	PLUMBING SYMBOLS
	GATE VALVE
	GLOBE VALVE
	CHECK VALVE
, [,	BUTTERFLY VALVE
ل	BALL VALVE
O	PLUG VALVE
	CALIBRATED BALANCING SHUT-OFF VALVE & GPM SETTING
Ψ 74	ANGLE VALVE
¥	TWO-WAY CONTROL VALVE
	THREE-WAY CONTROL VALVE
	SOLENOID VALVE
	STRAINER
	PRESSURE REGULATING VALVE
X	SAFETY RELIEF VALVE
	VENTURI FLOW MEASURING DEVICE
—- 	
 	TEMPERATURE/PRESSURE TEST PLUG
+	PRESSURE GAUGE WITH GAUGE COCK
<u> </u>	
	WALL HYDRANT (NON-FREEZE)
C→+ <u>NFRH</u> → <u>HB</u>	ROOF HYDRANT (NON-FREEZE)
	HOSE BIBB
• <u>FD-#</u>	
• <u>AD-#</u>	
<u> </u>	
— <u>X</u> —	
c	ELBOW DOWN
<u> </u>	
	FLOW ARROW FLOOR CLEANOUT FLUSH WITH FINISH FLOOR
	YARD CLEANOUT FLUSH IN GRASS OR PAVED AREA
	CLEANOUT IN VERTICAL DROP WITH EXTENSION THROUGH WALL
	CLEANOUT IN VERTICAL DROP WITH EXTENSION THROUGH WALL
AD	ACCESS DOOR IN WALL OR CEILING
	CONNECT TO EXISTING
	LIMIT OF DEMOLITION
<u>0'-0"</u>	DISTANCE FROM FLOOR TO BOTTOM OF OBJECT
▷ ^{TB}	CONCRETE THRUST BLOCK

EXISTING PIPING SYMBOLS									
	EXISTING PIPING TO BE REMOVED								
xxx	EXISTING PIPING TO REMAIN - SERVICE IS SAME DESIGNATION AS NEW								
	EXISTING PIPING NOTED AS CAPPED AND PORTION REMOVED								

NOTE:
NOT ALL ABBREVIATIONS AND
SYMBOLS INDICATED MAY APPEAR ON
THESE CONTRACT DRAWINGS. THIS IS
FOR REFERENCE ONLY.

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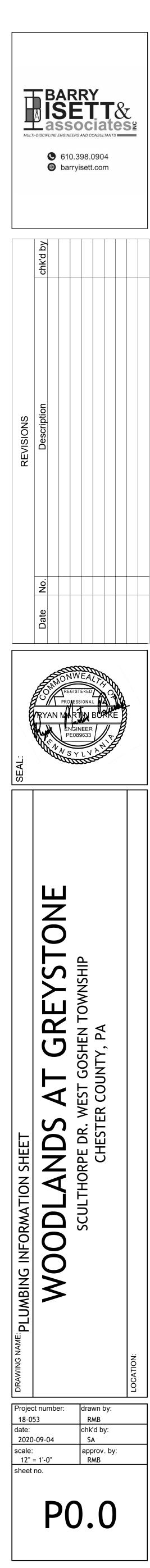
GENERAL SYMBOLS									
X P-X	SECTION MARKER								
X P-X	PARTIAL PLAN / DETAIL MARKER								
	RISER TYPE: S:SANITARY/W:WASTE/V:VENT/CW:COLD WATER/HW:HOT WATER RISER NUMBER								
	•								

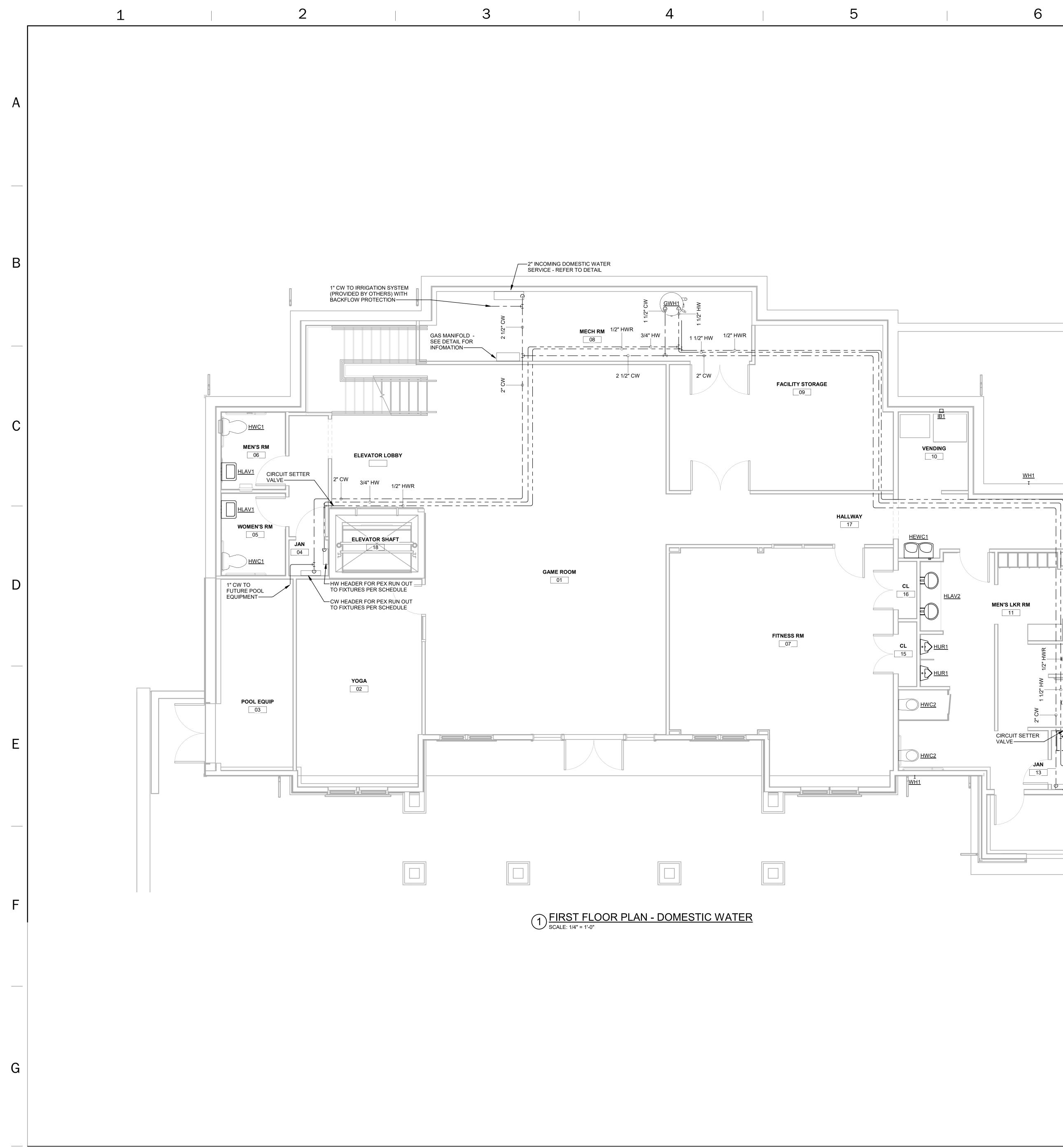
	PLUMBING LINE TYPES
CW	POTABLE DOMESTIC COLD WATER
FCW	FILTERED COLD WATER
HW	DOMESTIC HOT WATER (120° F)
HWR	DOMESTIC HOT WATER RETURN (120° F)
140°HW	DOMESTIC HOT WATER (140° F)
140°HWR	DOMESTIC HOT WATER RETURN (140° F)
SAN	SANITARY
VAC	VACUUM
GW	GREASE LADEN WASTE
AW	ACID WASTE
v	VENT
AV	ACID VENT
RWC	RAIN/STORM WATER
OSD	OVERFLOW (SECONDARY) RAIN/STORM DRAIN
SSD	SIPHONIC RAIN/STORM DRAIN SYSTEM
ID	INDIRECT DRAIN
G	NATURAL GAS
AIR	AIR
IW	INDIRECT WASTE
PD	PUMP DISCHARGE
SPRK	SPRINKLER

GENERAL NOTES:

- 1. CONTRACTOR SHALL PROVIDE A COMPLETE AND WORKING SYSTEM WITH ALL NECESSARY PERMITS AND APPROVALS FROM AUTHORITIES HAVING JURISDICTION. 2. INSTALL ALL EQUIPMENT AND MATERIALS IN STRICT ACCORDANCE WITH CURRENT
- ADOPTED 2015 I.P.C. ALL PERTINENT CODES, LAWS, ORDINANCES, REGULATIONS, AND RESPECTIVE MANUFACTURER'S WRITTEN INSTRUCTIONS. IF A CONFLICT OCCURS, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
- 3. COORDINATE PLUMBING WORK WITH THE WORK OF ALL OTHER CONTRACTORS, OWNER AND STRUCTURAL AND ARCHITECTURAL FEATURES. 4. PLUMBING DRAWINGS ARE DIAGRAMMATIC IN NATURE. THE DRAWINGS MUST FOLLOW AS
- CLOSELY AS CIRCUMSTANCES PERMIT AND ACTUAL LINE LOCATIONS SHALL BE DETERMINED BY THE P.C. IN THE FIELD. HOWEVER, THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE PROPER INSTALLATION OF ALL MATERIALS AND EQUIPMENT REQUIRED FOR A COMPLETE INSTALLATION WITHIN THE INTENT AND MEANING OF THE CONTRACT DOCUMENTS.
- 5. THE PLUMBING CONTRACTOR SHALL ARRANGE THE PROGRESS OF HIS WORK SO AS TO CONFORM TO THE PROGRESS OF THE TRADES AND SHALL COMPLETE THE ENTIRE INSTALLATION AS SOON AS THE CONDITION OF THE PROJECT WILL PERMIT.
- 6. ALL ITEMS OF LABOR, MATERIAL, AND EQUIPMENT NOT SPECIFICALLY DESCRIBED HEREIN NOR DETAILED ON THE DRAWINGS BUT INCIDENTAL TO OR NECESSARY FOR THE COMPLETION OF THE WORK, SHALL BE CONSIDERED AS INCLUDED WITHOUT EXTRA COST. UNLESS NOTED OTHERWISE, CONSTRUCTION MATERIAL AND EQUIPMENT REMOVED SHALL BECOME PROPERTY OF THE CONTRACTOR AND SHALL BE LEGALLY DISPOSED OF OFF THE SITE.
- 7. PROVIDE NECESSARY SUPPORTS, HANGERS AND HARDWARE TO PROPERLY SECURE PIPING AND EQUIPMENT STRUCTURE.
- 8. ALL SANITARY AND VENT PIPING ABOVE AND BELOW THE GROUND SHALL BE SCH. 40 DWV PVC PLASTIC PIPE WITH SOLVENT WELD JOINTS AND FITTINGS. MAKE ALL JOINTS WATERTIGHT AND GASTIGHT. WHEN ROUGH-IN WORK IS COMPLETED AND BEFORE CONNECTION OF FIXTURES OR GASTIGHT. WHEN ROUGHING WORK IS TO A WATER TEST BY PLUGGING UP ALL OPENINGS AND FILLING ALL OF THE LINES TO THE ROOF LEVEL. ALL DEFECTS SHALL BE CORRECTED.
- 9. LABEL ALL DOMESTIC COLD WATER, AND DOMESTIC HOT WATER PIPING WITH COLORED, WATERPROOF, ALL TEMPERATURE, SELF-ADHERING LABELS AND DIRECTIONAL ARROWS AS MANUFACTURED BY SETON OR EQUAL.
- 10. FURNISH AND INSTALL ACCESS PANELS WHERE REQUIRED FOR ACCESS TO ALL CONCEALED VALVES, TRAPS OR EQUIPMENT WHERE NO OTHER MEANS IS PROVIDED. INSTALL RATED ACCESS PANELS IN THE FIRE RATED CONSTRUCTION TO MAINTAIN RATING. COORDINATE ACCESS LOCATIONS WITH ARCHITECT AND GC.
- 11. DO NOT INSTALL PIPING OR ANY OTHER PLUMBING EQUIPMENT OVER ELECTRICAL PANELS. MAINTAIN A MINIMUM OF 36" CLEAR IN FRONT OF ELECTRICAL PANELS.
- 12. THE PLUMBING CONTRACTOR SHALL PROVIDE INSTRUCTIONS TO THE OWNER FOR EACH SYSTEM INSTALLED AND THE OPERATION OF ALL EQUIPMENT IN HIS CONTRACT.
- 13. CHECK AND VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS SERVICES AND UNDERGROUND UTILITIES AT THE SITE, FAILURE TO VISIT AND INSPECT THE EXISTING CONDITIONS SHALL NOT BE VALID REASON FOR AUTHORIZATION OF A CHANGE ORDER. PLUMBING CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ALL DAMAGES WHICH MAY OCCUR BY THE FAILURE TO PRECISELY LOCATE AND PRESERVE ANY UNDERGROUND UTILITIES.
- 14. CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE IN WRITING ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER.
- 15. PROVIDE SHOCK ABSORBING DEVICES WHICH WILL PROTECT WATER SUPPLY PIPING FROM WATER HAMMER. REFER TO PLUMBING EQUIPMENT SHEDULE FOR TYPES. LOCATE AT THE ENDS OF ALL BRANCH PIPING RUNS.
- 16. THE PLUMBING CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ENGINEER AS-BUILT DRAWINGS AND OPERATION AND MAINTENANCE MANUALS INCLUDING ALL NAME PLATE DATA, WIRING DIAGRAMS, MAINTENANCE INSTRUCTIONS, AND PARTS LIST UPON PROJECT COMPLETION.
- 17. EXTERIOR BELOW GROUND PIPING SHALL BE BURIED BELOW THE LOCAL FROST LINE.
- 18. INTERIOR ABOVE GROUND DRAINAGE AND VENT PIPING SHALL BE CONCEALED IN WALLS AND ABOVE SUSPENDED CEILINGS WHERE POSSIBLE. VERTICAL STACKS SHALL BE PROVIDED WITH ACCESSIBLE CLEAN OUTS AT THEIR BASE. MINIMUM SIZE OF SANITARY PIPING BELOW GRADE INSIDE BUILDING SHALL BE 2".
- 19. THE CONTRACTOR SHALL MAINTAIN A CLEAN AND SAFE WORK AREA AT ALL TIMES. ALL SAFETY PROCEDURES AND ENFORCEMENT IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL CONFORM TO ALL OSHA STANDARDS
- 20. BACK FLOR PREVENTERS AND/OR VACUUM BREAKERS SHALL BE INSTALLED WHERE REQUIRED TO PREVENT CONTAMINATION OF POTABLE WATER SYSTEM.
- 21. SUBMIT (6) SETS OF SHOP DRAWINGS AND PRODUCT DATA GROUPED TO INCLUDE COMPLETÉ SUBMITTALS OF RELATED SYSTEMS, PRODUCTS, AND ACCESSORIES IN A SINGLE SUBMITTAL.
- 22. CONTRACTOR SHALL PAY FOR AND OBTAIN ALL FEES, PERMITS AND INSPECTIONS. ALL CHARGES BY UTILITY COMPANIES SHALL BE PAIN BY THIS CONTRACTOR.
- 23. EXCEPT WHERE OTHERWISE INDICATED, ALL CUTTING, EXCAVATION, FILL, AND PATCHING REQUIRED FOR THE PLUMBING WORK SHALL BE BY THE PLUMBING CONTRACTOR. DO NOT CUT STRUCTURAL MEMBERS.
- 24. ALL EXPOSED PIPING SHALL BE CLEANED AND HAVE THE SURFACE PREPARED TO RECEIVE PAINTED FINISH. PRIME AND PAINT THE EXPOSED PIPING IN COLOR AS SELECTED BY THE ARCHITECT.
- 25. SLOPE ALL SOIL, WASTE AND STORM WATER LINES PER CODE. 26. SEAL ALL FLOOR AND WALL PENETRATIONS IN FIRE RATED CEILINGS AND PARTITIONS TO
- MAINTAIN FIRE RATING. COORDINATE LOCATIONS WITH ARCHITECTURAL DRAWINGS.
- 27. PLUMBING CONTRACTOR IS REQUIRED TO NOTIFY FACILITY OWNERS NOT LESS THAN 3 AND/OR NOT MORE THAN 10 WORKING DAYS PRIOR TO EXCAVATION OR DEMOLITION WORK WHEN USING POWERED EQUIPMENT ON PUBLIC OR PRIVATE PROPERTY. 28. PENNSYLVANIA ONE CALL SYSTEM 1-800-242-1776.
- 29. PROVIDE MANUAL SHUT-OFF VALVES IN COLD WATER, HOT WATER AND HOT WATER RETURN AT ALL TAKEOFFS AND BRANCHES. VALVES TO BE LOCATED AS CLOSE AS POSSIBLE TO MAINS. DO NOT LOCATE VALVES ABOVE INACCESSIBLE CEILINGS.

	PLUMBING DRAWING LIST									
P0.0	PLUMBING INFORMATION SHEET									
P1.0	FIRST FLOOR PLAN - DOMESTIC WATER									
P1.1	SECOND FLOOR PLAN - DOMESTIC WATER									
P2.0	FIRST FLOOR PLAN - SANITARY									
P2.1	SECOND FLOOR PLAN - SANITARY									
P5.0	PLUMBING DIAGRAMS & SCHEDULES									
P6.0	PLUMBING SPECIFICATIONS									

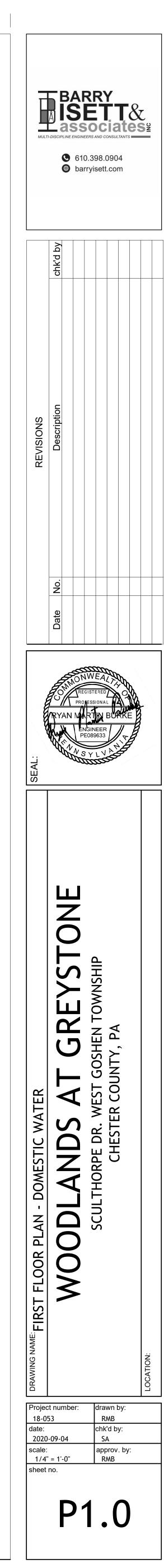




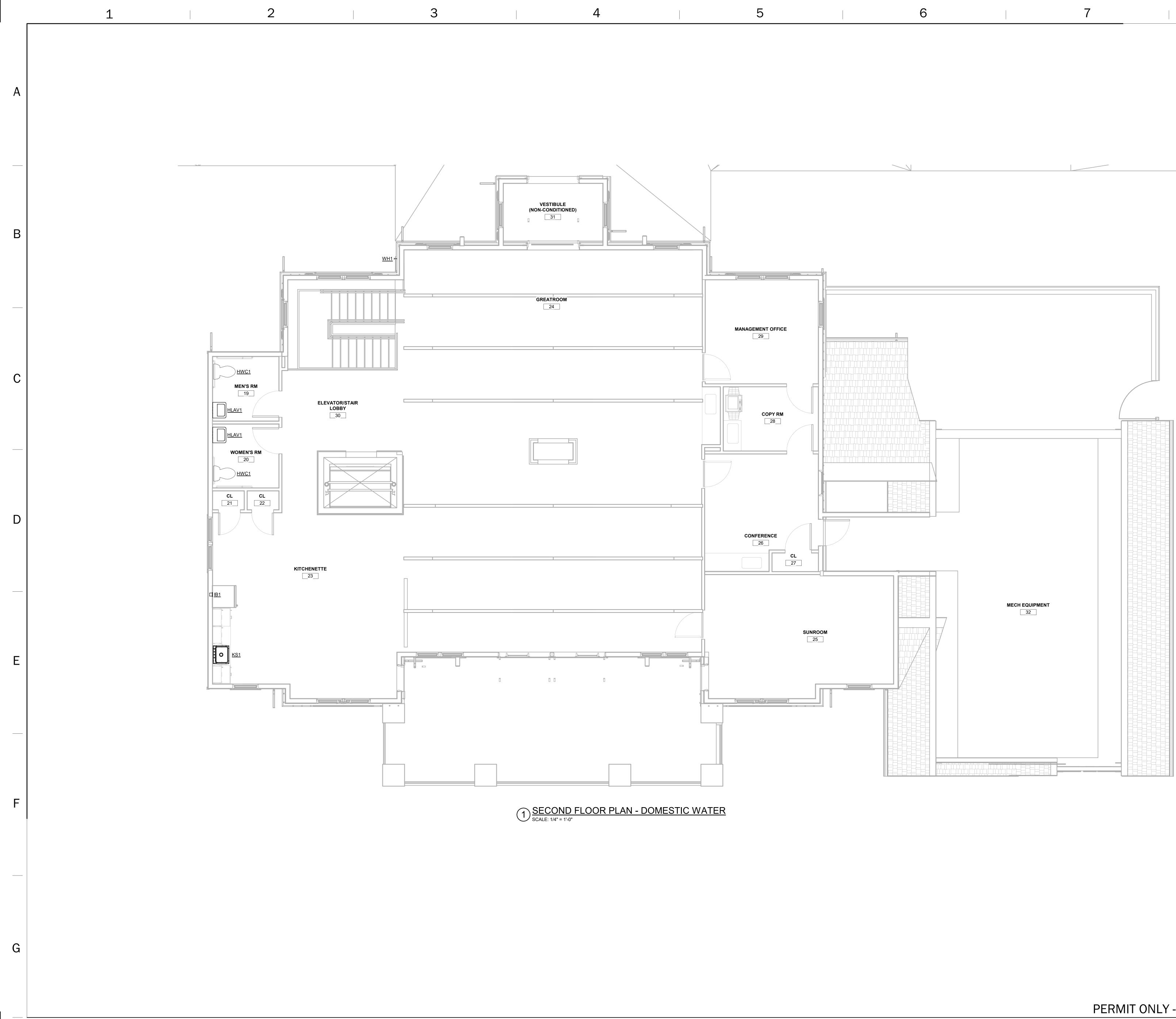
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GENERAL NOTES: 1. CONFIRM WALLS WITH MOUNTED WATER CLOSETS/URINALS ARE FRAMED LARGE ENOUGH TO ACCEPT FIXTURE CARRIERS.

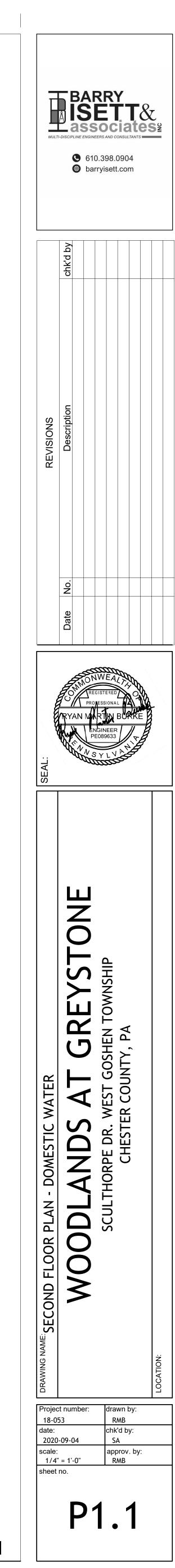
WH1 -----_____ HLAV3 $\overline{}$ <u>HWC2</u> WOMEN'S LOCKER RM MEN'S LKR RM 12 11 HWC2 | <u>HSH1</u> <u>HSH1</u> HWC2 <u>HWC2</u> ((HSH2 HSH2 CIRCUIT SETTER <u>HLAV1</u> (() **JAN** 13 14 _____ HW HEADER FOR PEX RUN OUT TO FIXTURES PER SCHEDULE CW HEADER FOR PEX RUN OUT TO FIXTURES PER SCHEDULE



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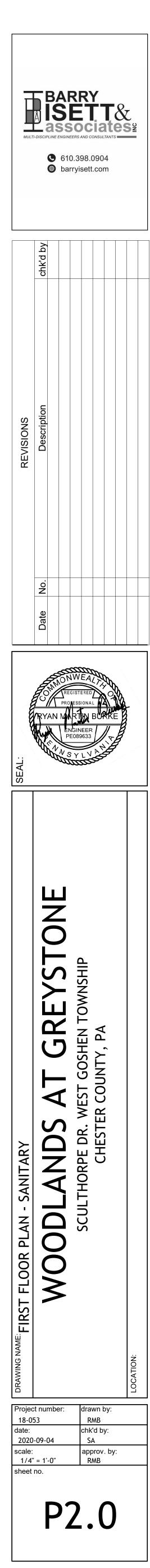
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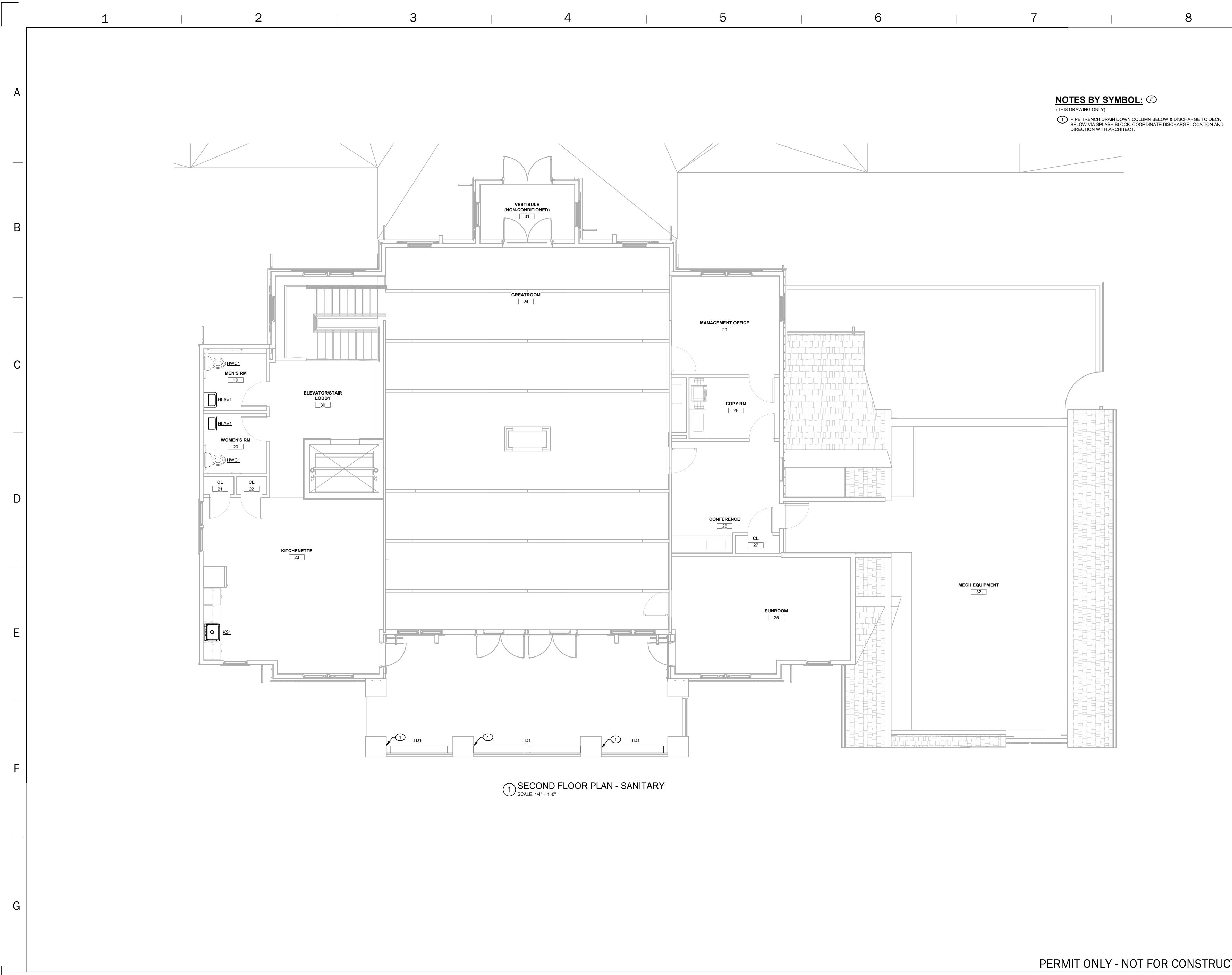
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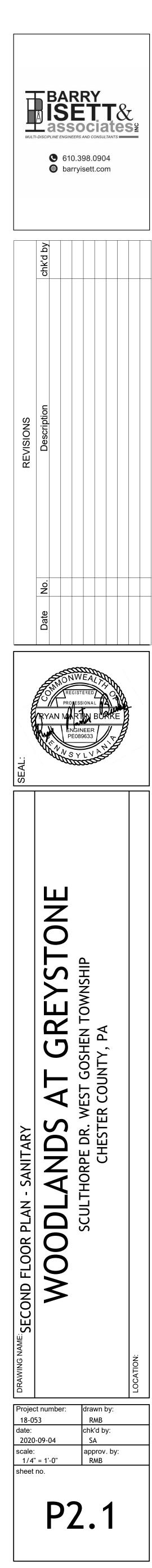


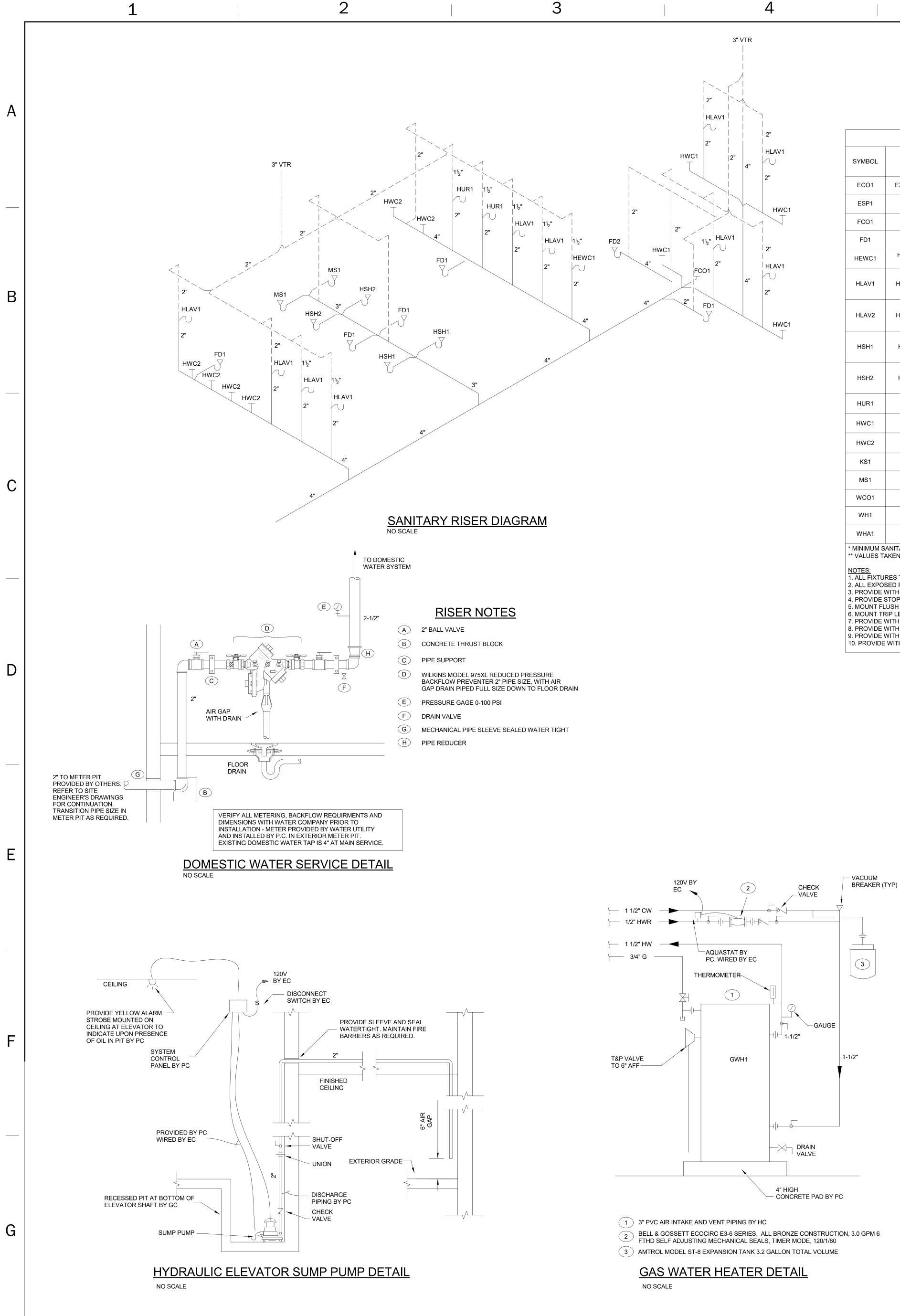
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	FIXTURE TYPE			FAUCET/	UMBING ANSI/ASME	EQUIPMEN MOUNTING/	* MINIMUM PIPE SIZES						WSFU		
SYMBOL		MANUFACTURER	MODEL NO.	VALVE	APPROVAL S	SUPPORT	HW CW		SAN	TRAP	VENT	DFU **	**	ELECTRIC	NOTES
ECO1	EXTERIOR CLEAN OUT	ZURN	Z1400	-	A112.21.1M	FINISHED GRADE	-	-	4"	-	-	_	-	-	INSTALL FLUSH AND LEVEL WITH CONCRETE
ESP1	ELEVATOR SUMP PUMP	REFER TO DETAIL		-	-	ELEV PIT	-	-	2"	-	-	-	-	-	PROVIDE WITH ALL NECESSARY FLOAT SWITCH AND CHECK VALVE
FCO1	FLOOR CLEAN OUT	ZURN	ZN1400	-	A112.21.1M	FLOOR	-	-	4"	-	-	-	-	-	INSTALL FLUSH AND LEVEL WITH FLOOR
FD1	FLOOR DRAIN	ZURN	ZN415-B-P	-	A112.6.3-2001	FLOOR	-	-	2"	2"	1½"	-	-	-	WITH 5" DEEP TRAP, PROVIDE WITH TRAP SEAL PROTECTION
HEWC1	HANDICAP ELECTRIC WATER COOLER	OASIS	PG8ACSL	-	NSF61 SECTION 9-1997B	WALL BRACKET	-	1/2"	1½"	1½"	1½"	.5	.25	120V, 4.6A ¼ HP	MOUNT 36" AFF TO TOP OF SPOUT, ANTI MICROBIAL SURFACE
HLAV1	HANDICAP LAVATORY	ZURN	Z5344 20"x18" 4" CENTERS	ZURN Z6955-XL-S-LL	A112.19.2M/ A117.1	WALL BRACKET/ ZURN Z1224, Z1231	¹ /2"	¹ /2"	1½"	1½"	1½"	1	.7/2	-	1.5 GPM, POLISHED CHROME. MOUNT RIM 34" A SEE NOTE 3. PROVIDE ADA TRAP AND POLISHE CHROME GRID STRAINER, THERMOSTATIC MIXI VALVE
HLAV2	HANDICAP LAVATORY	ZURN	Z5114 20"x17" 4" CENTERS	ZURN Z6955-XL-S-LL	A112.19.2M/ A117.1	COUNTER	¹ /2"	¹ /2"	1½"	1½"	1½"	1	.7/2	-	1.5 GPM, POLISHED CHROME. COUNTER BY GC SEE NOTE 3. PROVIDE ADA TRAP AND POLISHE CHROME GRID STRAINER, THERMOSTATIC MIX VALVE
HSH1	HANDICAP SHOWER	FIAT	A3636.01F 36"x36"	ZURN Z7301-SS-MT-DV2P- HW11-H3-S9-VB	A117.1/ Z-124-2	SET IN MORTAR BED	^{1/2} "	¹ /2"	2"	2"	1½"	2	4	-	ROUGH-IN DIMENSIONS: 44"x3914" SEE NOTE 8
HSH2	HANDICAP SHOWER	FIAT	A6030.01F 60"x30"	ZURN Z7301-SS-MT-DV2P- HW11-H3-S9-VB	A117.1/ Z-124-2	SET IN MORTAR BED	1/2"	1/2"	2"	2"	1½"	2	4	-	ROUGH-IN DIMENSIONS: 68¾"x33¼" SEE NOTE 8
HUR1	HANDICAP URINAL	ZURN	Z5755-U	ZURN ZTR6203-EWS-LL	A112.19.2M/ A112.19.6M/A117. 1	WALL	-	³ 4"/1"	2"	-	1½"	2	5	-	0.5 GPF, MOUNT RIM 17" AFF, CAULK TO WALL,
HWC1	HANDICAP WATER CLOSET	ZURN	Z5555-K	SIPHON JET	A112.19.2	FLOOR	-	1/2"	4"	-	2"	3/4	2/5	-	1.28 GPF, SEE NOTE 6, ZURN SEAT Z5950
HWC2	HANDICAP WATER CLOSET	ZURN	Z5665-BWL-1	ZURN ZTR6200EV-LL	A112.19.2M/ A112.19.6M/A117.	FLOOR	-	1"/11/4"	4"	-	2"	3/4	6/10	-	1.28 GPF, SEE NOTE 5, ZURN SEAT Z5950
KS1	KITCHEN SINK	ELKAY	LRAD2521 25"x21"	ZURN Z7870C-XL	A112.19.3M	COUNTER	¹ /2"	1/2"	1½"	1½"	1½"	2	1.4	-	1.5 GPM, WITH LK-335 DUO STRAINER AND TAILPIECE
MS1	TERRAZZO MOP SINK	STERN WILLIAMS	MTB-2424 24"x24"	ZURN Z843M1-RC	A112.19.3M	FLOOR	34"	34"	3"	3"	2"	2	3	-	SEE NOTE 8
WCO1	WALL CLEAN OUT	ZURN	Z1441	-	A112.36.2M	WALL	-	-	4"	-	-	-	-	-	
WH1	FREEZE PROOF WALL HYDRANT	ZURN	Z1300-CL	FLUSH WITH LOCK	A112.21.3M	WALL	-	34"	-	-	-		-	-	MOUNT MIN 24" AFG, PROVIDE WITH INTERIOR MOUNTED ACCESSIBLE SHUT-OFF VALVE
WHA1	WATER HAMMER ARRESTER	ZURN	Z1700	-	A112.26.1M	ABOVE CEILING/ IN WALL		³ 4"-1"	-	-	-	-	-	-	100=1-11; 200=12-32; 300=33-60; 400=61-113; 500=114-154; 600=155-300

** VALUES TAKEN FROM TABLES 709.1 AND E103.3(2) FROM THE CURRENT ADOPTED IPC

1. ALL FIXTURES TO BE BY MANUFACTURER NOTED, OR APPROVED EQUAL, AND SUPPLIED WHITE UNLESS NOTED OR DIRECTED BY ARCHITECT. 2. ALL EXPOSED PIPING, P-TRAPS AND STOP VALVES TO BE CHROME PLATED BRASS. 3. PROVIDE WITH PRE-FORMED INSULATION KIT, WHITE IN COLOR ON ALL EXPOSED PIPING FOR HANDICAP FIXTURES. 4. PROVIDE STOP VALVES AT EACH FIXTURE. 5. MOUNT FLUSH VALVE HANDLE ON ACCESS SIDE OF WATER CLOSET.

6. MOUNT TRIP LEVER ON ACCESS SIDE OF WATER CLOSET. 7. PROVIDE WITH STAINLESS STEEL BUMPER GUARDS (-BG), WALL GUARDS (-WG) CAULKED, HOSE AND HOSE BRACKET (-HH) AND MOP HANGER BRACKET (-MH) MOUNTED ABOVE SINK. 8. PROVIDE WITH VINYL BUMPER GUARDS (V-70), WALL GUARDS (BP-2) CAULKED), HOSE AND HOSE BRACKET (T-35) AND MOP HANGER BRACKET (T-40) MOUNTED ABOVE SINK. 9. PROVIDE WITH GRAB BARS, PRESSURE BALANCE MIXING VALVE, HAND HELD SHOWER, FLEXIBLE METAL HOSE, 30" SLIDE BAR, AND VACUUM BREAKER 10. PROVIDE WITH SUMP RECEIVER, UNDER DECK CLAMPS, CAST IRON DOME AND EXTENSION COLLARS AS NECESSARY FOR A COMPLETE INSTALLATION.

> SYMBOL FIXTURE TYPE GAS-FIRED WATER GWH1 HEATER NOTES: 1. INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS. 2. FINAL LOCATION TO BE DETERMINED IN THE FIELD UNLESS NOTED OTHER WISE. 3. PROVIDE WITH ALL NECESSARY VALVES AND FITTINGS FOR A COMPLETE INSTALLATION. 4. PROVIDE WITH T&P VALVE TO DISCHARGE WITH AIR GAP TO MOP SINK OR FLOOR DRAIN. 5. VENTING TO BE INSTALLED ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND APPLICABLE FUEL GAS CODE. 6. PROVIDE CONDENSATE NEUTRALIZATION KIT. SYMBOL ESP-1 ELEVATOR S HWR-1 HOT WATER RE

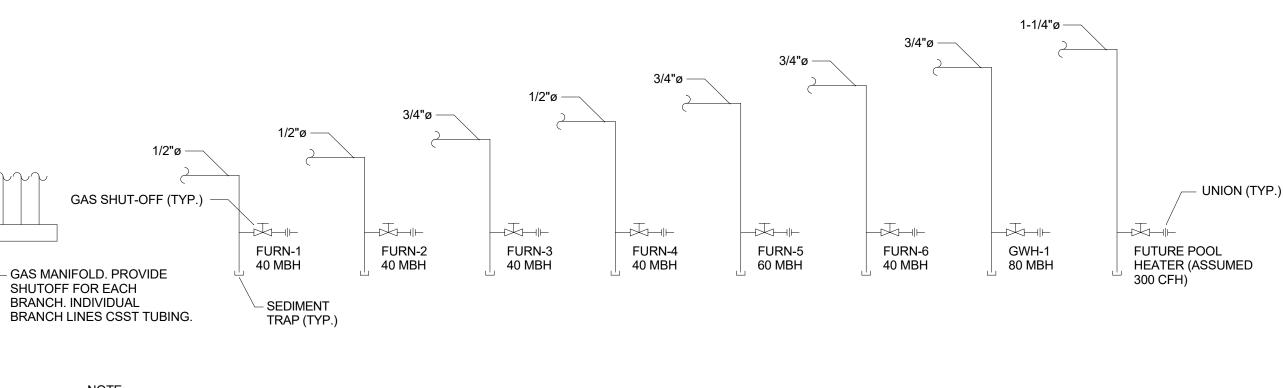
NOTES: 1. INSTALL PER MANUFACTURER'S WRITTEN INSTRUCTIONS.

DISTRIBUTION PRESSURE = 11.0" w.c. - 2" INCOMING PROPANE GAS PIPING. PROPANE TANK AND EXTERIOR PIPING TO BE BY OTHERS.

	GAS FIRED WATER HEATER SCHEDULE												
MANUFACTURER	MODEL NO.	MOUNTING/	INLET/OUTLET CONNECTIONS					INPUT	ELECTRIC	NOTES			
	MANUFACTURER	MODEL NO.	SUPPORT	HW	CW	GAS	INTAKE	EXHAUST	MBH	LLCINC	NOTES		
R	BRADFORD WHITE	LG2PDV75H805N	FLOOR	3 ₄ "	3 ₄ "	¹ /2"	3"-4"	3"-4"	80	120V	75 GALLON, 77 GPH RECOVERY @ 100°F TEMP RISE		

	PUMP SCHEDULE												
ERVICE	MANUFACTURER	MODEL NO.	GPM	FT. HD.	HP	FLA	LRA	RPM	ELECTRIC	NOTES			
DR SUMP PUMP	LIBERTY PUMPS	ELV250	20	18	⅓	5.2	8.0	3,450	208/1/60	INTEGRAL FLOAT OPERATION. DIRECT WIRED, HIGH LEVEL ALARM. MOUNT ALARM IN VISIBLE AND AUDIBLE LOCATION. RECEPTACLE BY E.C.			
R RECIRCULATION	BELL & GOSSETT	ECOCIRC 9-16	8	15	4-60 W	-	-	-	115/60/1	STAINLESS STEEL PUMP BODY.			

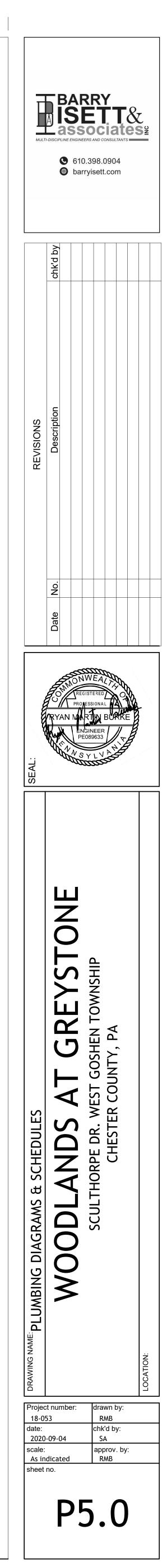
2. FINAL LOCATION TO BE DETERMINED IN THE FIELD UNLESS NOTED OTHER WISE. 3. PROVIDE WITH ALL NECESSARY VALVES AND FITTINGS FOR A COMPLETE INSTALLATION.



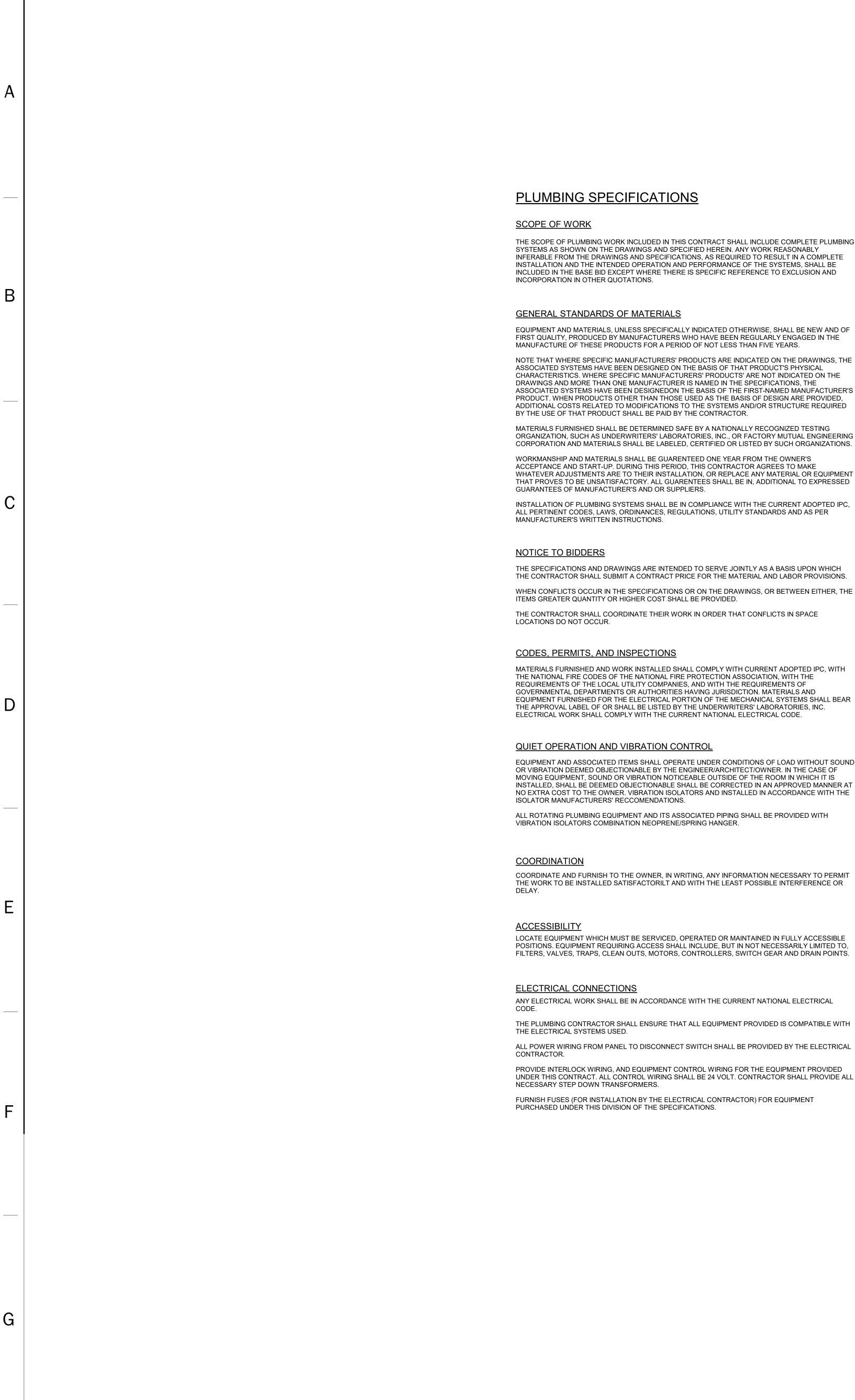
NOTE: VERIFY METER OUTLET PRESSURE PRIOR TO COMMENCING WORK.

NOTE: GAS PIPE SIZING BASED ON 2015 IFGC TABLE 402.4(23) FOR A TOTAL CONNECTED LOAD OF 640 CFH AND DEVELOPED LENGTH OF 125 FT.

GAS RISER DIAGRAM



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PLUMBING SPECIFICATIONS

THE SCOPE OF PLUMBING WORK INCLUDED IN THIS CONTRACT SHALL INCLUDE COMPLETE PLUMBING SYSTEMS AS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, ANY WORK REASONABLY INFERABLE FROM THE DRAWINGS AND SPECIFICATIONS, AS REQUIRED TO RESULT IN A COMPLETE INSTALLATION AND THE INTENDED OPERATION AND PERFORMANCE OF THE SYSTEMS, SHALL BE INCLUDED IN THE BASE BID EXCEPT WHERE THERE IS SPECIFIC REFERENCE TO EXCLUSION AND

EQUIPMENT AND MATERIALS, UNLESS SPECIFICALLY INDICATED OTHERWISE, SHALL BE NEW AND OF FIRST QUALITY, PRODUCED BY MANUFACTURERS WHO HAVE BEEN REGULARLY ENGAGED IN THE MANUFACTURE OF THESE PRODUCTS FOR A PERIOD OF NOT LESS THAN FIVE YEARS.

NOTE THAT WHERE SPECIFIC MANUFACTURERS' PRODUCTS ARE INDICATED ON THE DRAWINGS, THE ASSOCIATED SYSTEMS HAVE BEEN DESIGNED ON THE BASIS OF THAT PRODUCT'S PHYSICAL CHARACTERISTICS. WHERE SPECIFIC MANUFACTURERS' PRODUCTS' ARE NOT INDICATED ON THE DRAWINGS AND MORE THAN ONE MANUFACTURER IS NAMED IN THE SPECIFICATIONS, THE ASSOCIATED SYSTEMS HAVE BEEN DESIGNEDON THE BASIS OF THE FIRST-NAMED MANUFACTURER'S PRODUCT. WHEN PRODUCTS OTHER THAN THOSE USED AS THE BASIS OF DESIGN ARE PROVIDED, ADDITIONAL COSTS RELATED TO MODIFICATIONS TO THE SYSTEMS AND/OR STRUCTURE REQUIRED BY THE USE OF THAT PRODUCT SHALL BE PAID BY THE CONTRACTOR.

ORGANIZATION, SUCH AS UNDERWRITERS' LABORATORIES, INC., OR FACTORY MUTUAL ENGINEERING CORPORATION AND MATERIALS SHALL BE LABELED, CERTIFIED OR LISTED BY SUCH ORGANIZATIONS. WORKMANSHIP AND MATERIALS SHALL BE GUARENTEED ONE YEAR FROM THE OWNER'S ACCEPTANCE AND START-UP. DURING THIS PERIOD, THIS CONTRACTOR AGREES TO MAKE

WHATEVER ADJUSTMENTS ARE TO THEIR INSTALLATION, OR REPLACE ANY MATERIAL OR EQUIPMENT THAT PROVES TO BE UNSATISFACTORY. ALL GUARENTEES SHALL BE IN, ADDITIONAL TO EXPRESSED GUARANTEES OF MANUFACTURER'S AND OR SUPPLIERS.

INSTALLATION OF PLUMBING SYSTEMS SHALL BE IN COMPLIANCE WITH THE CURRENT ADOPTED IPC, ALL PERTINENT CODES, LAWS, ORDINANCES, REGULATIONS, UTILITY STANDARDS AND AS PER

THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS UPON WHICH THE CONTRACTOR SHALL SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR PROVISIONS. WHEN CONFLICTS OCCUR IN THE SPECIFICATIONS OR ON THE DRAWINGS, OR BETWEEN EITHER, THE ITEMS GREATER QUANTITY OR HIGHER COST SHALL BE PROVIDED. THE CONTRACTOR SHALL COORDINATE THEIR WORK IN ORDER THAT CONFLICTS IN SPACE

MATERIALS FURNISHED AND WORK INSTALLED SHALL COMPLY WITH CURRENT ADOPTED IPC, WITH THE NATIONAL FIRE CODES OF THE NATIONAL FIRE PROTECTION ASSOCIATION, WITH THE REQUIREMENTS OF THE LOCAL UTILITY COMPANIES, AND WITH THE REQUIREMENTS OF GOVERNMENTAL DEPARTMENTS OR AUTHORITIES HAVING JURISDICTION. MATERIALS AND EQUIPMENT FURNISHED FOR THE ELECTRICAL PORTION OF THE MECHANICAL SYSTEMS SHALL BEAR THE APPROVAL LABEL OF OR SHALL BE LISTED BY THE UNDERWRITERS' LABORATORIES, INC. ELECTRICAL WORK SHALL COMPLY WITH THE CURRENT NATIONAL ELECTRICAL CODE.

QUIET OPERATION AND VIBRATION CONTROL

EQUIPMENT AND ASSOCIATED ITEMS SHALL OPERATE UNDER CONDITIONS OF LOAD WITHOUT SOUND OR VIBRATION DEEMED OBJECTIONABLE BY THE ENGINEER/ARCHITECT/OWNER. IN THE CASE OF MOVING EQUIPMENT, SOUND OR VIBRATION NOTICEABLE OUTSIDE OF THE ROOM IN WHICH IT IS INSTALLED, SHALL BE DEEMED OBJECTIONABLE SHALL BE CORRECTED IN AN APPROVED MANNER AT NO EXTRA COST TO THE OWNER. VIBRATION ISOLATORS AND INSTALLED IN ACCORDANCE WITH THE

ALL ROTATING PLUMBING EQUIPMENT AND ITS ASSOCIATED PIPING SHALL BE PROVIDED WITH VIBRATION ISOLATORS COMBINATION NEOPRENE/SPRING HANGER.

COORDINATE AND FURNISH TO THE OWNER, IN WRITING, ANY INFORMATION NECESSARY TO PERMIT THE WORK TO BE INSTALLED SATISFACTORILT AND WITH THE LEAST POSSIBLE INTERFERENCE OR

LOCATE EQUIPMENT WHICH MUST BE SERVICED, OPERATED OR MAINTAINED IN FULLY ACCESSIBLE POSITIONS. EQUIPMENT REQUIRING ACCESS SHALL INCLUDE, BUT IN NOT NECESSARILY LIMITED TO FILTERS, VALVES, TRAPS, CLEAN OUTS, MOTORS, CONTROLLERS, SWITCH GEAR AND DRAIN POINTS.

ANY ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE CURRENT NATIONAL ELECTRICAL

THE PLUMBING CONTRACTOR SHALL ENSURE THAT ALL EQUIPMENT PROVIDED IS COMPATIBLE WITH

PROVIDE INTERLOCK WIRING, AND EQUIPMENT CONTROL WIRING FOR THE EQUIPMENT PROVIDED

FURNISH FUSES (FOR INSTALLATION BY THE ELECTRICAL CONTRACTOR) FOR EQUIPMENT

DISCONNECT SWITCHES

PRODUCT: WESTINGHOUSE TYPES HF OR HU; GENERAL ELECTRIC TYPE TH; OR SQUARE D TYPE HU.

OWNER TRAINING

PROVIDE A ONE (1) HOUR TRAINING SESSION WITH OWNERS PERSONNEL AT COMPLETION OF THE JOB. NOTIFY THE OWNER AND ENGINEER IN WRITING AT LEAST FIVE (5) WORKING DAYS BEFORE SCHEDULING THE TRAINING SESSION.

PIPING AND ACCESSORIES

PIPING SHALL BE TESTED AS INDICATED. ISOLATE EQUIPMENT, CONTROLS, INSTRUMENTS AND VALVES FROM THE PIPING SYSTEM DURING HYDROSTATIC TESTS.

ALL SANITARY AND VENT PIPING AND RAIN WATER ABOVE AND BELOW THE GROUND SHALL BE SCH. 40 DWV PVC PLASTIC PIPE WITH SOLVENT WELD JOINTS AND FITTINGS OR SERVICE WEIGHT CAST IRON, NO-HUB OR BELL AND SPIGOT. ALL PIPING LOCATED IN RETURN AIR PLENUMS SHALL BE SERVICE WEIGHT CAST IRON. MAKE ALL JOINTS WATERTIGHT AND GASTIGHT. WHEN ROUGH-IN WORK IS COMPLETED AND BEFORE CONNECTION OF FIXTURES OR DRAINS, THE SYSTEM SHALL BE SUBJECTED TO A WATER TEST BY PLUGGING UP ALL OPENINGS AND FILLING ALL OF THE LINES TO THE ROOF LEVEL. ALL DEFECTS SHALL BE CORRECTED.

INTERIOR COLD AND HOT WATER PIPING IN THE BUILDING SHALL BE TYPE 'L' COPPER OR PEX-A. TYPE 'L' COPPER: ASTM SPEC, B-88-51 WITH A 150 PSI WORKING PRESSURE. EXTERIOR AND/OR UNDERGROUND PIPING SHALL BE TYPE 'K' COPPER OR DUCTILE IRON. FITTINGS SHALL BE WROUGHT COPPER OF WEIGHT CORRESPONDING TO PIPE TO WHICH THEY ARE ATTACHED. JOINTS SHALL BE SOLDERED USING LEAD-FREE SODLER.

PEX-A ENGEL METHOD CROSSLINKED POLYETHYLENE PIPIN, ASTM F876 AND F877 BY UPONOR OR APPROVED EQUAL. FITTINGS AND TEES SHALL BE POLYSULFONE ASTM D6394 WIHT REINFORCING COLD-EXPANSION RINGS MADE BY SAME MANUFACTURER AS PEX PIPINAND MARKED 'F1960'.

AFTER ALL PIPING HAS BEEN INSTALLED, BUT BEFORE ANY EQUIPMENT OF FIXTURES HAVE BEEN CONNECTED, THE PRESSURESHALL BE MAINTAINED FOR A PERIOD OF (2) HOURS. AFTER SUCCESSFUL TESTING, FLUSH ALL PIPING TO REMOVE DIRT FROM FOREIGN MATTER, THEN STERILIZE THE WATER SYSTEM WITH A CHLORINE OR HTH SOLUTION. FLUSH WATER PIPES WITH FRESH WATER TO REMOVE CHLORINE SOLUTION. STERILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH AWWA SPECIFICATIONS C601-53T.

ALL ABOVE GROUND NATURAL GAS PIPING SHALL BE ASTM A53 SCHEDULE 40 BLACK STEEL PIPE WITH MALLEABLE IRON THREADED FITTINGS OR ASTM 240, TYPE 304 CORRUGATED STAINLESS STEEL TUBING WITH ASTM B16 MECHANICAL FITTINGS AND A CORROSION RESISTANT COATING. INSTALL A SEDIMENT TRAP AT ALL POINTS WHERE CONDENSATION MAY COLLECT. ALL EXTERIOR EXPOSED PIPING SHALL RECIEVE (1) COAT OF PRIMER AND (2) COATS OF GRAY EPOXY PAINT. ALL BELOW GROUND PIPING SHALL BE ASTM D2513 POLYETHYLENE PIPE WITH ALL NECESSARY FITTINGS AND TRANSITIONS MANUFACTURED SPECIFICALLY FOR GAS SERVICE. ALL PIPING SHALL BE INSTALLED AND TESTED IN STRICT ACCORDANCE WITH CURRENT INTERNATIONAL FUEL GAS CODE, NFPA, AGA AND UTILITY STANDARDS.

INSULATION

INSULATION SHALL BE PROVIDED CONTINUOUSLY THROUGH SLEEVES AND OPENINGS.

PIPE INSULATION SHALL CONFORM TO RECOMMENDATIONS OF THE NFPA AND SHALL HAVE COMPOSITE FIRE AND SMOKE HAZARD RATINGS AS TESTED BY PROCEDURE ASTM-E-84, NFPA 255, OR UL-723, NOT EXCEEDING FLAME SPREAD 25 AND SMOKE DEVELOPED 50.

SEAL ALL VAPOR BARRIERS CONTINUOUS AND THROUGHOUT AGAINST MOISTURE PENETRATIONS. PIPE, PIPE FITTINGS, FLANGES AND VALVES SHALL BE INSULATED.

PROTECT PIPE INSULATION AT HANGERS, GUIDE AND ROLLERS BY 16 GAUGE GALVANIZED METRAL SHIELD ON OUTSIDE OF THE INSULATION AND VAPOR BARRIERS. PROVIDE HIGH DENSITY CALCIUM SILICATE INSULATION AT ALL HANGER POINTS.

SEAL ALL BUILDING ENVELOPE PENETRATIONS WITH SHEET METAL FLASHING AND SILICONE CAULKING.

INSULATE ALL DOMESTIC HOT AND COLD WATER LINES, ALL RAIN WATER PIPING. ALL FITTINGS AND VALVES. PIPE INSULATION SHALL BE RIGID FIBERGLASS WITH WHITE KRAFT BONDED TO ALUMINUM FOIL, K=0.23 @, 75° F., REINFORCED WITH FIBERGLASS YARN. SUITABLE FOR PAINTING , JOHNS MANVILLE MICRO-LOK 650 WITH AP-T JACKET OR APPROVED EQUAL, FITTINGS AND VALVES SHALL BE INSULATED WITH MOLDED ONE-PIECE P.V.C. COVERS WITH FIBERGLASS INSULATION, JOHNS MANVILLE ZESTON 25/50° OR EQUAL.

WHERE MANUFACTURED, FACTORY PREMOLDED FITTINGS (OF SAME MATERIAL AND THICKNESS AS THE PIPE INSULATION) SHALL BE USED FOR ALL FITTINGS, FLANGES AND VALVES. VALVES 2 1/2" AND SMALLER FOR SHUT-OFF AND BALANCING SERVICE, SHALL BE BALL VALVES.

WHERE PREMOLDED INSULATION FITTINGS ARE NOT MANUFACTURED, ALL FITTINGS, FLANGES AND VALVES SHALL BE INSULATED WITH MITERED SEGMENTS OF 7 LB. DENSITY FIBERGLASS PIPE COVERING OR THE INSULATION SHALL BE BUILT UP WITH 1 POUND FIBERGLASS AEROC OR WITH FACTORY REINFORCED FOIL VAPOR BARRIER TO A THICKNESS EQUAL TO THE ADJOINING INSULATION. HOT SERVICE FINISH APPLICATIONS SHALL CONSIST OF OPEN WEAVE GLASS MESH ADHERED WITH I.C. 501 (OR BF 30-36). VAPOR SEAL FOR COLD APPLICATIONS SHALL BE I.C. 501 (OR BF 30-35) ADHESIVE WITH OPEN WEAVE GLASS MESH AND OUTER COAT SHALL OVERLAP ADJACENT COVERING BY AT LEAST 2 INCHES.

MINIMUM PIPE INSULATION THICKNESS SHALL BE IN 1".

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR EACH ELEMENT OF CONSTRUCTION AND TYPE OF PRODUCT OR EQUIPMENT. CONTRACTOR SHALL SUBMIT SIX (6) COPIES OF EACH DRAWING FOR REVIEW.

SUBMITTALS SHALL INCLUDE INFORMATION REGARDING PRODUCTS, OPTIONS, MANUFACTURER'S RECOMMENDATIONS, PRODUCT SPECIFICATIONS, CATALOG CUTS, PERFORMANCE DATA, COMPLIANCE WITH SPECIFIED STANDARDS, DIMENSIONS, WIRING DIAGRAMS, AND INSTALLED LOCATIONS.

6

VALVES

AND SEATS. MANUFACTURER SHALL BE APOLLO, NIBCO OR APPROVED EQUAL.

EACH Y-TYPE STRAINER. STRAINER PERFORATIONS SHALL BE 1/64 INCH.

AND UL 1479, 3M FIRE PRODUCTS, HILTI FIRESTOP SYSTEMS OR STI.

LENGTH TO BE FLUSH WITH THE FINISHED WALL SURFACE.

BALL VALVES SHALL BE FULL PORT, TWO PIECE BRONZE BODY WITH SCREWED ENDS CHROME

PLATED STEEL BALL, TFE SEATS AND STEM SEALS WITH T HANDLE. MANUFACTURER SHALL BE

GATE VALVES SHALL BE OS&Y, FULL PORT, CAST IRON BODY WITH FLANGED ENDS, BRONZE DISCS

CHECK VALVES SHALL BE SILENT LIFT TYPE RATED FOR SAME OPERATING PRESSURE AS THE PIPING

STRAINERS SHALL BE Y-PATTERN WITH BRONZE BODIES AND BRONZE BASKETS AND SHALL BE RATED

FOR SAME OPERATING PRESSURE AS THE PIPING SYSTEM IT SERVES. PROVIDE BLOW-OFF VALVE

ALL PLUMBING ITEMS THAT PASS THROUGH OR TERMINATE WITHIN FIRE SEPARATIONS OR

FIREWALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH THE IBC. REFER TO ARCHITECTURAL

PLANS FOR EXACT LOCATIONS. FIRE STOPPING PRODUCTS SHALL BE AS TESTED PER ASTM E-814

SLEEVES FOR PIPING THROUGH MASONRY WALLS SHALL BE SCHEDULE 40, STANDARD GALVANIZED

STEEL PIPE; IN FRAMED PARTITIONS SHALL BE 20. GUAR=GE SHEETMETAL. THE SPACE BETWEEN THE

ALL SUPPORTS AND PARTS SHALL CONFORM TO THE LATEST REQUIREMENTS OF THE ANSI CODE FOR

HANGERS SHALL BE MANUFACTURED BY GRINNEL CO., CENTRAL IRON, B-LIKE, BLAWKNOX CO, OR AN

PIPE HANGERS, RODS, INSERTS AND CLAMPS SHALL BE THOSE APPROVED FOR THEIR RESPECTIVE

MIN. ROD SIZES:

3/8"

3/8"

3/8"

1/2"

1/2"

5/8"

3/4"

3/8"

3/8"

3/8"

1/2"

1/2"

5/8"

3/8"

3/8"

1/2"

5/8"

3/4'

3/8"

UNLESS OTHERWISE SPECIFICALLY APPROVED, HANGER SIZE AND SPACING SHALL BE:

MAX. HANGER SPACING:

7 FT. O.C.

9 FT. O.C.

10 FT. O.C

11 FT. O.C.

12 FT. O.C.

12 FT. O.C

12 FT. O.C.

5 FT. O.C.

6 FT. O.C.

9 FT. O.C.

10 FT. O.C.

10 FT. O.C.

3 FT. O.C.

4 FT. O.C.

4 FT. O.C

4 FT. O.C.

2 1/2 FT. O.C.

4 FT. O.C.

8 FT. O.C

PIPE AND ITS SLEEVE . SHALL NOT EXCEED ONE-HALF INCH. THE SLEEVE SHALL HAVE A SUFFICIENT

EXPOSED PIPING PASSING THROUGH WALLS, FLOORS, OR CEILINGS SHALL BE FITTED WITH

CHROMIUM-PLATED CAST BRASS ESCUTCHEONS WITH FASTENING SET SCREWS.

PRESSURE PIPING B31.9 AND MSS STANDARD PRACTICE SP-58 AND SP-59.

3' AND LARGER FOR SHUT-OFF SERVICE SHALL BE GATE VALVES.

2 12/" AND SMALLER FOR SHUT-OFF SERVICE SHALL BE BALL VALVES.

APOLLO, NIBCO OR APPROVED EQUAL.

SLEEVES AND ESCHUSIONS

PIPE SUPPORTS AND HANGERS

USES BY THE UNDERWRITERS' LABORATORIES INC.

SYSTEM IT SERVES.

FIRE STOPPING

APPROVED EQUAL.

PIPE SIZES STEEL:

1/2" TO 1 1/4"

1 1/2"

2 1/2"

4" & 5"

6"

3" & 3 1/2"

<u>COPPER:</u> 1/4" TO 3/4'

1" TO 1 1/4"

1 1/2" & 2"

<u>CPVC:</u> 1/4" TO 1 1/4"

1 1/2" & 2"

<u>PEX/PE:</u> 1/4" TO 1

2 1/2"

3" & 5"

