	ABBREVI	ATI	ONS
А	COMPRESSED AIR	HZ	HERTZ
AAV	AUTOMATIC ADMITTANCE VALVE	ICE	ICE MAKER
ABV	ABOVE	ID	INDIRECT DRAIN
ACU	AIR CONDITIONING UNIT	IE	INVERT ELEVATION
AD	AREA DRAIN	IN W.C.	INCHES WATER COLUMN
AE AFF	ANESTHESIA EXHAUST	KW	KILOWATT
AFF AHU	ABOVE FINISHED FLOOR  AIR HANDLING UNIT	LAV LBS	LAVATORY POUNDS
ANU AS	AIR SEPARATOR	LBS/HR	POUNDS PER HOUR
AS AV	AUTOMATIC AIR VENT	LB5/HR LG	LENGTH
AW	ACID WASTE	LPR	LOW PRESSURE STEAM RETURN
@	AT	LPS	LOW PRESSURE STEAM SUPPLY
В	BOILER	LWT	LEAVING WATER TEMPATURE
BAS	BUILDING AUTOMATION SYSTEM	MAU	MAKEUP AIR UNIT
BFP	BACKFLOW PREVENTION DEVICE	MAV	MANUAL AIR VENT
BHP	BRAKE HORESPOWER	MAX	MAXIMUM
BLDG	BUILDING	MBH	THOUSANDS OF BTU PER HOUR
BOP	BOTTOM OF PIPE	MC	MECHANICAL CONTRACTOR
ВО	BOILER BLOW OFF	MCA	MINIMUM CURRENT AMPACITY
BTUH	BRITISH THERMAL UNITS PER HOUR	MIN	MINIMUM
CD	CEILING DIFFUSER /CONDENSATE DRAIN		MAXIMUM OVERCURRENT PROTECTION
CH	CHILLER WATER RETURN	MPR	MEDIUM PRESSURE RETURN
CHR CHS	CHILLED WATER RETURN CHILLED WATER SUPPLY	MPS N	MEDIUM PRESSURE STEAM NITROGEN
CLG	CEILING	N.C.	NORMALLY CLOSED
COND	CONDENSATE	NIC	NOT IN CONTRACT
COP	COEFFICIENT OF PERFOMANCE	NO NO	NITROUS OXIDE
CT	COOLING TOWER	N.O.	NORMALLY OPEN
CU	CONDENSING UNIT	NTS	NOT TO SCALE
CV	CONTROL VALVE	0	OXYGEN
CW	DOMESTIC COLD WATER	OFD	OVERFLOW ROOF DRAIN
D	DRAIN	Р	PUMP
DC	DRY COOLER	P-1	PLUMBING FIXTURE IDENTIFIER
°F	DEGREE FAHRENHEIT	PBD	PARALLEL BLADE DAMPER
DH	DEHUMIDIFIER	PC	PLUMBING CONTRACTOR
DI	DEIONIZED WATER	PD	PRESSURE DROP
DN DOAS	DOWN	PH	PHASE
DOAS DS	DEDICATED OUTDOOR AIR SYSTEM  DOWNSPOUT NOZZLE	PPM PRV	PARTS PER MILLION PRESSURE RELIEF VALVE
DTR	DUAL TEMPERATURE RETURN	PS PS	PRESSURE SWITCH
DTS	DUAL TEMPERATURE SUPPLY	PSI	POUNDS PER SQUARE INCH
DW	DISHWASHER	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
EA.	EACH	PSIG	POUNDS PER SQUARE INCH GAUGE
EC	ELECTRICAL CONTRACTOR	PTAC	PACKAGED TERMINAL AIR CONDITIONER
EFF	EFFICIENCY	RD	ROOF DRAIN
EL	ELEVATION	RLA	RUNNING LOAD AMPS
ER	EXHAUST REGISTER	RL	RAIN LEADER
ET	EXPANSION TANK	RM.	ROOM
EWC	ELECTRIC WATER COOLER	RO	REVERSE OSMOSIS SUPPLY
EWH	ELECTRIC WATER HEATER	RPM	REVOLUTIONS PER MINUTE
EWT	ENTERING WATER TEMPERATURE	RR	REVERSE OSMOSIS RETURN
EX EXT	EXISTING EXTERNAL	RTU RX	ROOFTOP AIR HANDLING UNIT REMOVE EXISTING
FCO	FLOOR CLEANOUT	SF	SQUARE FOOT
FCU	FAN COIL UNIT	SH	SHOWER
FD	FLOOR DRAIN	SPEC.	
FDC	FIRE DEPARTMENT CONNECTION	SS	STAINLESS STEEL
FDV	FIRE DEPARTMENT VALVE	STRUCT.	
FL	FLOOR	SW	STORM WATER
FLA	FULL LOAD AMPS	TEMP	
FOR	FUEL OIL RETURN	TMV	THERMOSTATIC MIXING VALVE
FOS	FUEL OIL SUPPLY	TOP	TOP OF PIPE
FOV	FUEL OIL VENT	TP	TRAP PRIMER
FPM	FEET PER MINUTE	TWH	TANKLESS WATER HEATER
FS	FLOOR SINK	TYP	TYPICAL
FSD FT	FIRE SMOKE DAMPER FEET	UH UON	UNIT HEATER UNLESS OTHERWISE NOTED
FT <sup>2</sup>	SQUARE FEET	UON UR	URINAL
FTR	FINNED TUBE RADIATOR	V	VOLT / VACUUM
FW	FEED WATER PUMPED DISCHARGE	V VAC	VOLTY VACOOM  VOLTS ALTERNATING CURRENT
GAL	GALLON	V/KC VB	VACUUM BREAKER
GC	GENERAL CONTRACTOR	VP VP	VELOCITY PRESSURE
GPM	GALLONS PER MINUTE	VRF	VARIABLE REFRIGERANT FLOW
GR	GLYCOL RETURN	VTR	VENT THRU ROOF
GRH	GAS RADIANT HEATER	W	WATTS
GS	GLYCOL SUPPLY	W/	WITH
GUH	GAS UNIT HEATER	W/O	WITHOUT
GV	GRAVITY VENTILATOR	WC	WATER CLOSET
GW	GREASE WASTE	WCO	WALL CLEANOUT
GWH	GAS WATER HEATER	WF	WATER FILTER
Н	HUMIDIFIER	WG	WATER GAUGE
HB	HOSE BIBB	WH	WALL HYDRANT
HCWP	HEATING COIL	WS WSHD	WATER SOURCE HEAT DUMP
HCWR	DUAL TEMPERATURE RETURN	WSHP	WATER SOURCE HEAT PUMP
HCWS HD	DUAL TEMPERATURE SUPPLY HUB DRAIN		
HD HP	HEAT PUMP / HORSEPOWER		
HPR	HIGH PRESSURE STEAM RETURN		
HPS	HIGH PRESSURE STEAM SUPPLY		
HR	HOUR		
HW	HOT WATER		
HWR	HW RECIRC/HEATING WATER RETURN		
HWS	HEATING WATER SUPPLY		
HX	HEAT EXCHANGER		
		I	

#### NOTICE TO CONTRACTORS: OCCUPIED FACILITY

EXISTING FACILITY IS PARTIALLY OCCUPIED. CONTRACTOR SHALL COORDINATE INTERRUPTIONS OF SERVICE WITH OWNER AND NOTIFY OCCUPANTS 48 HOURS BEFORE SERVICE INTERRUPTION. IF ACCESS TO OCCUPIED SPACE IS REQUIRED, ACCESS SHALL BE COORDINATED WITH OWNER AND OCCUPANTS AFFECTED SHALL BE GIVEN 48 HOURS NOTICE.

#### GENERAL NOTES

original warranties.

- Materials, equipment, and systems shall meet all pertinent requirements of the Underwriters Laboratory (UL), the American Society for Testing Materials (ASTM), American Water Works Association (AWWA), American Gas Association (AGA), National Fire Protection Association (NFPA), code procedures, methods, and requirements, including the most stringent of health and safety standards as required and as interpreted by the authority having jurisdiction. Applicable codes energy, mechanical, and fuel gas codes" applicable local and municipal codes and ordinances.
- Bidders shall be licensed contractors in accordance with local and state laws.

GENERAL PLUMBING REQUIREMENTS

- performed. They shall examine all services, equipment, surfaces, etc., which this work is in any way dependent upon, and bring any discrepancies determined or omissions found in the drawings to the owner's attention before submitting bid.
- All installed systems, devices and related items shall be tested in place on site. Replace any and all contractor supplied defective devices, items or systems at contractor's own expense before completion of the project.
- Contractor shall guarantee all work for which materials are furnished, fabricated or field erected, all factory assembled equipment for which no specific manufacturer's guarantee is furnished, and guarantee shall exist for a period of one (1) year from the date of final owner acceptance of the 2018, and with local gas company. Gas pipe shall be schedule 40 black steel, UON. work and shall apply to defects in material and to defective workmanship of any kind.
- The systems shown on the drawings shall be provided to serve all fixtures, equipment, and areas within the Building and 5'-0" beyond building unless noted otherwise. Systems shall include all 37. All existing H.V.A.C. and piping/plumbing information shown was obtained from field surveys or equipment, appurtenances, safety devices, and controls necessary for the intended service.
- All permits and fees required for the work shall be secured and paid for by the plumbing contractor and included in bid price.
- Anything drawn or specified on these plans shall not be construed to conflict with any local, laws, ordinances, regulations and codes, this contractor shall make all changes required by the enforcing authorities in a manner approved by the owner and without additional cost to the owner.
- Where job conditions require changes from the contract documents that do not change the scope contractor. Panels shall be wind-lock model stealth or approved equal with appropriate size. of installation or nature of work required, the contractor shall make such changes without additional cost to the owner. No other changes may be made without written permission of the 41. All service valves, unions, gas cocks, etc., shall be manufactured by Nibco or equal.
- 0. All equipment and fixtures shall be new and unused and installed in strict conformance to manufacturer's recommendations. Provide fixtures complete with all trim, stops, hangers, carriers, supports, etc. including provision for the handicapped, if required. Where fixtures are accessible to 43. All refrigerant piping shall be wrapped with 1" Armaflex insulation. the handicapped, fixtures must comply with all federal ADA regulations.
- .1. Arrange for chases, slots, and openings in other building components to allow for plumbing installations. Coordinate the cutting and patching of building components to accommodate installation of plumbing equipment and materials.
- 12. Do not endanger or damage installed Work through procedures and processes of cutting and patching. Provide repairs required to restore other work, because of damage caused as a result of 46. Maintain a minimum clearance of 3'-0" in front of electrical panels and 1'-0" either side when plumbing installations.
- 13. Coordinate the installation of required supporting devices and sleeves to be set in poured in place perimeter. Refer to adopted electrical codes where in doubt. concrete and other structural components, as they are constructed. Plumbing contractor shall be responsible for assuring all hangers and supports are anchored or attached to building elements 47. All cleanouts, valves, air chambers, etc. are to be accessible. Extend piping and provide access nail plates where piping passes through stud(s) within 2" of nailing surface to protect pipe from nails or drywall screws.
- 14. Sequence, coordinate, and integrate installations of plumbing materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing-in the building.
- 15. Where mounting heights are not detailed or dimensioned, install plumbing services and overhead 49. Provide stops and/or isolation valves to each individual fixture or piece of equipment to allow for equipment to provide the maximum headroom possible while coordinating with other trades.
- 16. Install plumbing equipment to facilitate maintenance and repair or replacement of equipment 50. Indirect drain piping from fixtures, specialties, and equipment shall be routed to floor drain or components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
- 17. Coordinate the installation of plumbing materials and equipment above ceilings with suspension system, light fixtures, ductwork, conduit, and other installations. Coordinate plumbing equipment 51. Wherever possible, horizontal soil or waste pipe shall come off top or at 45 degree vertically from and materials installation with other building components.
- .8. All pipes shall be of the size given on the drawings. All piping shall be run true to line. Pipes may 52. All vent terminations shall be coordinated with building structure, openings, air intakes, and other be moved, if necessary for installation, provided that the nature of the system is not changed. All roof mounted equipment. Adjust vent through roof locations to comply with applicable code. pipes shall be concealed: located above ceiling, below floor or in walls, except where connection is made to fixture or where concealment is not feasible.
- 19. Coordinate connection of plumbing systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service and coordinate all locations, sizes and invert elevations with site contractor. 20. Plumbing service rough-in shall be based on information, drawings, equipment cuts, etc. prepared
- by the equipment supplier. Final plumbing connections shall be made from rough-in to equipment 54. Minimize developed length of branch runouts from circulated domestic hot water mains to fixtures after equipment is set in place.
- approval. All piping is shown schematically for clarity coordinate with structure, ducts, lights, utilities, etc. Verify all dimensions by field measurements.
- water hammer arresters installed on the high point at the end of each branch line. 23. All above-ground water supply piping shall be Type L rigid copper. All below grade water supply
- piping shall be Type K soft copper with at least 50' between joints. All joints shall be soldered with 58. Upon completion of the work, the general contractor shall prepare a punch list first and notify "lead-free" solder (e.g., 95-5).
- 25. All sanitary and storm waste piping below slab shall be cast-iron or solid-wall PVC. All grease waste piping shall be cast iron. Sanitary, storm and vent piping above grade shall be cast-iron or galvanized steel, except that PVC may NOT be used in demising walls and may NOT be used in return plenum ceilings.
- 26. All condensate drain piping and indirect drains shall be DWV seamless copper tubing with soldered drainage fittings.
- 7. All floor penetrations and all exterior penetrations shall be completely waterproofed, firesafed, and sealed. All pipe penetrations of fire rated assemblies shall be sleeved and sealed as required to maintain the rating of the assembly. Sleeves shall be used for all masonry penetrations. Proper sealing of penetrations as described here is the sole responsibility of the plumbing contractor.
- 28. Existing piping shown on drawings is based on original drawings, and location, mounting heights and points of connection must be verified in field. All items that are indicated in bold print shall be considered new or relocated, unless otherwise noted.
- 29. In general, do not abandon old piping remove and dispose of properly, unless inaccessible or under slab, or unless noted otherwise.

30	9. All water piping inside the building thermal envelope shall be insulated with Owens Corning SSL II with ASJ Max Fiberglas pipe insulation as follows: Cold water, 1/2" thick insulation; hot water
	supply and recirculation piping 1.25" dia and smaller, 1" thick insulation; hot water supply and
	recirculation piping 1.5" dia and larger, 1.5" thick insulation.

- and other nationally recognized agencies as well as the latest adopted edition of state and local 31. No hot and cold water supply piping shall be run in outside walls, crawl space, attic, or other unheated spaces. Unless specifically noted and with heat trace.
- and standards include, but are not limited to the following: "international plumbing, building, 32. All sanitary sewer traps and grease waste piping that is located in unheated areas shall be heat traced and insulated with 1" fiberglass minimum to prevent freezing. All heat tracing shall be controlled with a sensor on the coldest portion of the piping and set to turn on if pipe temperature
- Bidders shall thoroughly acquaint themselves with the conditions under which the work is to be 33. Provide and install LavGuard by Truebro, Inc. ADA compliant, vinyl coated with standard white finish, foam insulation on all exposed plumbing waste and supply connectors underneath all lavatories, not just the one labeled with an H-. If there are any instant water heaters, transformers for hands-free devices, or any other sharp or abrasive objects under lavatory, provide and install full lavatory shield (LavShield by Truebro, Inc. or equal), maintaining ADA required clearances under all lavatories.
  - 34. All horizontal branches and vents 3" in diameter and over shall be sloped at 1/8" per foot minimum, unless otherwise noted. All horizontal branches and vents under 3" in diameter shall be sloped at 1/4" per foot minimum, unless otherwise noted (UON).
- all work in connection with installing manufacturer's guaranteed equipment. This contractor's 35. Fabricate, install, inspect, test and purge natural gas systems in accordance with the latest IFGC
  - 36. Contractor to install, size and trap refrigerant piping per the manufacturer's recommendations.

original previous tenant design drawings. Contractor <u>must</u> verify this information prior to any work

- being performed. 38. Any cutting or patching of the roof to be done by the owner's roofing contractor so not to void any
- municipal or state law, regulation or ordinance which governs the installation of any plumbing or 39. The general contractor shall coordinate all exterior plumbing inverts with actual site conditions, related work. Where any portion of the systems are not installed as in accordance with applicable proposed installation and with civil drawings prior to construction, to ensure that all connection points leaving the building can be met..
  - 40. All access panels required in hard ceilings and walls shall be furnished and installed by the

  - 42. All sanitary piping located above food storage racks, above food preparation areas or above food serving areas shall be copper pipe with soldered copper drainage and waste fittings.

  - 44. All sanitary piping shall be sloped at minimum 1/8" per foot. All sanitary piping 2" and smaller and located below first floor slab/grade shall be sloped at 1/4" per foot.
  - 45. All indirect piping that is equal or greater then 4'-0" long shall be provided with trap at equipment
  - installing plumbing systems in the same area. Pipe systems, equipment, etc. shall not be routed directly over panels or switch gear and where above may be as close as 12 inches from
- adequate for intended plumbing system or equipment. Plumbing contractor to provide and install panels where necessary. Plumbing contractor will be required to demonstrate accessibility if it is questionable. Access panel sizes, locations, and final color shall be coordinated with the architect as well as all other trades to avoid any conflicts. Access panels required for this purpose are to be provided by plumbing contractor for installation by general contractor.
  - 48. All plumbing system valves shall be installed in a location and orientation that will permit intended
  - individual servicing unless noted otherwise on plans. other approved receptacles and terminated with an air gap 2 times the diameter of the drain
  - piping but not less than a 1 inch gap. Support piping so drain piping cannot be deflected from
  - center of pipe before offsetting horizontally to riser.
  - 53. Plumbing contractor shall install air chambers on vertical drop to individual sinks with spray feature and piping to all shower valves. Install piston-type water hammer arrestors on horizontal piping prior to drop to all individual flush valve fixtures. Piston- or diaphragm-type water hammer arrestors may be utilized for water headers serving a group of fixtures within the same chase and
  - shall be located upstream the last fixture served on the header. Locate arrestors in accessible location, or provide access panel. Size arrestors per manufacturer's recommendation for related
- 21. Actual locations and mounting methods for fixtures and penetrations are subject to Architect's 55. Insulate all horizontal storm piping and exposed roof drain sumps with 1" thick insulation (where applicable). See plumbing insulation specification for clarification.
- 56. The general contractor shall be responsible for removal and disposal of all construction debris and 22. The hot and cold water supply line branches for all lavatories and sinks shall have Josam or Zurn refuse from the job site.

and/or mixing valves whenever possible.

architect to review and verify punch-list for corrections.

- 57. All submittals must be sent in pdf format, highlighted or redlined
- 24. Flush and sterilize water system after connections are made in accordance with local regulations. 59. Plumbing contractor shall furnish record set of drawings with any deviations marked in red ink, within 90 days of system acceptance.

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
SANS	SANITARY PIPE	0	FLOOR DRAIN/HUB DRAIN
	VENT PIPE	<b>Ø</b>	FLOOR SINK
<b>S</b>	COLD WATER PIPE	<b>⟨</b> →	SIAMESE CONNECTION
<b>5</b>	HOT WATER PIPE	•	SPRINKLER HEAD
5	HOT WATER RECIRC. PIPE	(1)	EQUIPMENT IDENTIFIER
5sw	STORM WATER PIPE	——HPS——	HIGH PRESSURE STEAM
S	OVERFLOW DRAIN PIPE	MPS	MEDIUM PRESSURE STEAM
SS	CONDENSATE DRAIN PIPE	—— LPS ——	LOW PRESSURE STEAM
PCD	PUMPED CONDENSATE DRAIN PIPE	HPR	HIGH PRESSURE RETURN
├─ + ─ FD - ─। ─ ┤		MPR	MEDIUM PRESSURE RETURN  LOW PRESSURE RETURN
sw ———		— FW —	FEED WATER PUMPED DISCHARG
cs ——		— во —	BOILER BLOW OFF
		—FOS —	FUEL OIL SUPPLY
CWS ————————————————————————————————————		FOR	FUEL OIL RETURN
		FOV	FUEL OIL VENT
5 HWS — 5		— GS —	GLYCOL SUPPLY
,		GR RO	GLYCOL RETURN  REVERSE OSMOSIS SUPPLY
HWR		RR	REVERSE OSMOSIS RETURN
, 0	NATURAL GAS PIPE	sw	STORM WATER
S PG	PROPANE GAS PIPE	— o —	OXYGEN
<del>S</del> RS/RL S	REFRIGERANT PIPE	— NO —	NITROUS OXIDE
——— CA ———— S	COMPRESSED AIR PIPE	N	NITROGEN
, F ———————————————————————————————————	FIRE PROTECTION PIPE	+	GAS OUTLETS  CONNECT TO EXISTING
<u>+</u>	OUTSIDE STEM & YOKE VALVE WITH TAMPER SWITCH		DEMOLISH TO THIS LOCATION
5 11-5	UNION	1	DRAWING NOTE
<del>;</del>	PRESSURE REDUCING VALVE		REVISION SYMBOL
<del>S</del>	BALANCING VALVE	1	EQUIPMENT IDENTIFIER
\ <u>-</u> \	DIRECTION OF LIQUID FLOW		
\$ \\ \dagger \dagger \\ \dagger \dag	GAS COCK		
5 - 5	BALL VALVE		
ς <u>φ</u>	GATE VALVE		
S S	THREE WAY CONTROL VALVE		
ς <u> </u>	TWO WAY CONTROL VALVE		
S 3	CHECK VALVE		
<del>کا کا کا</del>	WYE STRAINER		
ς	PRESSURE GAUGE		
ς Ψ	THERMOMETER		
G	PIPE DOWN		
O	PIPE UP		
<u> </u>	CLEANOUT (FLOOR & WALL)		
<u> </u> ⊠—	ANGLE STOP VALVE		
+	HOSE BIB (SPIGOT)		
_	WALL HYDRANT		

PLUMBING SYMBOLS LIST

 ALL SYMBOLS ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL NOTE THAT NOT ALL SYMBOLS MAY BE USED, AS WELL AS NOT ALL SYMBOLS USED MAY BE LISTED. REFER TO PROJECT SPECIFIC NOTES FOR ADDITIONAL INFORMATION.

#### DRAWING CONVENTIONS

NEW WORK - HEAVY AND SOLID LINES

EXISTING TO REMAIN - LIGHT AND SOLID LINES

----- REMOVE EXISTING - HEAVY AND DASHED LINES

ALL CONTRACTORS PRIOR TO BID SUBMISSION PROCESS SHALL VISIT PROPOSED WORK SITE AND FIELD VERIFY ALL EXISTING CONDITIONS. ANY CONDITIONS THAT DIFFER FROM THAT SHOWN ON THESE PLANS SHALL BE REPORTED TO ARCHITECT/ENGINEER SO THAT NEW AND REVISED BID DRAWINGS OR INFORMATION MAY BE ISSUED. MODIFICATIONS TO SCOPE OF WORK WHICH RESULT FROM CONTRACTORS NEGLECT TO VISIT THE SITE PRIOR TO SUBMITTING BID, SHALL BE THE CONTRACTORS SOLE RESPONSIBILITY.

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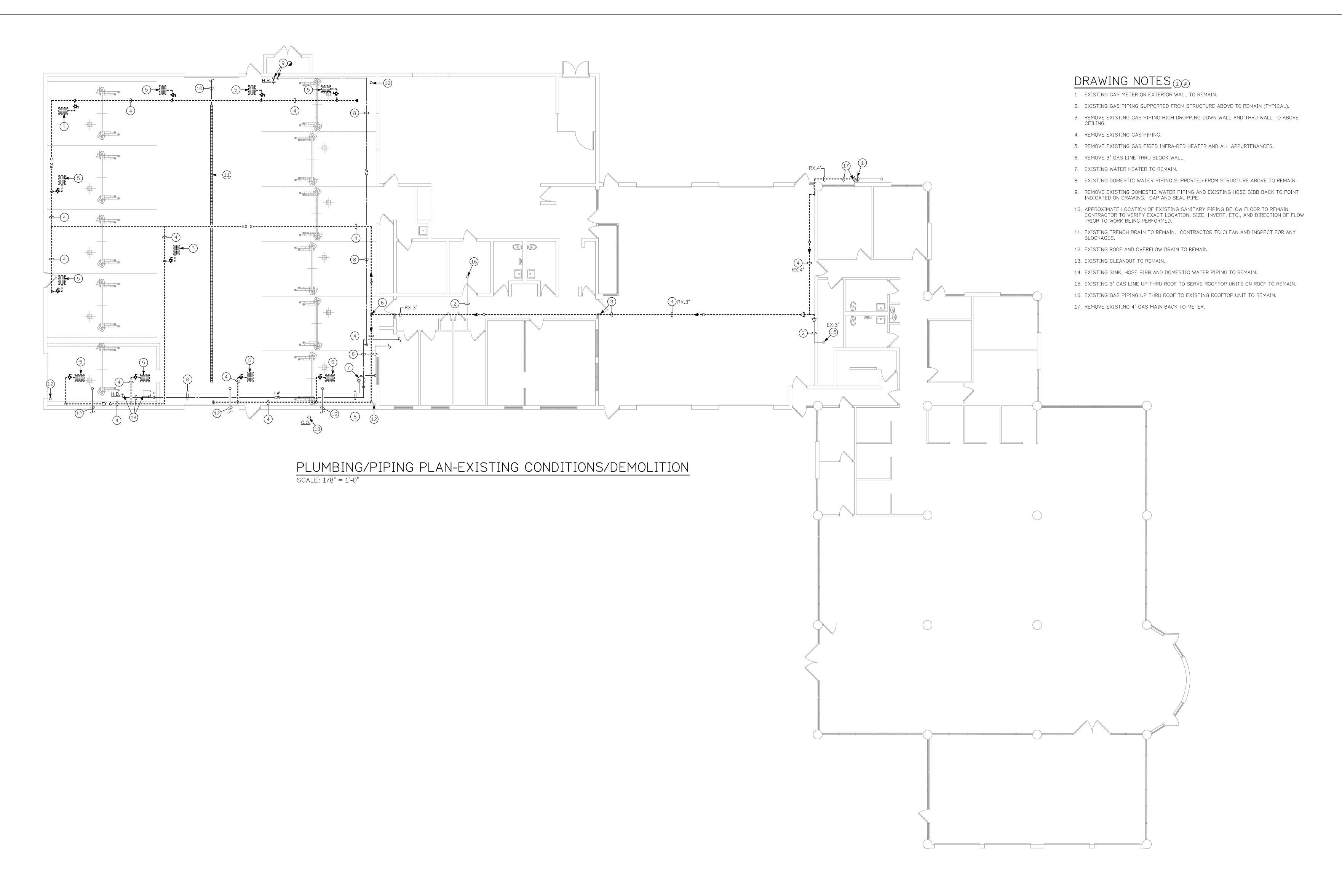
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**ABBREVIATIONS**, GENERAL NOTES SYMBOLS LIST

Project Number

IDC #23-010





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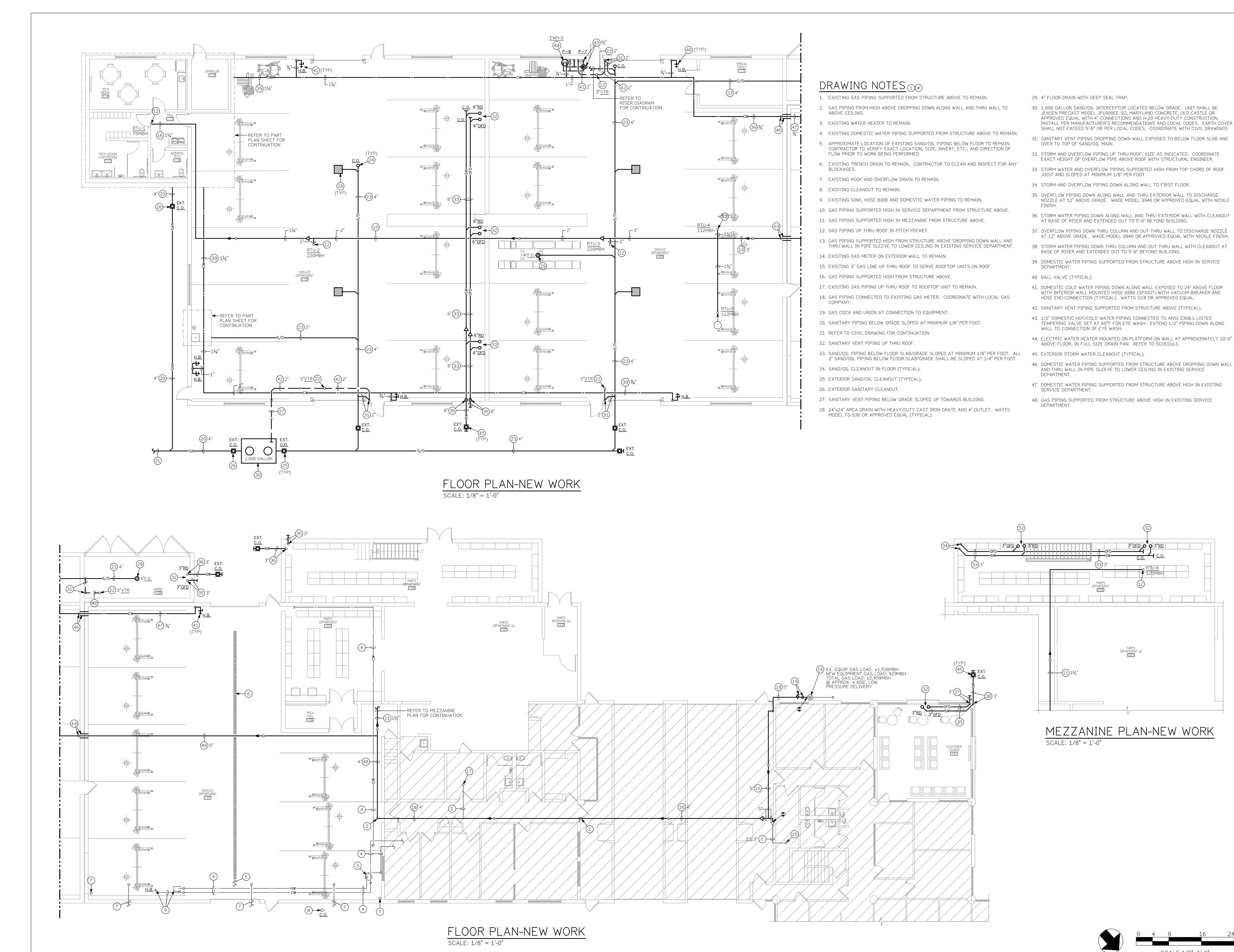
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Sheet Title
PLUMBING/PIPING PLAN-EXISTING COND./ **DEMOLITION** 



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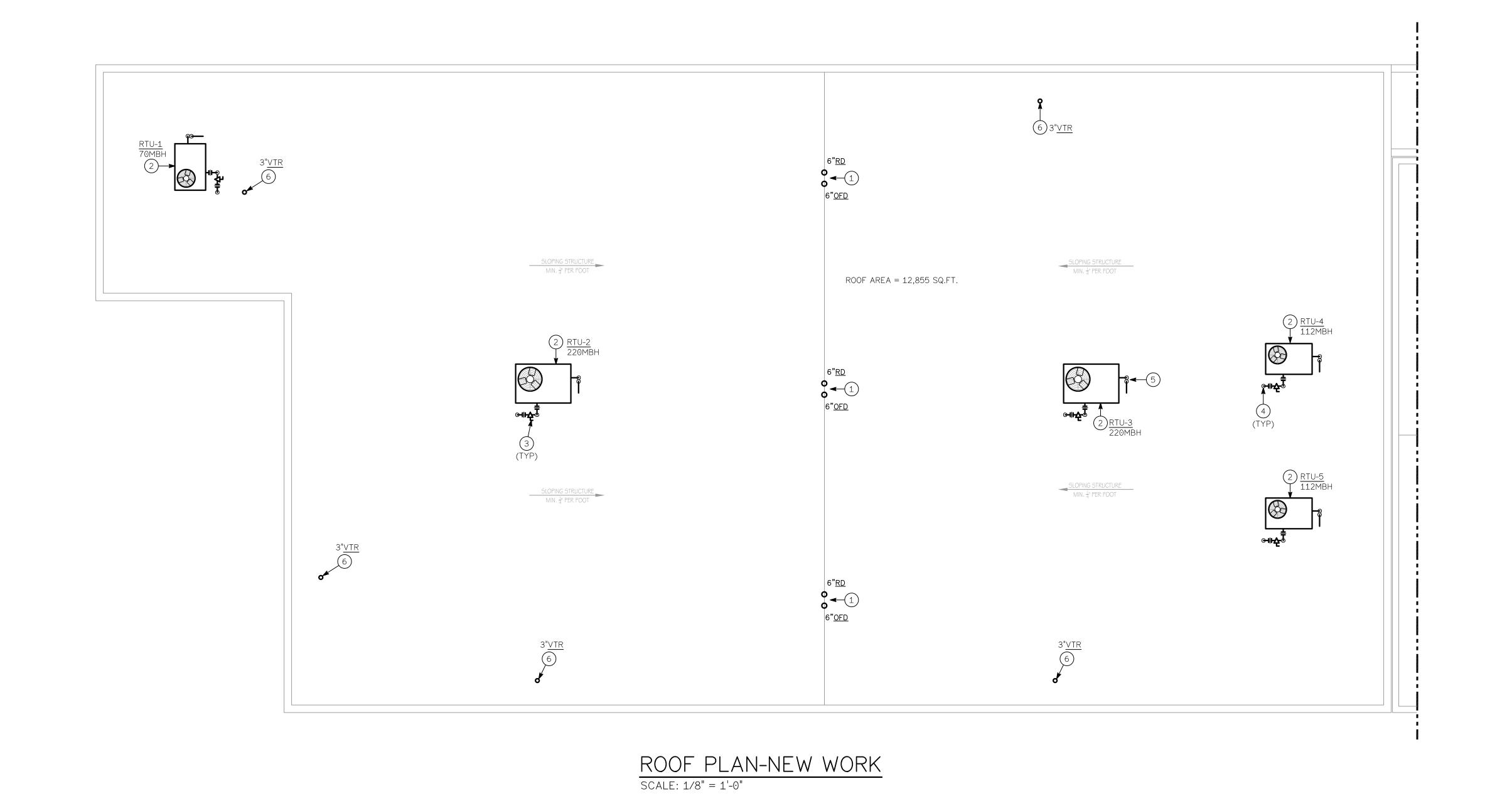
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Drawn By: Checked By: Plot Date:

FLOOR PLAN **NEW WORK** 

Project Number File Name IDC #23-010



## DRAWING NOTES 1#

- ROOF AND OVERFLOW DRAIN, SIZE AS INDICATED. COORDINATE EXACT HEIGHT OF OVERFLOW PIPE ABOVE ROOF WITH STRUCTURAL ENGINEER.
- 2. GAS FIRED ROOFTOP UNIT ON FACTORY CURB (TYPICAL). REFER TO SCHEDULE.
- 3. GAS COCK AND UNION AT CONNECTION TO EQUIPMENT (TYPICAL).
- 4. GAS PIPING UP THRU ROOF IN PITCH POCKET (TYPICAL).
- 5. FULL SIZE CONDENSATE DRAIN WITH DEEP SEAL TRAP (TYPICAL).
- 6. SANITARY VENT PIPING UP THRU ROOF.
- 7. EXISTING 3" GAS PIPING UP THRU ROOF TO REMAIN.
- 8. EXISTING GAS PIPING ON PILLOW BLOCKS ON ROOF TO REMAIN.
- 9. GAS PIPING SUPPORTED ALONG ROOF ON PILLOW BLOCKS SPACED EVERY 10'-0" AND 12" AT EACH TURN.
- 10. EXISTING ROOFTOP UNITS ON ROOF TO REMAIN.

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Checked By: Plot Date:

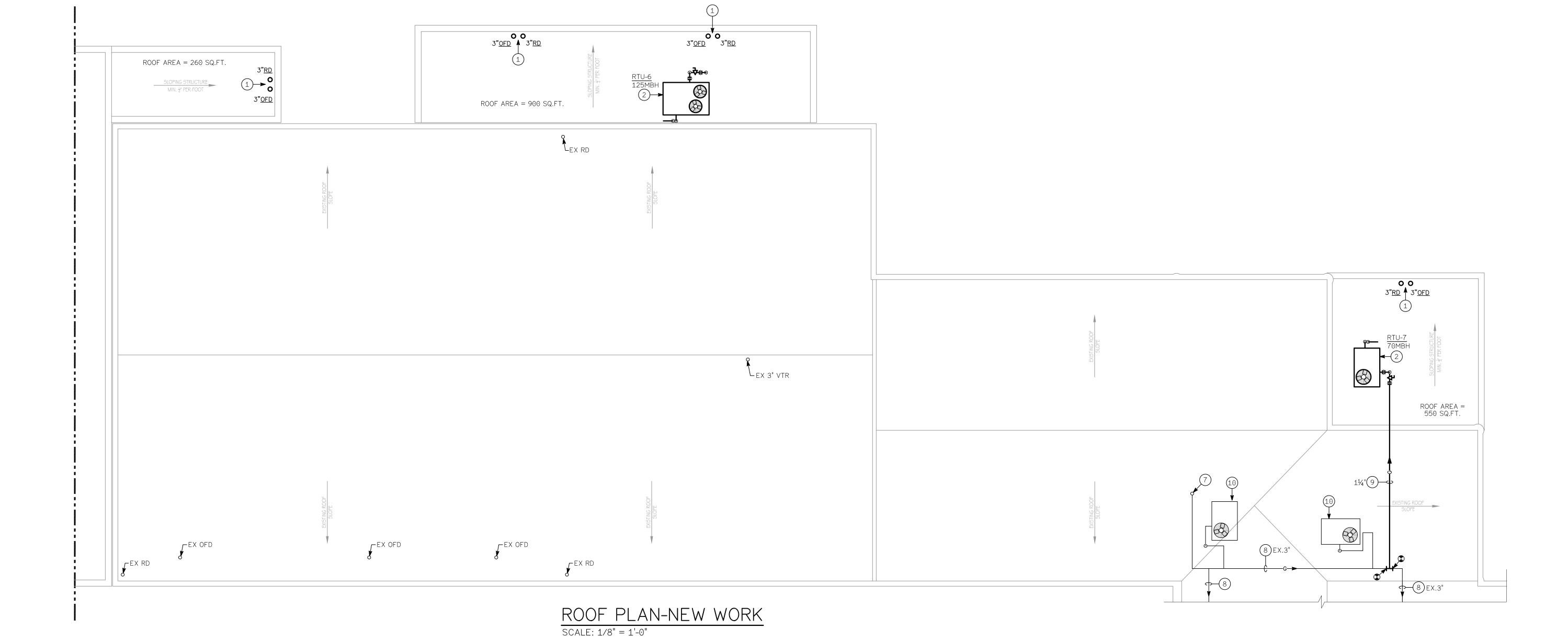
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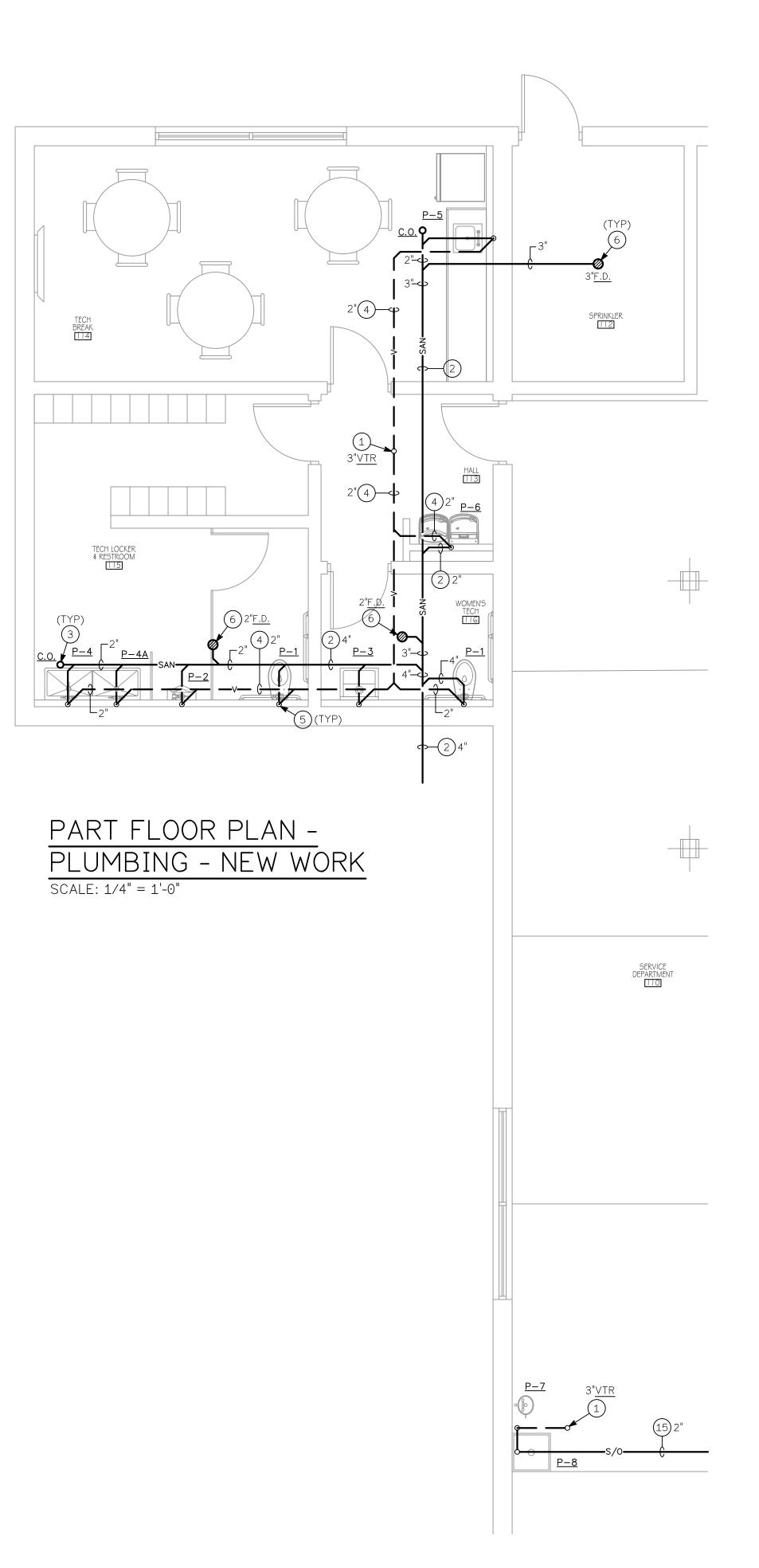
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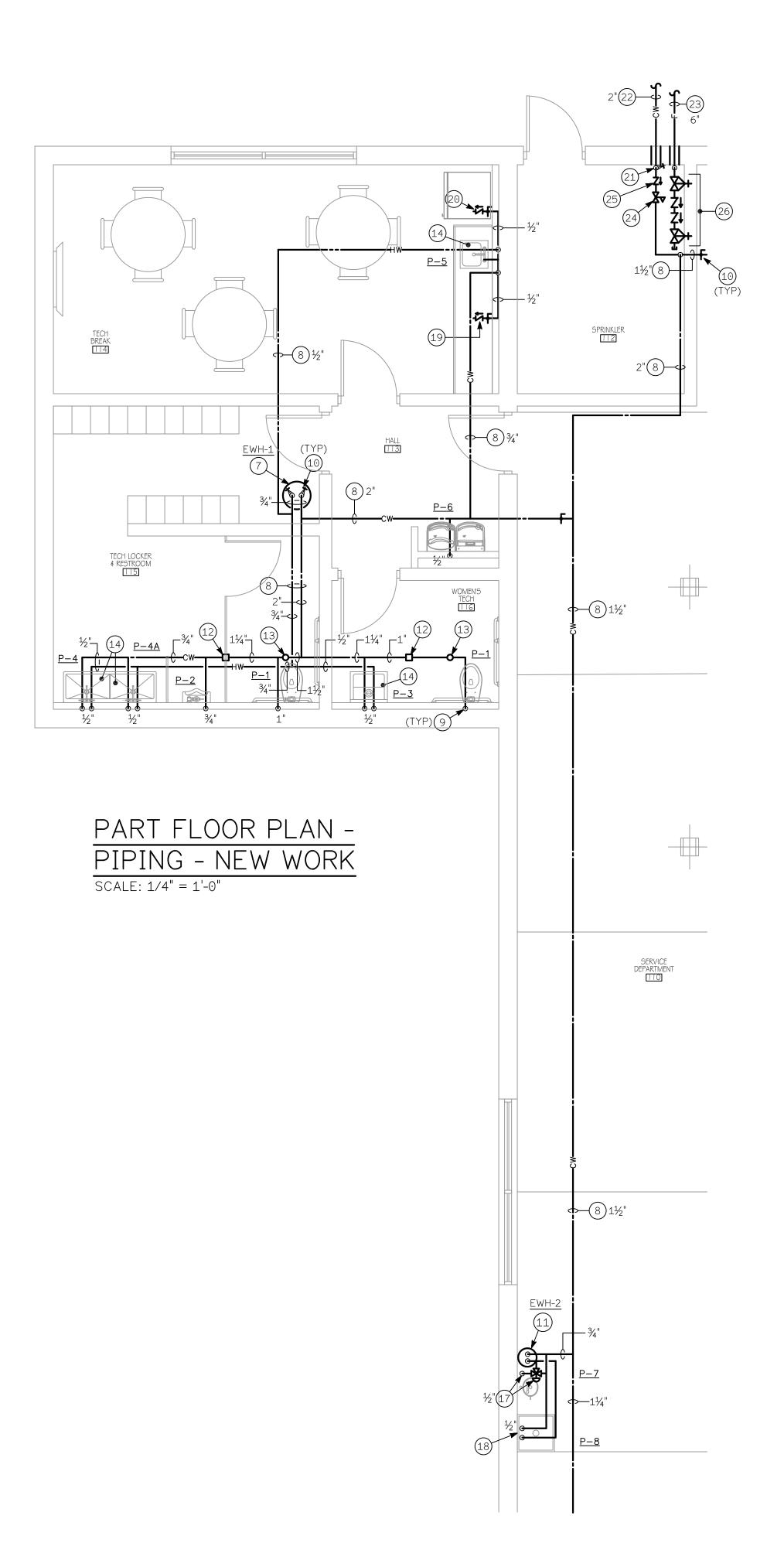
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**ROOF PLAN -NEW WORK** 

Project Number IDC #23-010 File Name







#### DRAWING NOTES (1)#

- 1. SANITARY VENT PIPING UP THRU ROOF.
- 2. SANITARY PIPING BELOW FLOOR SLAB/GRADE SLOPED AT MINIMUM 1/8" PER FOOT. ALL 2" SANITARY PIPING BELOW FLOOR SLAB/GRADE SHALL BE SLOPED AT 1/4" PER FOOT.
- 3. SANITARY CLEANOUT IN FLOOR (TYPICAL).
- 4. SANITARY VENT PIPING SUPPORTED HIGH FROM STRUCTURE ABOVE CEILING.
- 5. SANITARY VENT PIPING UP INSIDE WALL AND ROUTED ABOVE CEILING AS INDICATED
- 6. FLOOR DRAIN WITH TRAP PRIMER (TYPICAL), SIZE AS INDICATED.
- 7. ELECTRIC WATER HEATER MOUNTED ON PLATFORM ABOVE CEILING IN FULL SIZE DRAIN PAN. REFER TO SCHEDULE.
- 8. DOMESTIC WATER PIPING SUPPORTED HIGH FROM STRUCTURE ABOVE AND/OR HIGH IN SHOP (TYPICAL).
- 9. DOMESTIC WATER PIPING DOWN INSIDE WALL AND EXTENDED TO FIXTURES (TYPICAL).
- 10. BALL VALVE (TYPICAL).
- 11. ELECTRIC WATER HEATER MOUNTED ON PLATFORM ON WALL 10'-0" ABOVE FLOOR IN FULL SIZE DRAIN PAN. REFER TO SCHEDULE.
- 12. AUTOMATIC TRAP PRIMER/DISTRIBUTION UNIT LOCATED ABOVE CEILING WITH BALL VALVE AND ACCESS DOOR. EXTEND 1/2" PIPING TO EACH FLOOR DRAIN TRAP. UNIT SHALL BE PPP MODEL PR-500 PRIMER WITH DU-U-500 DISTRIBUTION UNIT, ASSE1018 LISTED, OR APPROVED
- 13. LEAD-FREE ASSE1010 LISTED WATER HAMMER ARRESTOR LOCATED ABOVE CEILING. WATTS MODEL LF15M2 OR APPROVED EQUAL.
- 14. UNDERSINK THERMOSTATIC MIXING VALVE WITH TAMPER-PROOF LOCKING CAP AND SET AT 105°F. WATTS LEAD-FREE LFUSG-B-M1 OR APPROVED EQUAL WITH ASSE1070 LISTING.
- 15. SAND/OIL PIPING BELOW FLOOR SLAB SLOPED AT MINIMUM 1/8" PER FOOT. ALL 2" SAND/OIL PIPING BELOW FLOOR SLAB SLOPED AT 1/4" PER FOOT.
- 16. SANITARY VENT PIPING SUPPORTED HIGH FROM STRUCTURE ABOVE IN SERVICE DEPARTMENT. 17. ANSI Z358.1 LISTED TEMPERING VALVE SET AT 60°F FOR EYE WASH WITH 1/2" HOT/COLD WATER CONNECTIONS AND 1/2" TEPID PIPING TO EYE WASH CONNECTION.
- 18. DOMESTIC WATER PIPING DOWN ALONG WALL TO FIXTURE.
- 19. DOMESTIC WATER PIPING STUBBED OUT BELOW COUNTER WITH BALL VALVE AND STAINLESS STEEL ASSE1022 DOUBLE CHECK VALVE FOR COFFEE MAKER. WATTS MODEL SD-3 OR APPROVED EQUAL.
- 20. DOMESTIC WATER PIPING STUBBED OUT AT WATER VALVE BOX MOUNTED APPROXIMATELY 48" ABOVE FLOOR FOR ICE MAKER CONNECTION. WATER-TITE MODEL W9700 OR EQUAL WITH 1/2" CONNECTION AND 1/4 TURN VALVE. PROVIDE LEAD-FREE, ASSE1024 BRONZE DUAL CHECK BACKFLOW PREVENTER UPSTREAM OF VALVE BOX, WATTS MODEL SERIES LF7 OR APPROVED
- 21. 2" DOMESTIC COLD WATER SERVICE UP THRU FLOOR IN SEALED PIPE SLEEVE WITH MAIN SHUT-OFF VALVE.
- 22. DOMESTIC COLD WATER PIPING TO BUILDING BELOW GRADE (BELOW FROST LEVEL) AND EXTEND OUT TO 5'-0" BEYOND BUILDING. COORDINATE WITH CIVIL DRAWINGS FOR CONTINUATION AND METER SIZE IN METER VAULT.
- 23. 6" FIRE PROTECTION SERVICE (BELOW GRADE) TO BUILDING AND UP THRU FLOOR IN SEALED PIPE SLEEVE. COORDINATE WITH CIVIL DRAWINGS FOR CONTINUATION.
- 24. LEAD-FREE ASSE1003 LISTED WATER PRESSURE REDUCING VALVE SET AT 70 PSI. WATTS SERIES LF223 OR APPROVED EQUAL.
- 25. LEAD-FREE, BRONZE ASSE1015 DOUBLE CHECK VALVE ASSEMBLY. WATTS MODEL SERIES
- LF007 OR APPROVED EQUAL.
- 26. 6" FIRE PROTECTION PIPING MOUNTED FROM FLOOR/WALL AT 36" ABOVE FLOOR WITH U.L./F.M. LISTED AND COUNTY APPROVED OS&Y VALVES AND BACKFLOW PREVENTOR ASSEMBLY. WATTS SERIES 709DCDAOSY OR APPROVED EQUAL. COORDINATE USAGE WITH THE LOCAL



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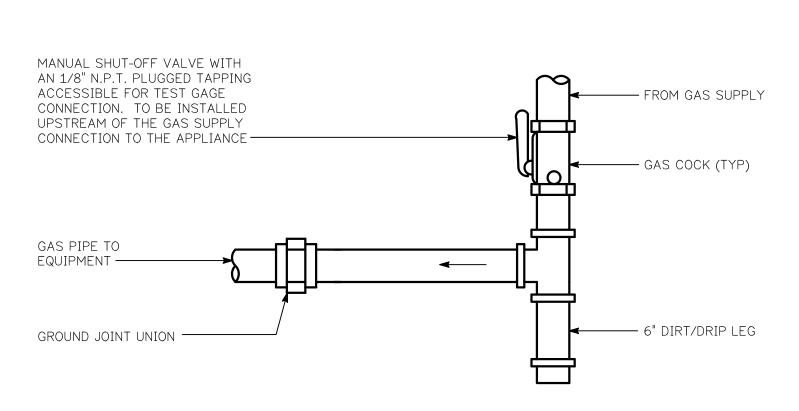
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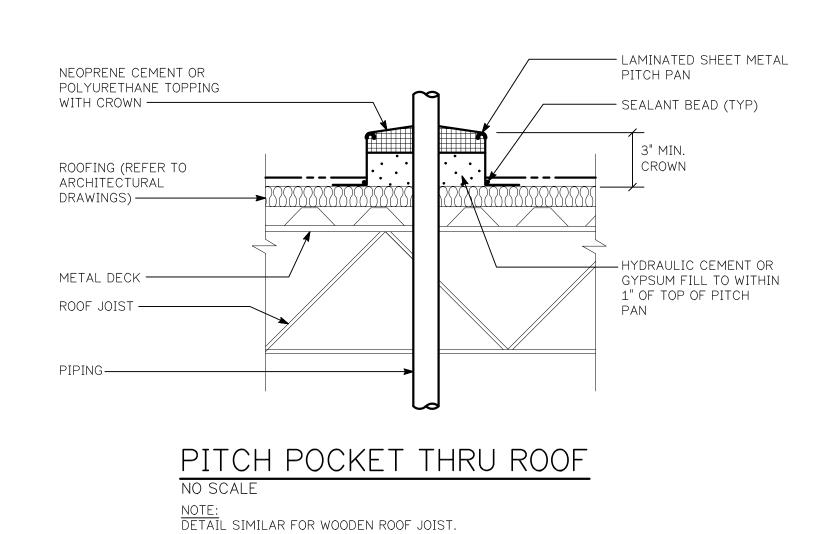
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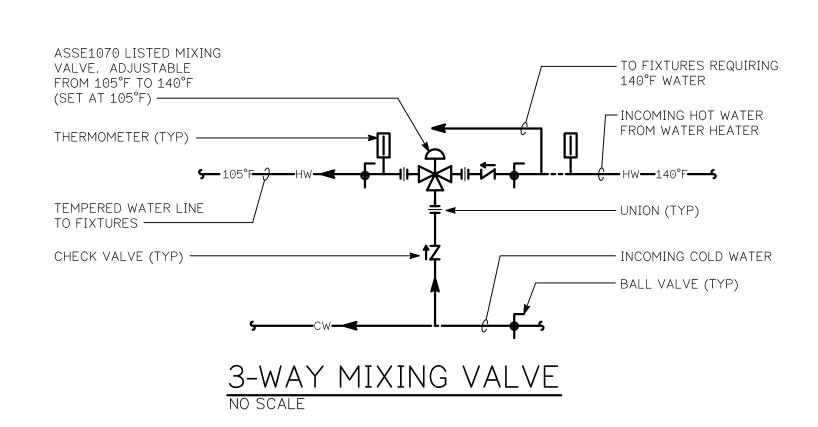
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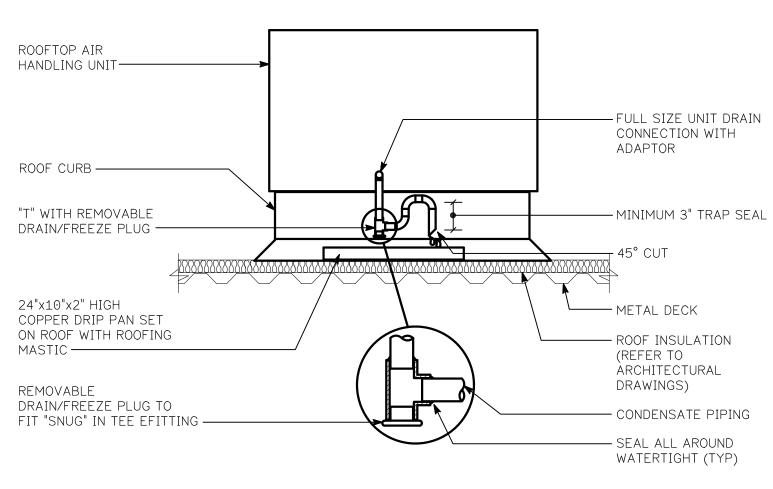
Sheet Title
PART FLOOR PLANS-PLUMBING/PIPING-**NEW WORK** 



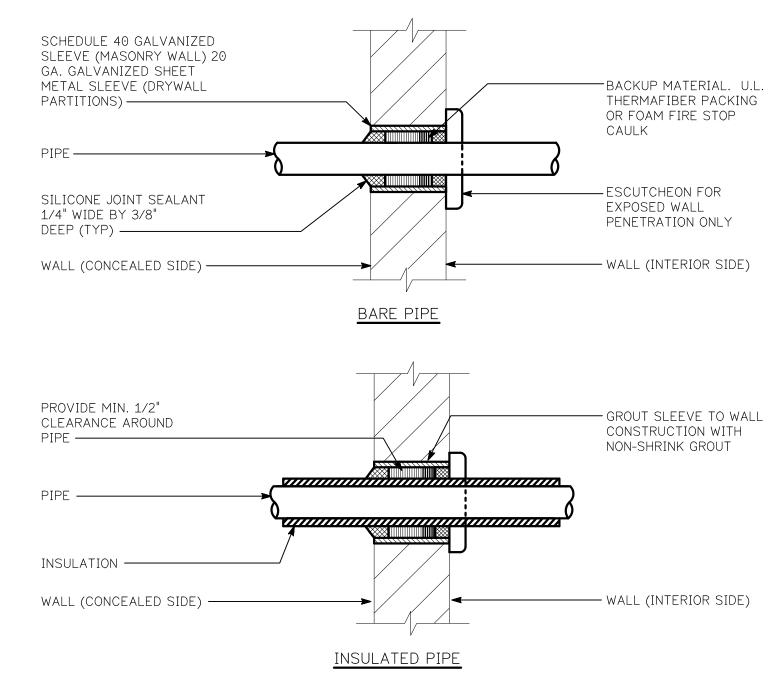
#### GAS CONNECTION TO EQUIPMENT NO SCALE









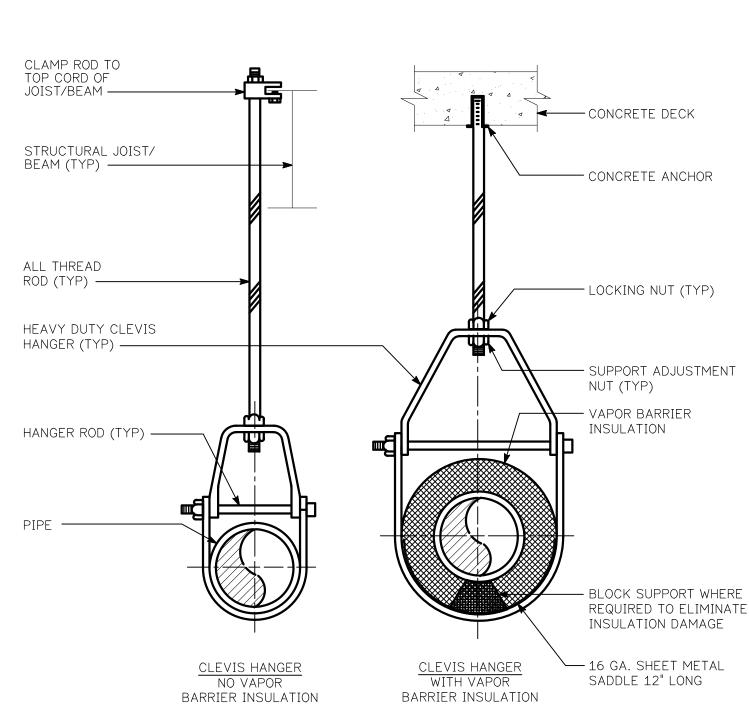


### PIPE SLEEVE THRU WALL

NOTES:

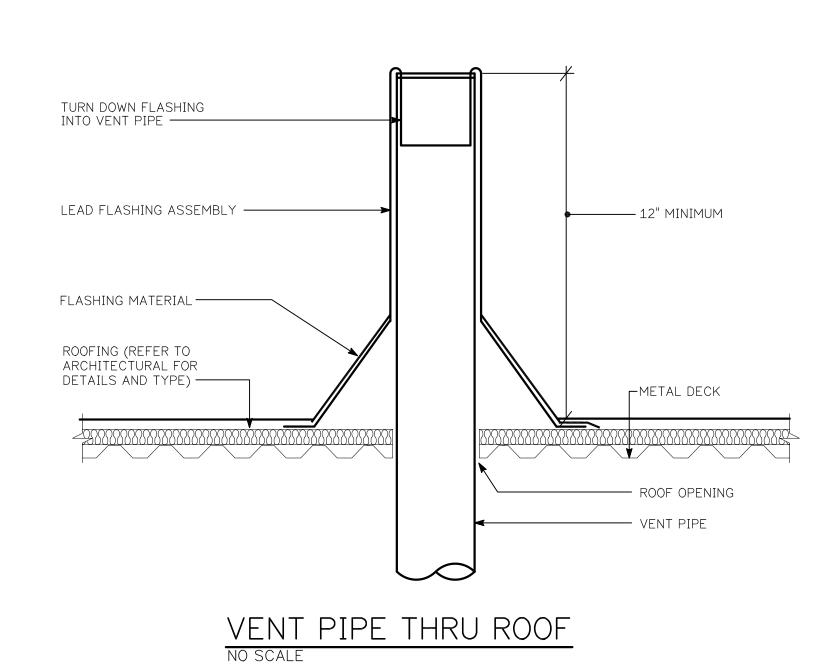
1) AT THE CONTRACTORS' OPTION A U.L. LISTED/APPROVED FIRE STOP PIPE

APPROVAL SLEEVE ASSEMBLY MAY BE SUBMITTED FOR APPROVAL. 2) FOR EXISTING POURED CONCRETED WALLS, CORE DRILL OR STAR DRILL OPENING THRU EXISTING WALL FOR PIPE SLEEVES AS DIRECTED. 3) GALVANIZED SLEEVE SHALL BE CAST INTO NEW CONCRETE WALL POURS.

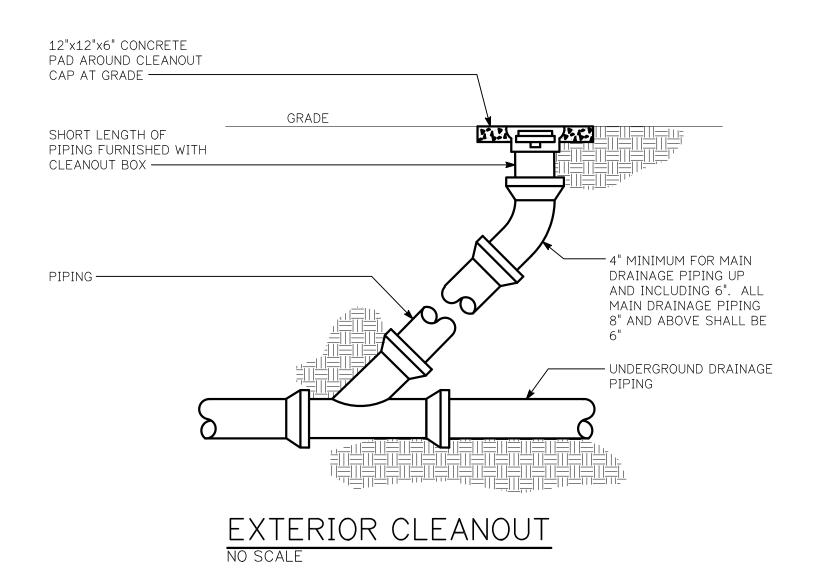


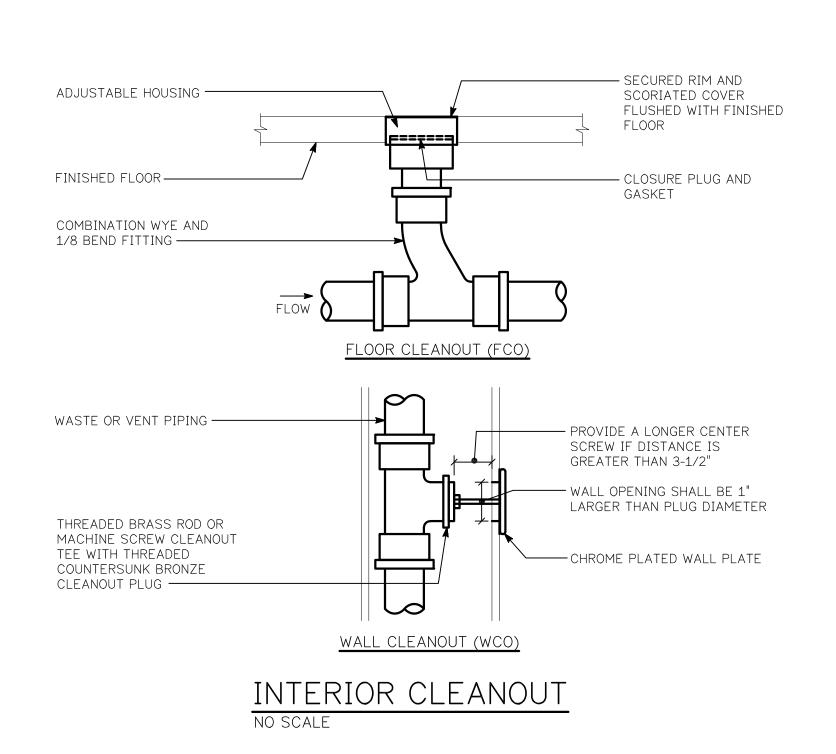
NOTES:

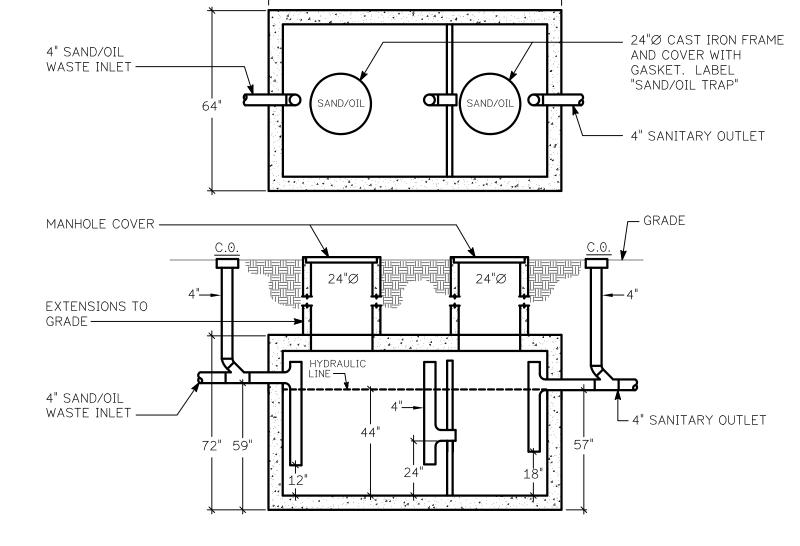
1) ALL HANGERS FOR COPPER PIPING SHALL BE COPPER COATED. 2) DISTANCE BETWEEN SUPPORTS: CAST IRON=6', COPPER=10', STEEL=12', PVC=4'



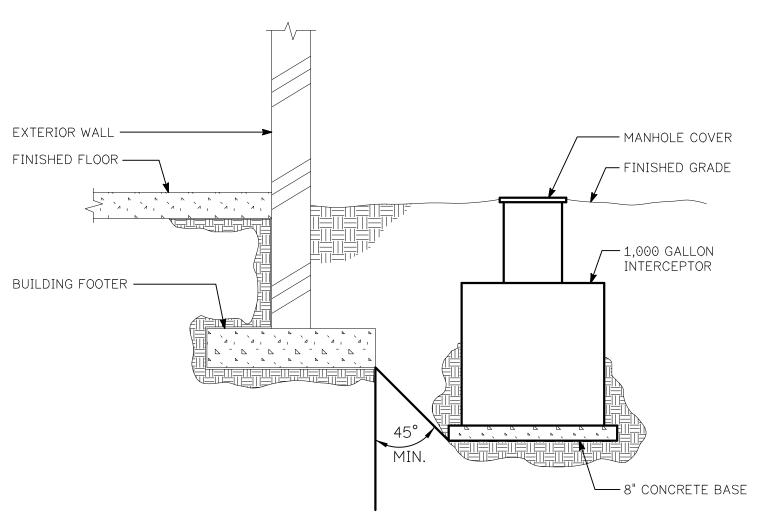
CEMENT BED -TILE FLOOR - WATERPROOF MEMBRANE CONCRETE FILL ——— STRUCTURAL SLAB ———— TY-SEAL ATTACHMENT --- DRAIN PIPING



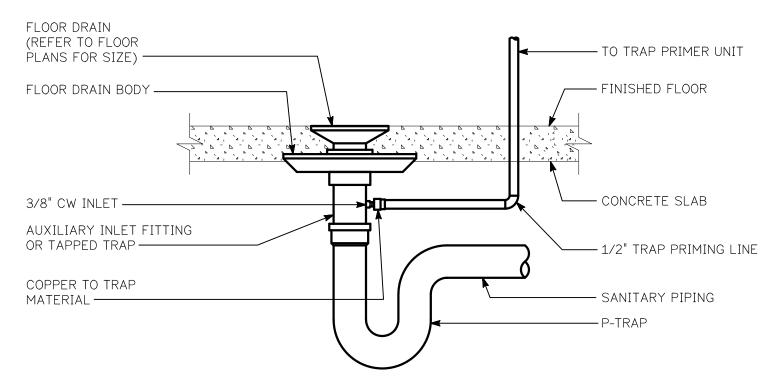




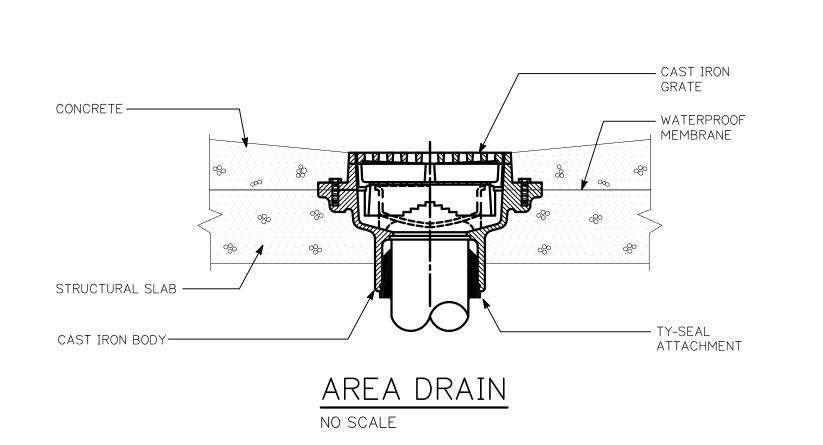
1) SAND/OIL INTERCEPTOR TO BE IN ACCORDANCE WITH ALL LOCAL CODE CODES AND REQUIREMENTS. 2) TANK SHOWN IS MANUFACTURED BY MAYER BROS., INC. COORDINATE SIZE AND DIMENSIONS WITH SELECTED MANUFACTURER AND WITH CIVIL DRAWINGS. 3) TANK DESIGNED FOR H-20 HEAVY DUTY TRAFFIC. EARTH COVER SHALL NOT EXCEED 5'-0" OR PER LOCAL CODES.



INTERCEPTOR INSTALLATION NO SCALE



TYPICAL FLOOR DRAIN WITH TRAP PRIMER NO SCALE



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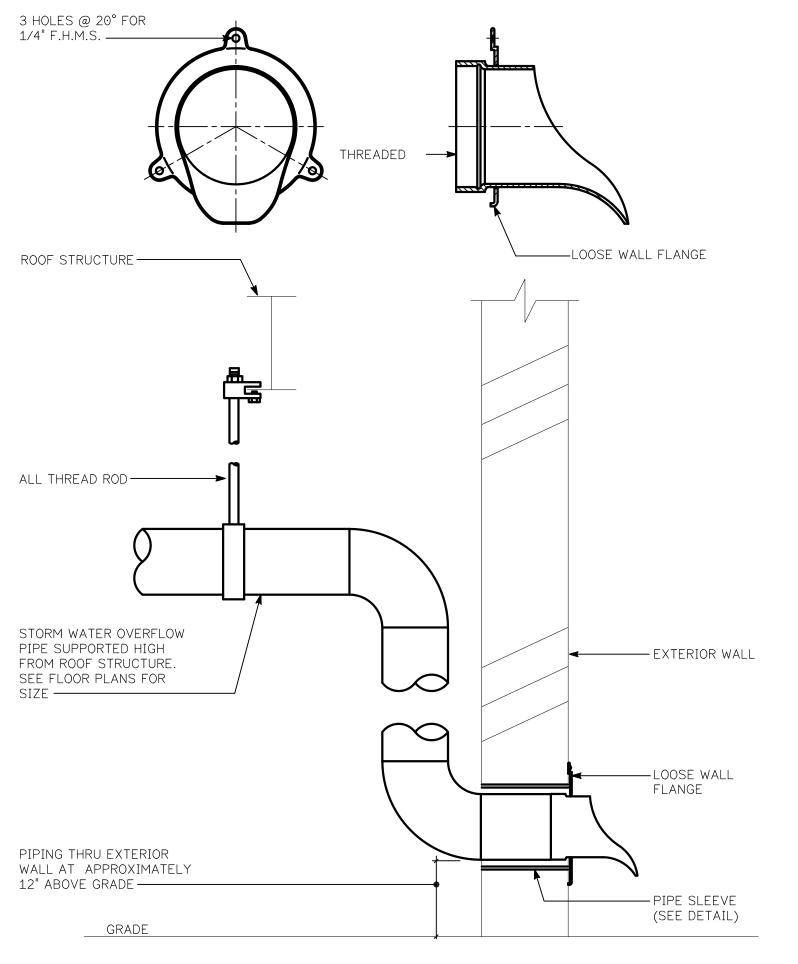
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**DETAILS** 

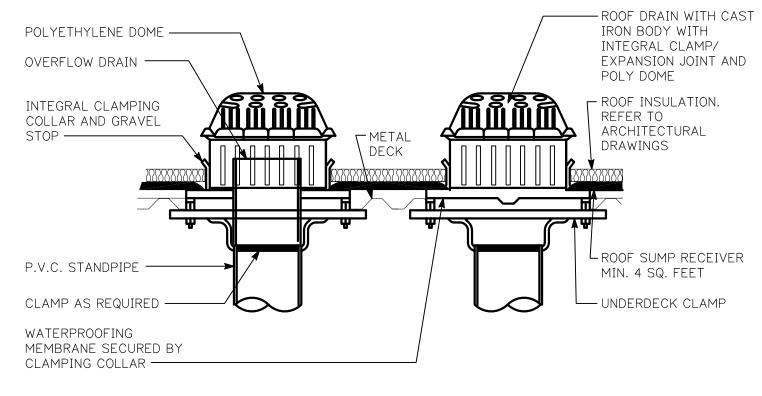
Project Number

File Name IDC #23-010



#### STORM WATER OVERFLOW PIPE THRU EXTERIOR WALL

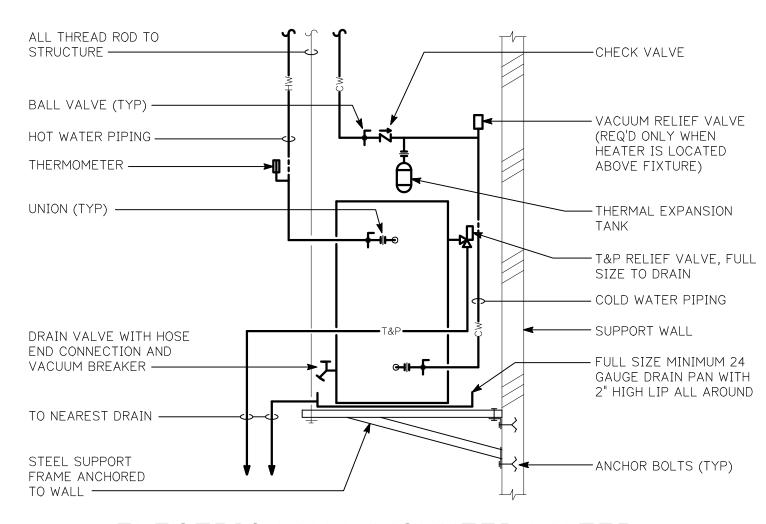
NOTE:
DOWNSPOUT NOZZLE SHALL BE WADE MODEL 3940 OR EQUAL WITH NICKLE FINISH.



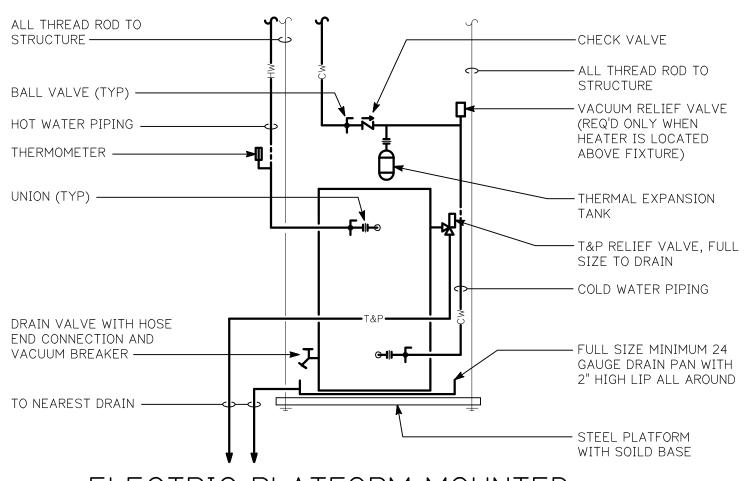
#### ROOF DRAIN & OVERFLOW DRAIN

NOTES:

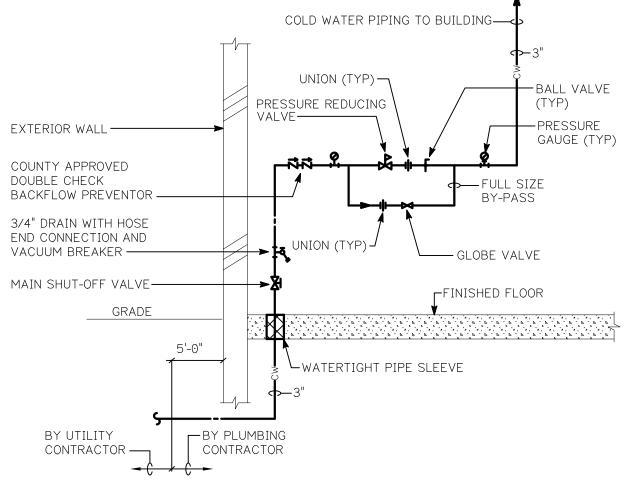
1) ROOF DRAIN SHALL BE J.R. SMITH MODEL #1010. 2) OVERFLOW DRAIN SHALL BE J.R. SMITH MODEL #1070



#### ELECTRIC WALL MOUNTED WATER HEATER PIPING SCHEMATIC

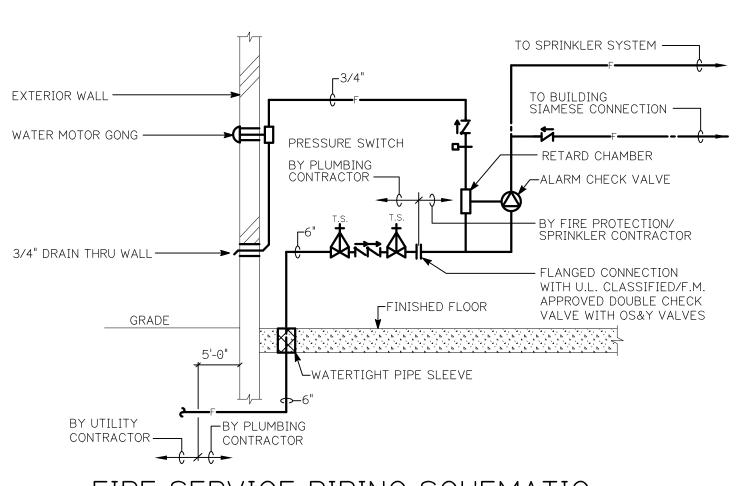


# ELECTRIC PLATFORM MOUNTED



# WATER SERVICE PRESSURE REDUCING

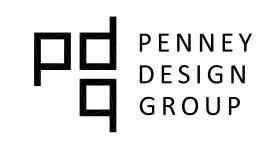
1) CONTRACTOR SHALL PROVIDE WATER FLOW AND PRESSURE TEST PRIOR TO INSTALLATION.
2) COORDINATE WATER METER TYPE AND INSTALLATION REQUIREMENTS WITH LOCAL COUNTY WATER DEPARTMENT. 3) PRESSURE SHALL BE REDUCED TO 70 PSI. COORDINATE WITH CIVIL ENGINEER. 4) THE 2" DOMESTIC WATER METER WILL BE LOCATED OUTSIDE IN A VAULT. REFER TO CIVIL



#### FIRE SERVICE PIPING SCHEMATIC

NOTES:

1) REFER TO FLOOR PLANS FOR PIPE SIZES. FINAL FIRE PROTECTION SYSTEM, PIPE SIZES AND SYSTEM DETAILS TO BE DETERMINED BY FIRE PROTECTION/SPRINKLER CONTRACTOR. 2) PLUMBING CONTRACTOR TO INSTALL INCOMING SERVICE UP TO AND INCLUDING U.L. CLASSIFIED/F.M. APPROVED DOUBLE CHECK VALVE ASSEMBLY. PLUMBING CONTRACTOR TO PROVIDE FLANGED CONNECTION DOWNSTREAM OF DOUBLE CHECK VALVE ASSEMBLY. FIRE PROTECTION/SPRINKLER CONTRACTOR TO INSTALL ALL PIPING, VALVES, EQUIPMENT, ETC., DOWNSTREAM OF FLANGED CONNECTION.



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**DETAILS** 

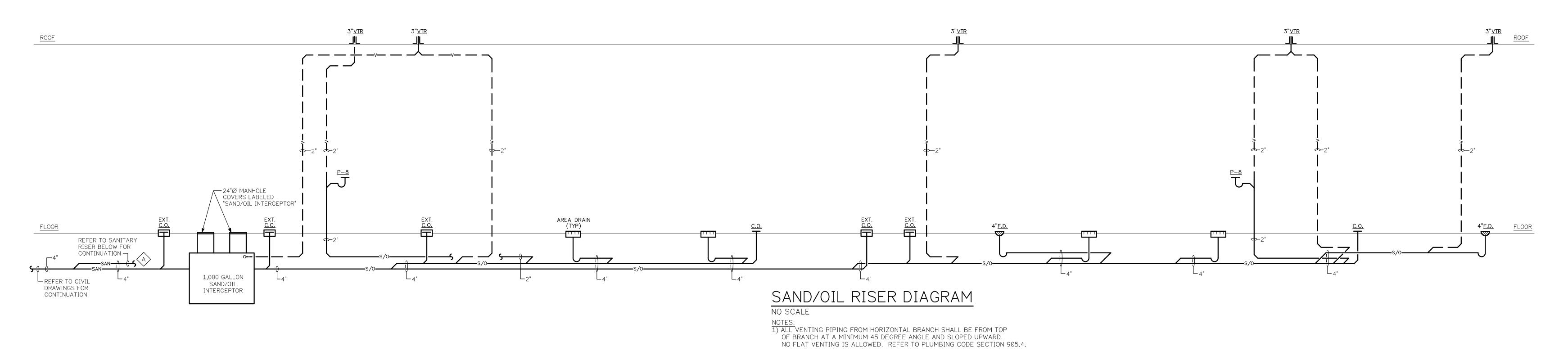
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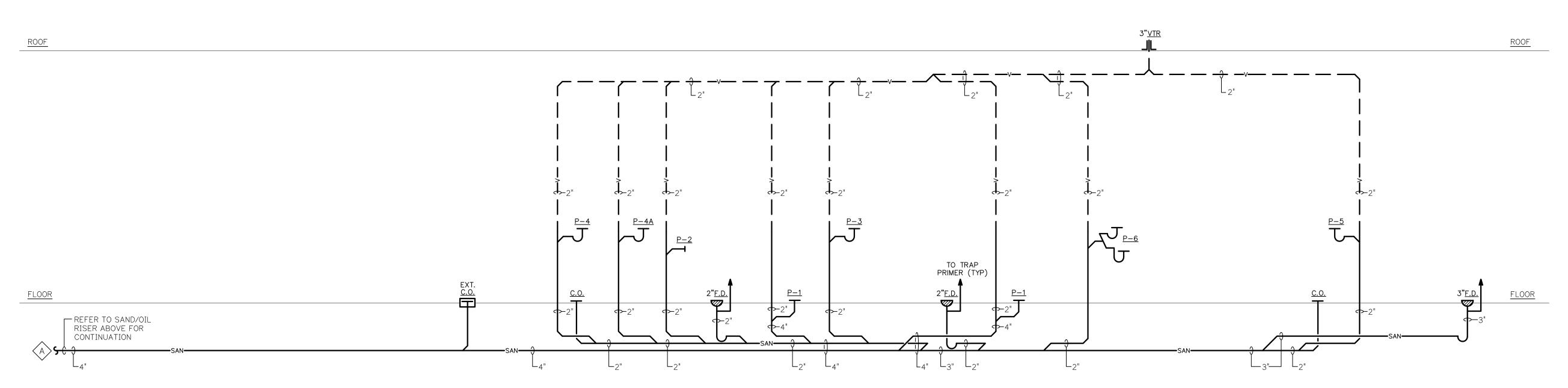
PLUMBING FIXTURE SCHEDULE									
ITEM#	DESCRIPTION			SIZES	L VENT	TRAP TYPE	REMARKS		
		H.W.	C.W.	SAN.	VENT	IIFC			
P-1	WATERCLOSET (FLUSH VALVE)		1"	4"	2"	INTEGRAL	ADA COMPLIANT		
P-2	URINAL (FLUSH VALVE)		3/4"	2"	2"	INTEGRAL	ADA COMPLIANT		
P-3	WALL HUNG LAVATORY	1/2"	1/2"	2"	2"	"P"	ADA COMPLIANT		
P-4	TECH WALL HUNG LAVATORY	1/2"	1/2"	2"	2"	"P"			
P-4A	TECH WALL HUNG LAVATORY	1/2"	1/2"	2"	2"	"P"	ADA COMPLIANT		
P-5	TECH BREAKROOM SINK	1/2"	1/2"	2"	2"	"P"	ADA COMPLIANT		
P-6	ELECTRIC WATER COOLER W/BOTTLE FILLER		1/2"	2"	2"	"P"	ADA COMPLIANT		
P-7	SINGLE EYE WASH STATION		1/2"				60°F TEPID HOT WATER		
P-8	HEAVY-DUTY SHOP WORK SINK	3/4"	3/4"	3"	2"	"P"			

ELECTRIC WATER HEATER SCHEDULE													
ITEM#	AREA SERVED	NOMINAL TANK SIZE (GAL.)	DIAMETER (IN.)	HEIGHT (IN.)	RECOVERY RATE (G.P.H.) @ 90° RISE	PIF CONNEC INLET		K.W.	ELECTRICAL DATA	OPERATING WEIGHT (LBS.)	MOUNTING LOCATION	MODEL #	MANUFACTURER
EWH-1	TECH AREA	20	22"	22"	20	3/4"	3/4"	4.5	277V/1Ø	250	ABOVE CEILING	PCE-20-10MSA	STATE
EWH-2,3	SHOP SINK, EYE WASH	30	22"	31"	20	3/4"	3/4"	4.5	277V/1Ø	350	10'-0" AFF ON WALL	PCE-30-20LSA	STATE

NOTES:
1) 1 KW WILL RAISE 4.1 GALLONS 100°F PER HOUR.
2) PROVIDE HEAT TRAPS AT INLET/OUTLET CONNECTIONS.
3) STORAGE WATER TEMPERATURE SHALL BE SET AT 140°F.

SAND/OIL INTERCEPTER					
LOCATION	SQ.FT.				
109 SERVICE SHOP	6,080				
110 SERVICE SHOP	5,960				
108 AIR/OIL ROOM	260				
TOTAL SQUARE FOOTAGE AREA=	12,300				
BASED ON THE 2018 INTERNATIONAL PLUMBING CODE CHAPTER 10, SECTION #1003.4.2.2					
FIRST 100 SQ.FT. REQUIRES 6 CUBIC FEET, ADDITIONAL AREA REQUIRES 1 CUBIC FOOT FOR EVERY 100 SQ.FT.					
(12,300-100)/100 = 122> 122+6 = 128 128 CUBIC FEET = 958 GALLONS					
* A <u>1,000</u> GALLON INTERCEPTER WILL BE PROVIDED *					





## SANITARY RISER DIAGRAM NO SCALE

NOTES:

1) ALL VENTING PIPING FROM HORIZONTAL BRANCH SHALL BE FROM TOP

OF BRANCH AT A MINIMUM 45 DEGREE ANGLE AND SLOPED UPWARD.

NO FLAT VENTING IS ALLOWED. REFER TO PLUMBING CODE SECTION 905.4.

 VERTICAL DISTANCE BETWEEN FIXTURE OUTLET AND TRAP SHALL NOT EXCEED 24". REFER TO PLUMBING CODE SECTION 1002.1.

2) VERTICAL DISTANCE BETWEEN FIXTURE OUTLET AND TRAP SHALL NOT EXCEED 24". REFER TO PLUMBING CODE SECTION 1002.1.

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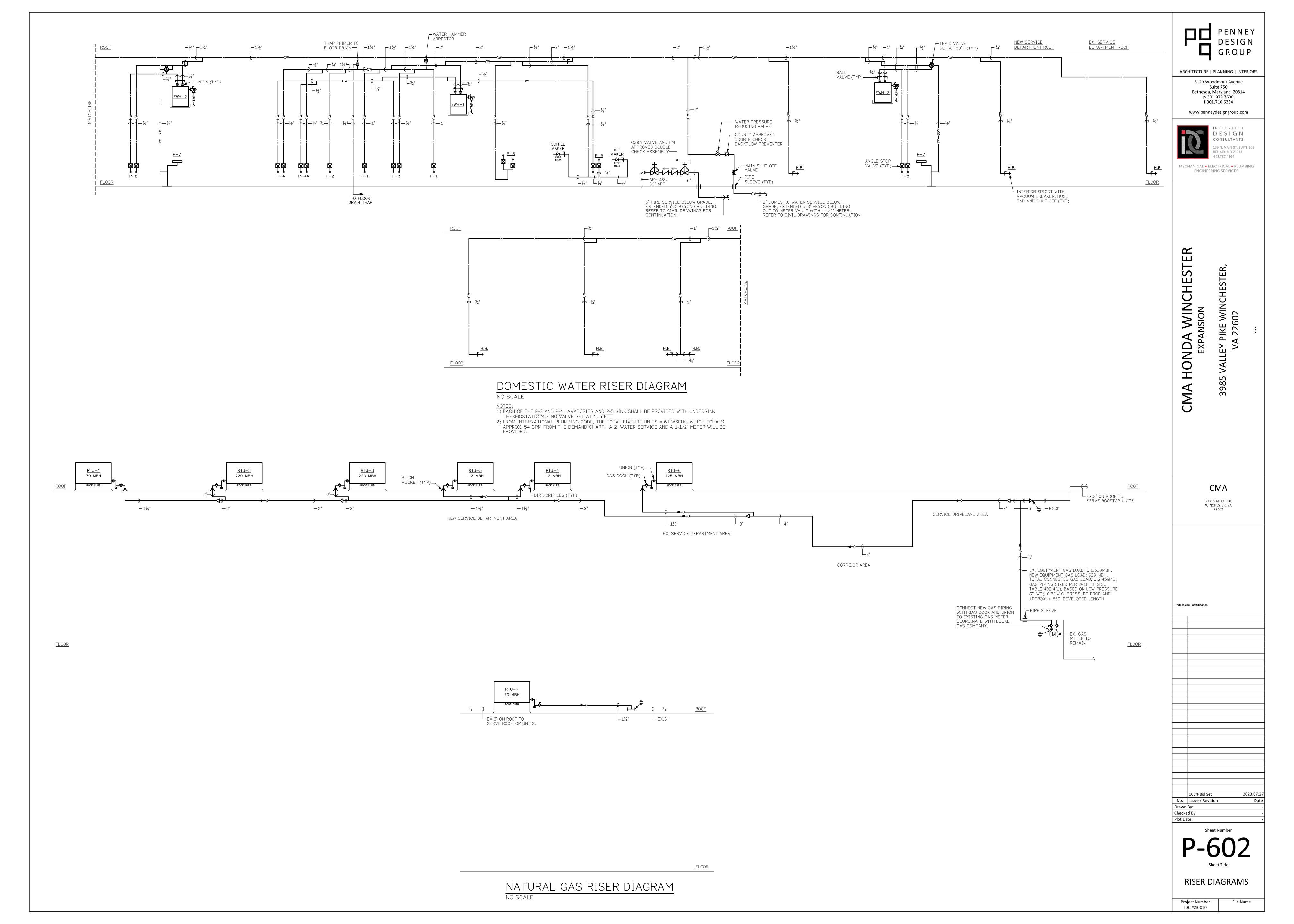
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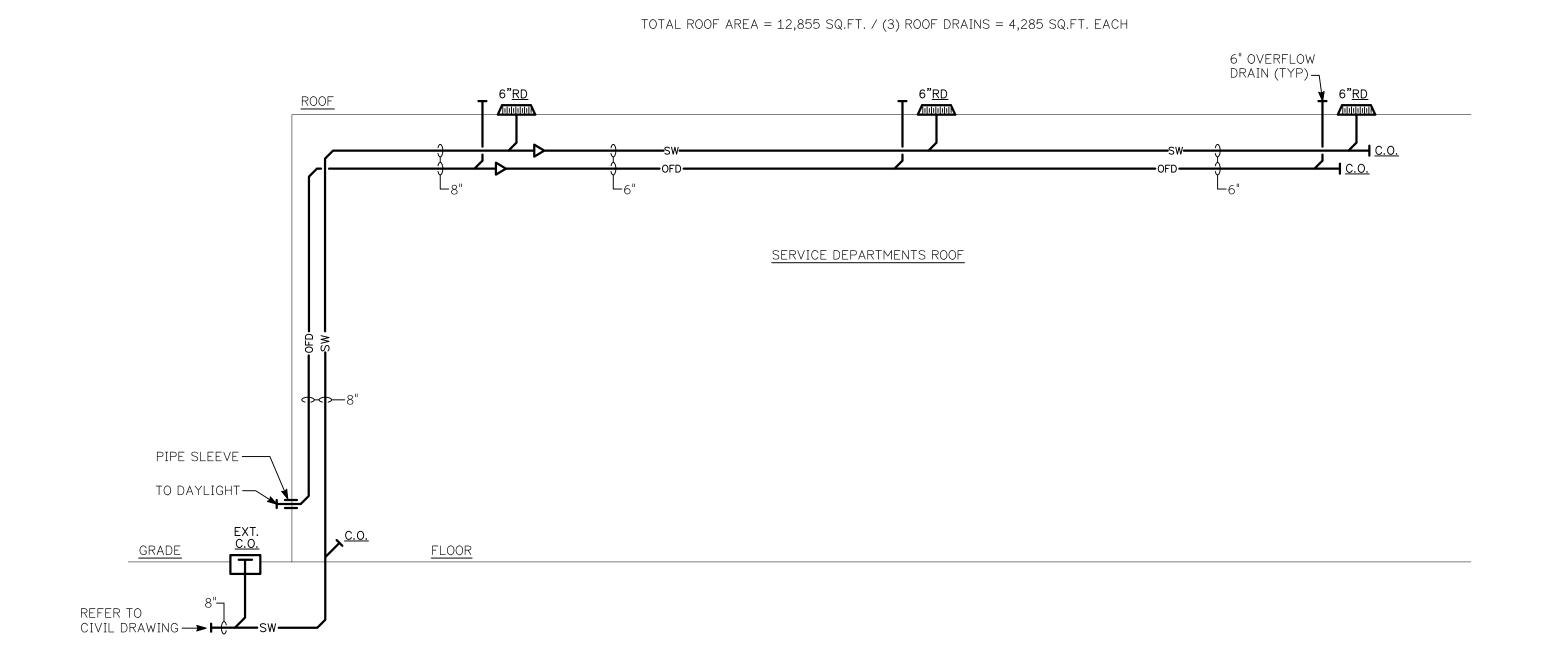
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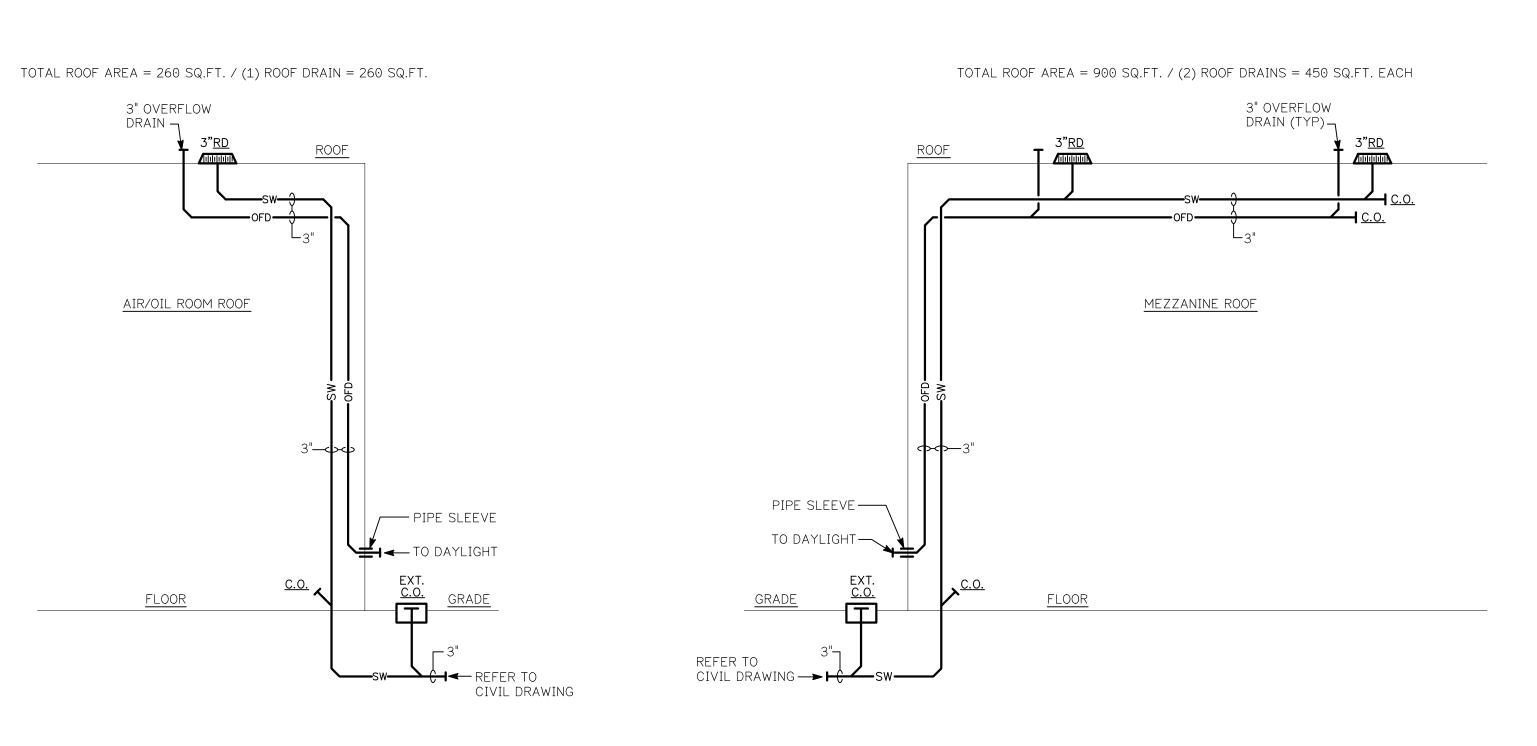
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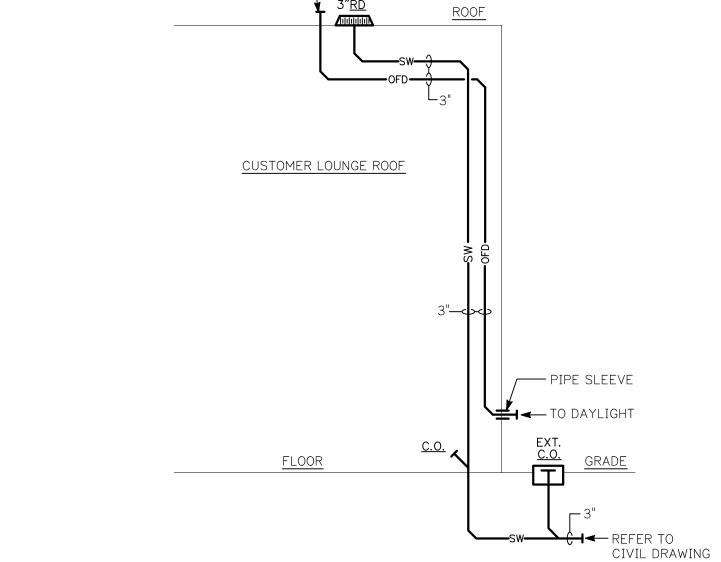
SCHEDULES, RISER DIAGRAMS

Project Number File Name
IDC #23-010









TOTAL ROOF AREA = 500 SQ.FT. / (1) ROOF DRAIN = 500 SQ.FT.

3" OVERFLOW

## STORM WATER RISER DIAGRAMS

NO SCALE

NOTE:
ALL MINIMUM VERTICAL AND HORIZONTAL PIPE SIZES ARE BASED ON THE INTERNATIONAL PLUMBING CODE, FIGURE 1106.1 (2.8" RAINFALL FOR VIRGINIA) AND TABLES 1106.2 AND 1106.3 FOR LEADER SIZING. ALL PIPING SHALL SLOPE AT MINIMUM 1/8" PER FOOT.

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RISER DIAGRAMS

Project Number File Name IDC #23-010

#### PIPING/PLUMBING SPECIFICATIONS

#### 1. SECTION 15010 - BASIC PIPING/PLUMBING REQUIREMENTS

- A. The work of each of the following sections includes furnishing and installing the material, equipment and systems complete as specified and/or indicated on the drawings. The installations, when finished, shall be complete and coordinated, ready for satisfactory
- B. All work under this contract shall be done in strict accordance with all applicable municipal, state, county, NFPA, International and local codes that govern each particular trade.
- C. The contractor shall make applications and pay all charges for all necessary permits, licenses and inspections as required under the above codes. Upon completion of the work, the customary certifications of approval shall be furnished. The contractor shall also coordinate and make all required submissions to the local utility companies (ie: load letters, water/gas demand forms, etc.).
- D. No materials or equipment shall be used in the work until approved. Before submission of the shop drawings, and not more than thirty (30) days after award of the contract, the contractor shall submit for approval, a complete list of all materials and equipment which he intends to furnish, giving manufacturer and catalog numbers. A complete list of proposed sub-contractors shall also be submitted.
- E. The contractor shall examine all drawings and specifications and shall visit the site and inspect the existing conditions in person. Certain areas may have been in-accessible at the time of the engineers survey and may only be visible during or after the demolition phase; therefore, those systems and coordination of those systems, shall become the responsibility of the contractors. Failure to comply with this requirement shall not relieve the contractors of their responsibilities for complying with the intent of the contract documents.
- F. The contractor shall snake/camera all existing below floor/grade sanitary systems serving the project area, as required, to verify sizes, inverts, direction of slope, etc. and ensure that the new sanitary system can connect to the existing system where indicated on the drawings.
- G. The drawings indicate the general arrangement of the plumbing installations. Details of proposed departures due to actual field conditions or other causes shall be submitted for approval prior to installation. Reworking of completed items due to improper field
- coordination shall be at the contractor's expense. H. Provide sufficient access and clearance for all items of equipment requiring servicing and maintenance, such as valves, drains, vents, filters, traps, etc. and major items of
- I. The contractor shall perform all necessary cutting and patching as required to complete the installation of the all plumbing work. Patching of walls, floors, ceilings, roof, etc. shall match the adjacent surfaces.
- J. The contractor shall prepare three (3) copies of a record and information booklet. The booklet shall be bound in a three ring loose-leaf binder. Provide the following data in
- 1) Catalog data on each piece of equipment furnished
- 2) Approved shop drawings on each piece of equipment furnished 3) Maintenance, operation and lubrication instruction on each piece of equipment furnished
- 4) Manufacturer's and contractor's guarantees 5) Water balancing reports

Storm water piping .....

- 6) Commissioning reports as required 7) Schedule/description of all service work/maintenance inspections required by the paragraphs of this section
- K. The entire new and existing piping/plumbing system shall be tested hydrostatically before insulation covering is applied and proved tight under the following gauge
- as specified below Sanitary piping ..... Domestic water piping ... ..... 100 psig . mercury gauge Natural gas piping ..... ...... 225/400 psig Refrigeration liquid and suction piping ..... .. Per NFPA Fire protection piping ...
- Contractor shall also inspect and verify all existing piping located within the project area which listed to remain, for leaks, defects, etc. and repair as required.

... as specified below

- L. All soil, waste and vent piping shall be tested by the contractor. The entire new drainage system and venting system shall have all necessary openings plugged and filled with water to the level of ten (10) feet above the main or branch being tested. The system shall hold this water for thirty (30) minutes without showing a drop greater than four (4)
- Note: If any code or authority requires testing which is different than the test listed above, the more stringent test shall be performed.
- M. Upon completion of the plumbing installations, the contractor shall provide a complete set of prints of the contract drawings which shall be legibly marked in red pencil to show all changes and departures of the installation as compared with the original design. They shall be suitable for use in preparation of as-built drawings.
- N. All piping and valve systems shall be identified with labels and tags. Materials shall be as manufactured by Seton name plate corporation. Color coding for piping shall be as
- O. All new installations, including all materials and labor shall be guaranteed for a period of one (1) year from date of owner acceptance. The above shall not in any way void or abrogate equipment manufacturer's guarantee or warranty. Certificates of guarantee shall be delivered to the owner.
- P. Contractor shall also provide one (1) year free service to keep the equipment in operating condition. This service shall be provided and rendered upon request when notified of any equipment malfunction.
- Q. In addition to the first year warranty period, the contractor shall provide, at no additional cost to the owner, a minimum of four (4) service calls and maintenance inspections. A complete outline of the required maintenance and the proposed schedule shall be included in a "record and information booklet", for review and acceptance by the owner/representative and engineer. The inspections are to be performed at three (3) month intervals for a total of four (4) service calls and inspections during the first year warranty period plus the original system start-up commissioning. Upon completion of each scheduled inspection, the contractor shall deliver to the building owner or owners representative, within (48) hours of completion, two (2) copies of the completed inspection report for record purposes.
- R. The service contractor shall, at the ninth month, advise the owner of the termination date of the above services. This contractor shall also provide the owner with a detailed proposal, reflecting annual escalation, for the continuation of the services and inspections described above.

#### 2. SECTION 15050 - BASIC PIPING/PLUMBING MATERIAL & METHODS

- A. Provide all labor and materials necessary to furnish and install all piping systems on this project, including interior storm, sanitary, sanitary vent, domestic water, condensate drainage, natural gas and refrigerant piping systems.
- B. Piping and valves shall be as follows:

Fittings: Solvent weld joints.

- 1) Storm and sanitary drains below floor slab/grade:
- Piping: Schedule 40 PVC DWV pipe.
- 2) Storm and sanitary drains and sanitary vents above floor inside building:
- \* Piping located in return air plenums
- Piping: Cast iron no-hub soil pipe
- Fittings: Cast iron no-hub soil pipe fittings
- Joints: No-hub stainless steel gasketed fittings
- \* Piping located in open areas (ie: shop, parts) or non-return air plenums
- Piping: Schedule 40 PVC DWV pipe.

Fittings: Solvent weld joints.

- 3) <u>Domestic hot and cold water piping inside building:</u>
- Piping: All water pipings shall be hard copper, type L above ground, type K below
- Fittings: Lead free solder type wrought copper.
- Gate Valves: 2-1/2" or 3"= 150 psi, union bonnet, rising stem, solid wedge, bronze
- Ball Valves: 2" or smaller= 150 psi, two piece body, full port, blowout-proof stem, chrome plated ball, bronze body and stem, reinforced TFE seat ring. Nibco S-585-70.
- Unions: 125 psi., wrought copper, ground joint solder ends.

body, bonnet and stem. Nibco S-134.

#### 4) Water heater T&P relief piping:

- Piping: type DWV seamless copper tubing
- Fittings: wrought copper solder drainage fittings
- 5.) <u>Atmospheric condensate drainage piping:</u>
- Piping: type DWV seamless copper tubing
- Fittings: copper solder drainage fittings

#### 6) <u>Natural gas piping:</u>

- Piping: schedule 40 black steel
- Fittings: 2" or smaller, threaded. 2-1/2" or larger long radius welding.
- Gate Valves: 1", 1-1/2" or 2"= union bonnet, rising stem, solid wedge, bronze body, bonnet and stem, threaded ends. Nibco #T-174-A. 2-1/2" or larger= 300 psi, iron body, bolted bonnet, OS&Y, solid wedge, bronze mounted. Nibco #F-667-O.
- Ball Valves: 1/2" or 3/4"= forged brass alloy, aluminum tee handle, threaded ends. Nibco GB30 rated at 1/2 psi for indoor appliance connections.

#### 7) Refrigerant piping:

- Piping: Type L hard copper refrigerant tube, dehydrated and sealed.
- Fittings: Wrought copper solder type with silfos. 8) Fire protection:
- Piping and fittings as required by N.F.P.A. regulations and as hereinafter
- C. Copper pipe shall be revere, anaconda, or chase types "L" and "K" hard drawn, with
- D. Cast iron piping shall be service weight drainage piping and shall conform to the requirements of the C.I.S.P.I.. Each length of pipe and each fitting shall be clearly marked with the manufacturer's initials and pipe classifications.
- E. Steel piping shall be similar and equal to National Tube Company, Republic or Bethlehem black or zinc-coated (galvanized) steel as hereinbefore specified. Pipe shall be free from all defects which may affect the durability of the intended use. Each length of pipe shall be stamped with the manufacturer's name.
- F. All hangers for copper piping shall be copper clad, split ring swivel type, having rods with machine threads and threaded copper clad ceiling flange. Cast iron and steel piping supports shall be similar without copper clad and prime paint finish. Maximum horizontal distance between pipe hangers shall be as follows:
- Cast Iron Piping = 6' Copper Piping = 12'
- Copper Tubing (<=1-1/4") = 6' Copper Tubing (>=1-1/2" = 10'
- PVC Piping = 4' Steel Piping = 12'
- G. Provide dielectric couplings where non-ferrous metal piping is joined to ferrous metal piping. The gasket material shall be capable of withstanding the temperatures and pressures within the piping system in which installed. Submit dielectric coupling and gasket material for approval.

#### 3. SECTION 15250 - PIPING INSULATION

- A. All storm water, roof drain sumps, domestic water, chilled water and heating water piping systems shall be insulated with fiberglass insulation. All insulation shall be noncombustible or shall have a flame spread index of not more then 25 and a smoke-developement index of not more then 50 when tested in accordance with ASTM
- B. Pipe insulation shall be premolded fiberglass insulation with an all service jacket, Owens Corning fiberglass SSL-II. Fittings shall be insulated and covered with PVC covers. All domestic hot water piping smaller then 1-1/2" shall have 1" of insulation and all domestic hot water piping between 1-1/2" and 4" shall have 1-1/2" of insulation. All domestic cold water and storm water piping shall have 1" of insulation.

#### 4. SECTION 15300 - FIRE PROTECTION (Performance Spec Only)

- A. All work, materials, equipment and accessories shall comply with the standards of the National Fire Protection Association and all state and local regulations.
- B. Modify the existing wet pipe sprinkler system to properly cover and protect the new project area. System shall generally be light hazard, except ordinary hazard in all storage rooms, electrical rooms, etc. The fire protection contractor shall determine final classifications of all spaces.
- C. The modifications shall include, but are not limited to valves, flow switches, sprinkler heads and escutcheons, piping, fittings, hangers, signs and other identification markings, as required.
- D. The sprinkler contractor shall carefully examine all documents during the bidding period and familiarize himself with project conditions such as building construction, pipe and ductwork locations and elevations.
- E. Existing sprinkler heads that are removed may not be reused. Provide new sprinkler heads as required to meet the new layout and classification. All new sprinkler heads must match the existing head types. Any sprinkler heads installed in finished ceilings shall be brushed chrome semi recessed type. All heads in open structure or bay areas with no ceiling shall be bronze upright type. Sprinkler coverage required underneath roof overhangs/canopy areas outside of the building envelope may be accomoplished using dry pendent or dry sidewall sprinklers.
- F. The sprinkler contractor shall arrange for approval of the revised sprinkler systems and conduct tests in accordance with NFPA 13.
- G. The sprinkler contractor shall provide a detailed shop drawing showing piping layout, head locations, elevations and coordination with all building structure, electrical and plumbing trades. The contractor shall submit detailed sprinkler shop drawings with actual heads for architect approval prior to any fabrication.
- H. The sprinkler contractor must submit one set of sprinkler shop drawings and hydraulic calculations to the local county fire marshall and/or fire department.
- 4. SECTION 15300 FIRE PROTECTION (Performance Spec Only) (new/shell)
- A. All work, materials, equipment, and accessories shall comply with the standards of the national fire protection association and all state and local regulations. System shall be in accordance with NFPA 13 for sprinkler design, NFPA 13 for general storage protection and NFPA 13 for rack storage.
- B. Under the new building design, the plumbing contractor shall coordinate the incoming combination fire/domestic cold water system and split inside the sprinkler room. The plumbing contractor shall then install the OS&Y valves and a double U.L. double check valve/backflow preventor in the fire protection system. The final rough in from the plumber for the sprinkler contractor shall be a flanged/capped connection in the sprinkler room. The plumber shall also install the required valves, fitting, devices, etc. in the domestic water system such as: main shut-off valve, pressure reducing valve, water meter, backflow preventor, etc.. Refer to the drawings for exact arrangement.
- C. The sprinkler contractor shall extend the wet pipe sprinkler system from stub, to properly cover/protect the new building. System shall generally be light hazard, except ordinary hazard in all service shops, storage rooms, electrical rooms, etc. Final density flow per square foot and classification of all spaces shall be determined by the fire protection contractor.
- D. The installation shall include, but are not limited to valves, flow switches, sprinkler heads and escutcheons, piping, fittings, hangers and signs and other identification
- E. The sprinkler contractor shall carefully examine all documents during the bidding period. He shall familiarize himself with project conditions such as building construction and pipe and ductwork locations and elevations.
- F. Sprinkler heads shall be installed to properly cover and protect the new building. Sprinkler heads shall be installed to protect the entire structure. Any sprinkler heads installed in finished ceilings shall be brushed chrome semi recessed type. All heads in open structure or bay areas with no ceiling shall be bronze upright type.
- Sprinkler coverage required underneath roof overhangs/canopy areas outside of the building envelope may be accomoplished using dry pendent or dry sidewall
- G. The sprinkler contractor shall arrange for approval of the sprinkler systems, and conduct tests in accordance with NFPA 13.
- H. The sprinkler contractor shall provide a detailed shop drawing showing piping layout, head locations, elevations and coordination with all building structure, electrical and plumbing trades. The contractor shall submit detailed sprinkler shop drawings with actual heads for architect approval prior to any fabrication.
- I. The sprinkler contractor must submit one set of sprinkler shop drawings and hydraulic calculations to the local county fire marshall and/or fire department.
- J. The sprinker contractor shall apply for and obtain a county permit for the work. The permit submittals usually include three copies of shop drawings, hydraulic calculations and catalog documentation of sprinklers and other system
- K. Sprinkler spacing should be limited to a maximum of 100 ft per head. The construction detail and locations of the smoke draft curtain boards and roof vents should be explicity called out to the sprinkler contractor, as they will affect the placement and coverage of the sprinklers.

#### 5. SECTION 15400 - PLUMBING

- A. The work covered by this section of the specifications consists of furnishing all labor, equipment and materials in connection with the rough-in, final setting and connections to all plumbing fixtures. The contractor shall carefully review the conditions at the site and all of the contract drawings to determine the extent of the new and renovation plumbing work required.
- B. All plumbing fixtures shall be complete in every detail with all trimmings and connections. All fixtures shall be designed to prevent the backflow of polluted water or waste into the water supply system. Fixtures shall be as listed below or approved equal:

P-1 Flush Valve Water Closet (handicapped): Toto #CT705ELN, floor mounted, bottom outlet, elongated rim bowl, 17-1/2" high, 1.28 GPF with vitreous china construction, 1-7/8" trap diameter, 1-1/2" top spud, 12" rough-in, bolt caps, wall support and Toto #534 heavy duty white plastic seat with open front and check hinge. Provide Toto #TET1GA, 1.28 GPF EcoPower self-generating, sensor activated electronic flush valve with manual override button, chrome finish and vacuum breaker. ADA compliant.

<u>P-2 Tech Urinal (handicapped):</u> Toto #UT447E, 0.5 GPF, vitreous china, wall hung, washout flush action with integral trap with 3/4" top inlet spud and J.R. Smith fig. 0635 urinal support. Provide Toto #TEU1LA hydropower self-generating, sensor activated electronic flush valve with manual override button, chrome finish and vacuum breaker. ADA compliant.

P-3 Tech Wall Hung Lavatory (handicapped): Toto #LT307 with vitreous china construction, faucet ledge, grid drain, tailpiece, cast brass "P" trap, tubing to wall with escutcheon, key operated supply valves with rigid supplies and chair carrier. Provide Sloan #EBF-650, 4" center set lavatory faucet, battery powered, sensor activated, chrome plated with 0.5 gpm spray head. All exposed waste piping and hot and cold water piping shall be insulated with Truebro Handi Lav-Guard model 103 insulation kit with white finish. ADA compliant.

P-4 Tech Wash Sink: Advance Tabco single compartment 400 series, 16 gauge, type 430 stainless steel sink with back splash and galvanized tubular legs. Provide Elkay #LK940GN05T4H chrome plated mixing faucet with wrist blade handles, 5" high gooseneck swing spout, anti-hose aertor and Elkay #LK18B stainless steel perforated strainer grid.

P-4A Tech Wash Sink (handicapped): Advance Tabco single compartment 400 series, 16 gauge, type 430 stainless steel sink with back splash and galvanized tubular legs. Provide Elkay #LK940GN05T4H chrome plated mixing faucet with wrist blade handles, 5" high gooseneck swing spout, anti-hose aertor and Elkay #LK18B stainless steel perforated strainer grid. ADA compliant.

P-5 Tech Break Room Sink (handicapped): Elkay #GECR2521 "Celebrity" single compartment sink with 20 gauge, type 304 nickle bearing stainless steel, drop-in, 25"x21-1/4"x5-3/8" overall size. Provide Delta #9159-DST gooseneck faucet with ADA single lever handle, swing spout and 2-function pull down sprayer. Sink shall be complete with crumb cup strainer, rigid supplies with loose key stops, cast brass clean out, tubing to wall and escutcheons. All exposed waste piping and hot and cold water piping shall be insulated with Truebro Handi Lav-Guard model 102 insulation kit with white finish. ADA compliant.

P-6 Tech Electric Water Cooler w/bottle filler (ADA): Elkay #LZSTL8WSSK, air cooled, wall-hung, bi-level with stainless steel construction, hands-free, visual filter monitor, filtered, laminar flow, antimicrobial, flex-quard safety bubbler and front/side push pads. Unit shall have electronic bottle filler sensor and lead-free design. Unit shall deliver a minimum of 8.0 gph of 50 degree f. drinking water with 90 degree f. water inlet at room temperature. Compressor shall be 260 watts, 120V, using R-134A refrigerant. ADA compliant.

P-7 Emergency Eyewash: Bradley #S19-220-ADA, chrome plated brass with twin soft-flow eyewash heads and protective sprayhead covers. Push handle, 10" diameter yellow impact-resistant plastic bowl, stay open ball valve and in-line strainer. Unit shall comply with ANSI Z358.1 with minimum 3 gpm eyewash/face flow.

- P-8 Shop Work Sink: American Standard #7695.008, enameled cast iron, 24"x20-1/2"x11-1/4" overall size with 8" faucet centers, hanger, rim guard and 3" outlet. Fixture shall be fitted with #830AA faucet with wall to spout end, 10-1/2" spout, hose end connection, integral vacuum breaker, spout brace, adjustable union couplings and stop
- C. Sanitary vents thru roof shall be flashed with seamless lead flashing assemblies. Flashing shall have a conical steel reinforced boot and shall be complete with a top cast iron counter flashing.
- D. Sanitary vents thru roof shall be one-piece PVC/rubber boot assembly with pipe clamp flashed and sealed into existing roofing system.
- E. The Electric Water Heater shall be State or an approved equal. Heater shall be rated at volts and phase as indicated on drawings and be listed by Underwriters' Laboratories. Tank shall be factory fired with glass lining with 150 psi working pressure and equipped with extruded high density magnesium anode at T&P relief valve. Electric heating element shall be medium watt density with zinc plated copper sheath. The controls shall include a thermostat with each element and a high temperature cutoff. The jacket shall provide full size control compartments for performance of service and maintenance thru front panel openings and enclose the tank with insulation. The drain valve shall be located in the front for ease of servicing. Outer jacket shall be baked enamel finish. Heater shall have a three (3) year limited warranty for commercial installation, as outlined in the written warranty. Fully illustrated instruction manual shall be included. Insulation must meet ashrae standard 90a-1980 for energy efficiencies.
- F. The "Tepid" water (for eyewash/shower) Electric Water Heater shall be Hubbell or an approved equal. Packaged heater shall be rated at volts and phase as indicated on drawings, factory fired with 150 psi working pressure and be listed by Underwriters' Laboratories and in accordance with ANSI Z358.1-2009. Packaged system shall consist of integrally mounted factory supplied, calibrated and preformance tested, triple redundant thermostatic pressure balanced mixing valve system. Carbon steel tank shall be lined with 1/2" thick Hydrastone cement and not required any anodic protection. Tank shall be covered with 3" thick polyurethane foam insulation. Outer protective jacket shall be dent resistant composite to resist rust and corrosion. Delevery water temperature shall be set at 85°F. The system shall be supplied complete with all electrical operating controls and safety devices. The drain valve shall be located in the front for ease of servicing. Heater shall have a standard (1) year workmanship and material warranty with a (5) year pressure vessel warranty. Fully illustrated instruction manual shall be included. Refer to drawings for size, capacity and voltage.
- I. Floor drains shall be Watts or approved equal. Drain shall be model FD-100, cast iron with anchor flange, reversible clamping collar, primary/ secondary weepholes and adjustabe round nickle-bronze strainer. Drain to be primed from nearest flush valve or where indicated on drawings.
- J. Service shop area drains shall be Watts or approved equal. Drain shall be 24"x24" model FD-530, steel body, epoxy coated with heavy-duty ductile iron grate and 4" outlet.
- K. Roof drains shall be J. R. Smith Series 1010 cast iron with extension sleeve, flashing clamp device, gravel stop, underdeck clamp, bolts, roof sump receiver and aluminum dome strainer.
- L. Overflow drains shall be J. R. Smith Series 1070 cast iron with flashing clamp device, gravel stop, polyethylene dome, PVC standpipe, underdeck clamp and bolts.
- M. Domestic water service lead free, double check valve assembly shall be Watts series LF007 or approved equal. Valve shall be ASSE1015 listed and AWWA C510 compliant with sizes 1/2"-3". Construction shall be bronze body and cover and a maximum working pressure of 175 psi.
- N. Undersink thermostatic mixing valve shall be Watts USG-B-M1 or approved equal with ASSE1070 listing. Valve shall have bronze body construction with tamper-proof locking cap, internal check valves, strainer and complete with 3/8" compression fittings. Temperature setting range shall be 80-120 degree F with a flow range of 0.5-2.5 gpm.
- O. Potable water systems shall be disinfected prior to use. The method to be followed shall be that prescribed by the health authority and code requirements.

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