B-88.
        - WROUGHT COPPER SOLDERED FITTINGS, ASTM B75 ALLOY C12200, ANSI B16.22, MSS SP-104.
        - MECHANICAL PRESS COPPER FITTINGS FOR USE IN PLUMBING OR MECHANICAL APPLICATIONS, ASME B16.22, ASME B16.51, OR ASME B16.10. MECHANICAL PRESS COPPER FITTINGS SHALL CONFORM TO ASTM F5-117 OR ASME B16.51.
      - PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F876 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE IN ACCORDANCE WITH TR-4/03.  
(MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
      - PEX-A AND PEX-B MEETING ANSI/NSF61 AND ANSI/NSF312 STANDARDS FOR POTABLE WATER SAFETY AND LEAD-FREE STANDARDS AND MUST BE MARKED WITH "PPH-0", "NSF-61-0" OR OTHER NSF-APPROVED MARKING, ASTM F2023 FOR USE WITH CHLORINATED WATER.  
(MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
      - PEX MECHANICAL CRIMP/INSERT OR EXPANSION FITTINGS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE, INCREASE PEX PIPING SIZE TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER FOR SUPPLY MAINS.  
(MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
    - VALVES:
      - TO BE INSTALLED ON THE FIXTURE SUPPLY TO EACH PLUMBING FIXTURE.
      - TO BE INSTALLED ON THE WATER SUPPLY SIDE TO EACH APPLIANCE OR MECHANICAL EQUIPMENT.
      - TYPES:
        - GATE VALVE: JOMAR TYS-3010 OR EQUAL. LEAD-FREE NSF 61, ANSI B1.20.1.
        - GLOBE VALVE: JOMAR T65 OR EQUAL.
        - BALL VALVE: JOMAR JF100PXP OR EQUAL. COMPACT LEAD FREE BRASS BALL VALVE, UL642, CSA 39T1-12 & 39T1-42, FM, CALIFORNIA CODE AB189, NSF61 ANNEX 6 APPROVED.
        - BALL VALVE: JOMAR T100NE OR EQUAL. UL642, FM, CSA, NSF 61-0, MSS SP-110.
  - DOMESTIC HOT, HOT, AND HOT WATER REGULATOR(S) (UNDERGROUND).
    - TYPE L HARD DRAWN COPPER TUBING, ASTM B-88.
    - WROUGHT COPPER SOLDERED FITTINGS, ASTM B75 ALLOY C12200, ANSI B16.22, MSS SP-104.
    - MECHANICAL PRESS COPPER FITTINGS FOR USE IN PLUMBING OR MECHANICAL APPLICATIONS, ASME B16.22, ASME B16.51, OR ASME B16.10. MECHANICAL PRESS COPPER FITTINGS SHALL CONFORM TO ASTM F5-117 OR ASME B16.51.
  - PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F876 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE IN ACCORDANCE WITH TR-4/03.  
(MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
  - PEX-A AND PEX-B MEETING ANSI/NSF61 AND ANSI/NSF312 STANDARDS FOR POTABLE WATER SAFETY AND LEAD-FREE STANDARDS AND MUST BE MARKED WITH "PPH-0", "NSF-61-0" OR OTHER NSF-APPROVED MARKING, ASTM F2023 FOR USE WITH CHLORINATED WATER.  
(MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)
  - PEX MECHANICAL CRIMP/INSERT OR EXPANSION FITTINGS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE, INCREASE PEX PIPING SIZE TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER FOR SUPPLY MAINS.
  - HDPE, PIGMENTED BLUE THROUGHOUT, CTS SIZES 1"-2" AWWA C901 4110 DRR R1 C250 IPS SIZES 2"-3", AWWA C901 4110 DRR1 R250.
- DOMESTIC WATER SERVICE, 1"-3"
  - TYPE K SOFT DRAWN COPPER TUBING, ASTM B-88.
  - Cast Copper Alloy Fittings for Flared Copper Tube, ASME/ANSI B16.26:
- HDPE, PIGMENTED BLUE THROUGHOUT, CTS SIZES 1"-2" AWWA C901 4110 DRR R1 C250 IPS SIZES 2"-3", AWWA C901 4110 DRR1 R250 MATERIAL AND INSTALLATION MUST CONFORM TO WATER DEPARTMENT REQUIREMENTS.
- LEAD CONTENT OF WATER SUPPLY PIPE AND FITTINGS:
  - PIPE AND PIPE FITTINGS, INCLUDING VALVES AND FAUCETS, UTILIZED IN THE WATER SUPPLY SYSTEM SHALL NOT HAVE MORE THAN 0% LEAD CONTENT.
  - PIPE, PIPE FITTINGS, JOINTS, VALVES, FAUCETS, AND FIXTURE FITINGS UTILIZED TO SUPPLY WATER FOR DRINKING OR COOKING PURPOSES SHALL COMPLY WITH NSF 312 AND SHALL HAVE A NEIGHED AVERAGE LEAD CONTENT OF 0.25% OR LESS.

## PLUMBING SPECIFICATIONS (CONTINUED)

- STORM SEWER, SANITARY SEWER, GREASE WASTE, SAND OIL WASTE, AND VENTS (UNDERGROUND, INTERIOR TO THE BUILDING).
  - ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DNV FITTING SYSTEM (ASTM F1488) PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 620. FITTINGS SHALL CONFORM TO ANY ACTIVATED PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.
  - PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DNV FITTING SYSTEM (ASTM F1488) PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4596 FOR PIPE AND 12454 PER ASTM D 1154 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 641. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1066. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
  - PVC SCHEDULE 40 SOLID WALL PIPE AND DNV FITTING SYSTEM (ASTM D 2665) PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1154 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 1155 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1066. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
  - HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 889 AND CSPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CSPI STANDARD 310 AND BE CERTIFIED BY NSF61 INTERNATIONAL.
  - HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.
- STORM SEWER, SANITARY SEWER, GREASE WASTE, SAND OIL WASTE, AND VENTS (ABOVE GROUND, INTERIOR TO THE BUILDING).
  - ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DNV FITTING SYSTEM (ASTM F1488) PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 620. FITTINGS SHALL CONFORM TO ASTM D 2665. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235. (NOT FOR USE IN A RETURN AIR PLENUM)
  - PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DNV FITTING SYSTEM (ASTM F1488) PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4596 FOR PIPE AND 12454 PER ASTM D 1154 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 1155 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1066. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564. (WHERE APPROVED BY LOCAL JURISDICTIONS) (NOT FOR USE IN A RETURN AIR PLENUM)
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  - HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 889 AND CSPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CSPI STANDARD 310 AND BE CERTIFIED BY NSF61 INTERNATIONAL.
  - HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.
- STORM SEWER, SANITARY SEWER, GREASE WASTE, SAND OIL WASTE, AND VENTS (UNDERGROUND, EXTERIOR TO THE BUILDING).
  - ABS SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DNV FITTING SYSTEM (ASTM F1488) PIPE AND FITTINGS SHALL BE MANUFACTURED FROM ABS COMPOUND WITH A CELL CLASS OF 42222 FOR PIPE AND 32222 FOR FITTINGS AS PER ASTM D 3965 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 620. FITTINGS SHALL CONFORM TO ASTM D 2665. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2235. (NOT FOR USE IN A RETURN AIR PLENUM)
  - PVC SCHEDULE 40 CELLULAR CORE (FOAM CORE) PIPE AND DNV FITTING SYSTEM (ASTM F1488) PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 11432 PER ASTM D 4596 FOR PIPE AND 12454 PER ASTM D 1154 FOR FITTINGS AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 1155 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1066. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
  - PVC SCHEDULE 40 SOLID WALL PIPE AND DNV FITTING SYSTEM (ASTM D 2665) PIPE AND FITTINGS SHALL BE MANUFACTURED FROM PVC COMPOUND WITH A CELL CLASS OF 12454 PER ASTM D 1154 AND CONFORM WITH NATIONAL SANITATION FOUNDATION (NSF) STANDARD 14. PIPE SHALL BE IRON PIPE SIZE (IPS) CONFORMING TO ASTM F 1155 AND ASTM D 2665. INJECTION MOLDED FITTINGS SHALL CONFORM TO ASTM D 2665. FABRICATED FITTINGS SHALL CONFORM TO ASTM F 1066. SOLVENT CEMENTS SHALL CONFORM TO ASTM D 2564.
  - HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 889 AND CSPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CSPI STANDARD 310 AND BE CERTIFIED BY NSF61 INTERNATIONAL.
  - HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.
  - COPPER DNV: DRAINAGE TUBE SHALL CONFORM TO ASTM B306, WROUGHT COPPER FITTINGS, ANSI B16-24.
  - GALVANIZED STEEL PIPE, WITH WELDABLE IRON, THREADED FITTINGS, DRAINAGE PATTERN FOR SEWERS SHALL CONFORM TO ASTM A 53.
- NATURAL GAS.
  - BLACK STEEL PIPE, SCHEDULE 40, ASTM A53.
  - PIPE 3" AND SMALLER, 150 LB. MALLEABLE IRON, THREADED FITTINGS.
  - PIPE 4" AND SMALLER, WEGA MEGA PRESS 6" FOR WATER AND GAS, CSA LC4, T55A/ASME B31 FOR USE WITH ASTM A83 SCHEDULE 40 BLACK IRON PIPE.
  - PIPE 2-1/2" AND LARGER, WELDED.
  - PLUG VALVE: ROCKWELL NORDSTROM FIGURE NO. 143 OR 143.
  - BALL VALVE: JOMAR T-100NE APPROVALS: UL642, FM, CSA, NSF 61-0, MSS SP-110.
  - GAS PIPING LABELING:
    - ALL ELEVATED PRESSURE GAS PIPING SHALL BE LABELED EVERY 40 FEET WITH SIGNS INDICATING "ELEVATED PRESSURE".
  - GAS PIPING PAINTING:
    - ALL BLACK STEEL GAS PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE PRIMED AND PAINTED TO EITHER MATCH ADJACENT EXTERIOR WHERE LOCATED OR NEAR EXTERIOR WALL AND PAINTED SAFETY YELLOW WHEN LOCATED ON THE ROOF.
- ALL PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ELGIN. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-SP-64.
- SLEEVES
  - PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE AND SLEEVE WITH FIRE RATING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.
  - INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE RATING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.
  - ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.
  - PROTECTION AGAINST CONTACT: METALLIC PIPING, EXCEPT FOR CAST IRON, DUCTILE IRON AND GALVANIZED STEEL, SHALL NOT BE PLACED IN DIRECT CONTACT WITH STEEL, FRAMING MEMBERS, CONCRETE, OR OTHER WALLS AND FLOORS OR OTHER MASONRY. METALLIC PIPING SHALL NOT BE PLACED IN DIRECT CONTACT WITH CORROSIVE SOIL. SHEATHING USED TO PREVENT DIRECT CONTACT SHALL HAVE A THICKNESS OF GREATER THAN .005" AND THE SHEATHING SHALL BE MADE OF PLASTIC, ANY PIPE THAT PASSES THROUGH A FOUNDATION WALL OR FOOTING SHALL BE PROVIDED WITH A RELIEVING ARCH, ANY PIPE THAT PASSES THROUGH THE FOUNDATION WALL, THE SLEEVE SHALL BE TWO SIZES GREATER THAN THE PIPE PASSING THROUGH THE WALL OR FOOTING.
  - PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN EXISTING ROOF WARRANTY. ALL PLUMBING VENT TERMINALS SHALL TERMINATE A MINIMUM OF 12" ABOVE ROOF OR EQUAL TO HEIGHT OF PARAPET, WHICHEVER IS GREATER.
- INSULATION:
  - ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPED RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA.
- PIPE INSULATION - ABOVE GRADE:
  - THE PIPING INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.21 BTU PER IN/Hr\*sq Ft\*F OR LESS.
  - FIBERGLASS INSULATION WITH FACTORY APPLIED VAPOR BARRIER, ASL JACKET, FACTORY APPLIED PRESSURE SEALING LONGITUDE LAP JOINT, NO STAPLES, TESTED PREMOULDED PVC FITTING COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMOSTRONG AP ARMATLEX OR ARMOSTRONG DOW.
  - FOR NON CIRCULATING SYSTEMS, THE FIRST 8 FEET OF INLET AND OUTLET PIPING BETWEEN THE TANK AND THE HEAT TRAP (INCLUDING THE HEAT TRAP) MUST BE INSULATED.
  - FOR CIRCULATING SYSTEMS, ALL HOT WATER PIPING IN THE CIRCULATION LOOP MUST BE INSULATED AS SPECIFIED BELOW.
  - INSULATION SCHEDULE:
    - DOMESTIC COLD WATER 1/2"
    - DOMESTIC HOT WATER 1" FOR PIPING UP TO 1-1/4", 4 1-1/2" FOR PIPING 1-1/2" AND LARGER
    - HOT WATER REGULATING 1"
    - CONDENSATE DRAINS INSIDE BUILDING 1/2"
    - REFRIGERANT SUCTION 3/4" FOR PIPING UP TO 1-1/4", 4 1" FOR PIPING 1-1/2" AND LARGER
    - HORIZONTAL STORM PIPE 1/2"
    - HORIZONTAL STORM OVERFLOW PIPE 1/2"
    - ROOF DRAINS 1" INSULATION SHALL BE PROVIDED AT ROOF DRAIN BODY AND A MINIMUM OF 10" OF HORIZONTAL PIPING OR A MINIMUM OF 5" IF COMBINATION OF HORIZONTAL AND VERTICAL STORM PIPING DOWNSTREAM OF ROOF DRAIN BODY.

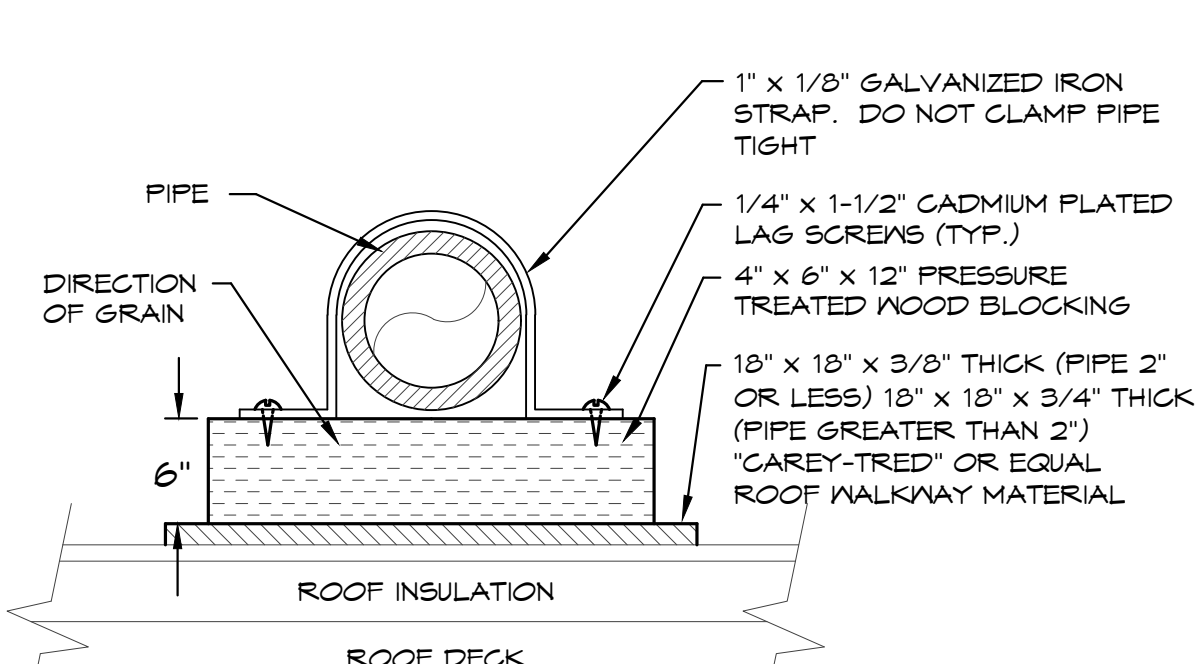


GAS PRESSURE REGULATORS FOR ROOFTOP UNITS (RTU) AND MAKE-UP AIR UNITS (MAU) SHALL BE SENSUS #143-80-2, 2 PSI INLET / 7" VC OUTLET PRESSURE WITH THE ORIFICE 1 SPRING SIZE AS RECOMMENDED BY THE MANUFACTURER.

## GAS CONNECTION DETAIL

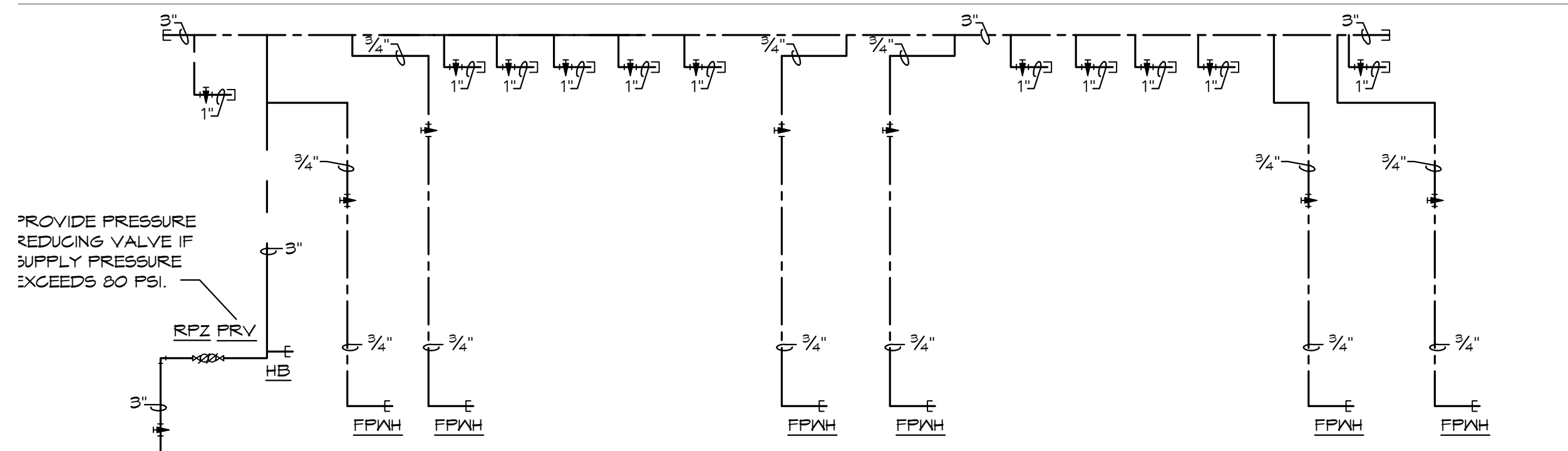
SCALE: NONE

FOR ROOFTOP UNITS, MAKE-UP AIR UNITS, ETC. WITH 2 PSI GAS PRESSURE

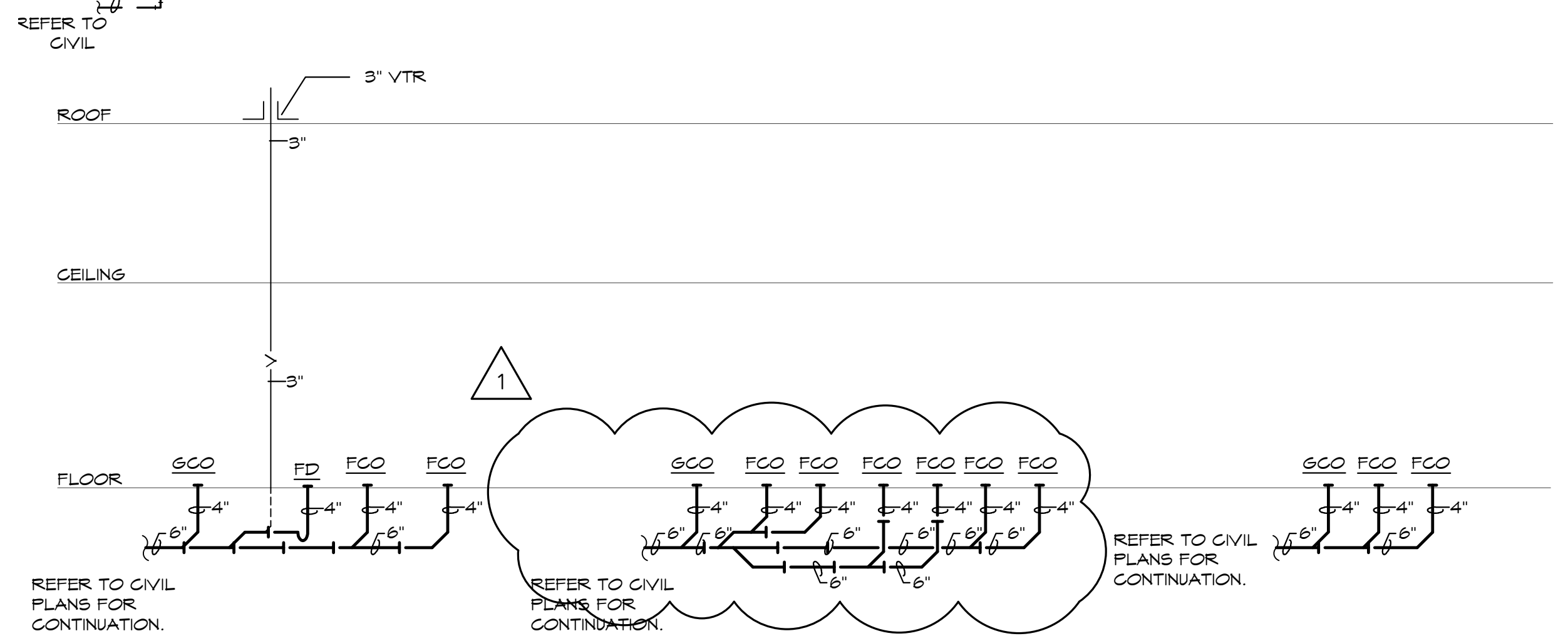


## ROOF PIPE SUPPORT DETAIL

SCALE: NONE



## HOT & COLD WATER



## PLUMBING RISER DIAGRAMS

SCALE: NONE

## PLUMBING FIXTURE SCHEDULE: (OR EQUAL)

FD	FLOOR DRAIN: JR SMITH #2005-A, CAST IRON FLOOR DRAIN WITH ADJUSTABLE TOP, 6" NIKALLOY STRAINER. PROVIDE WITH #2642 QUAD CLOSE TRAP SEAL DEVICE.
FCO	WAREHOUSE FLOOR FLOOR CLEANOUT: JR SMITH #4100, OR EQUAL
GCO	GRADE CLEANOUT: JR SMITH #4256, OR EQUAL
FPXH	FREEZEPROOF WALL HYDRANT: JR SMITH #5609, 3/4" SIZE, NICKEL-BRONZE FACE, KEY OPERATED, INTEGRAL VACUUM BREAKER.
HB	HOSE BIBB: WOODFORD, #24, 3/4" HOSE NOZZLE OUTLET, BRASS FINISH, HANDWHEEL OPERATED, INTEGRAL VACUUM BREAKER.
RPZ	REDUCED ZONE PRESSURE BACKFLOW PREVENTOR: MATTS #LF009, LEAD FREE BRONZE BODY CONSTRUCTION, TWO, IN-LINE INDEPENDENT CHECK VALVES, REPLACEABLE CHECK SEATS WITH AN INTERMEDIATE RELIEF VALVE, AND BALL VALVE TEST COCKS.

BC PROJECT #:22522  
MISSOURI PE COA #2009003629

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