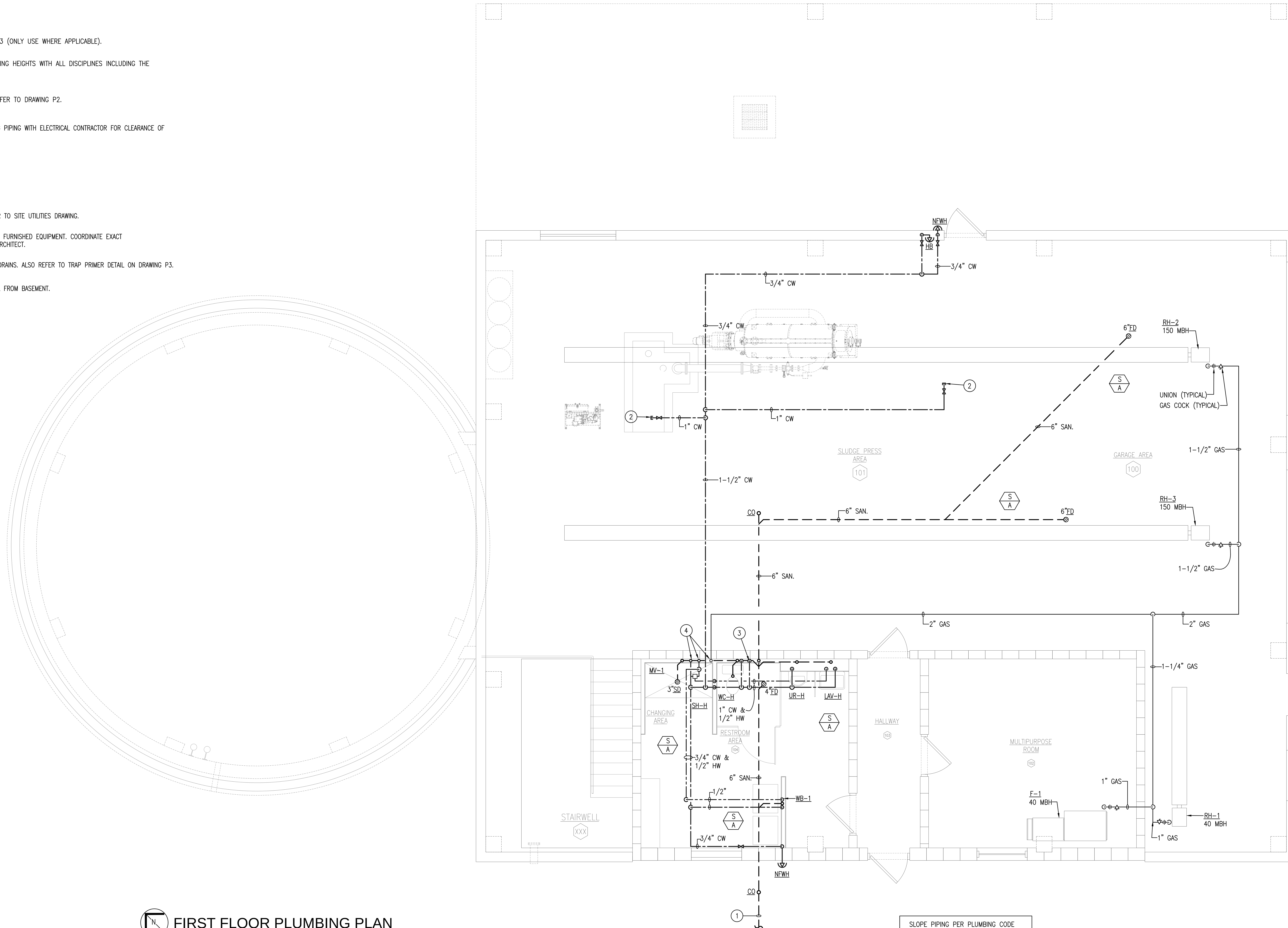
GENERAL NOTES:

1. REFER TO FIRESTOP PIPING DETAILS ON DWG. P3 (ONLY USE WHERE APPLICABLE).
2. PLUMBING CONTRACTOR SHALL COORDINATE CEILING HEIGHTS WITH ALL DISCIPLINES INCLUDING THE GENERAL CONTRACTOR.
3. (S/X) FOR SANITARY STACK DIAGRAM "A" REFER TO DRAWING P2.
4. P.C. SHALL COORDINATE ROUTING OF ALL PLUMBING PIPING WITH ELECTRICAL CONTRACTOR FOR CLEARANCE OF ALL ELECTRICAL PANELS AND DEVICES.

PLAN NOTES:

1. FOR CONTINUATION OF 6" SANITARY LINE REFER TO SITE UTILITIES DRAWING.
2. CAP 1" CW WITH SHUT-OFF VALVE FOR OWNER FURNISHED EQUIPMENT. COORDINATE EXACT SIZE AND LOCATION WITH THE OWNER & THE ARCHITECT.
3. 1/2" CW DOWN TO TRAP PRIMER FOR FLOOR DRAINS. ALSO REFER TO TRAP PRIMER DETAIL ON DRAWING P3.
4. 2" CW, 3/4" HW & 2" GAS LINES UP IN WALL FROM BASEMENT.



FIRST FLOOR PLUMBING PLAN

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

SLOPE PIPING PER PLUMBING CODE REQUIREMENTS.	
2 1/2" OR LESS	1/4"/FOOT
3" TO 6"	1/8"/FOOT
8" & UP	1/16"/FOOT

STATE OF OHIO
TIMOTHY J. NORRIS
E-40336
REGISTERED PROFESSIONAL ENGINEER

CALCULATED	CHECKED
M.S.K.	T.J.N.

REV. NO.	DATE
BID & PERMIT	04\10\14

consulting engineers

WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
FIRST FLOOR PLUMBING PLAN

VILLAGE OF CRESTLINE

P1
X

GENERAL NOTES:

1. PLUMBING CONTRACTOR TO FIELD VERIFY EXACT LOCATION & SIZE OF EXISTING UTILITIES INCLUDING SANITARY SEWER AND VENT PIPING. FOR SANITARY SEWER, P.C. SHALL FIELD VERIFY EXACT LOCATION, SIZE, INVERT ELEVATION & DIRECTION OF FLOW PRIOR TO MAKING ANY NEW CONNECTIONS. PRIOR TO CONSTRUCTION, ANY DEFICIENCES FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER OR ARCHITECT. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR FAILURE TO OBTAIN THIS INFORMATION.
2. REFER TO FIRESTOP PIPING DETAILS ON DWG. P3 (ONLY USE WHERE APPLICABLE).
3. PLUMBING CONTRACTOR SHALL COORDINATE CEILING HEIGHTS WITH ALL DISCIPLINES INCLUDING THE GENERAL CONTRACTOR.
4. VENT THRU ROOF (VTR) SHALL BE MINIMUM 10'–0" AWAY FROM OUTSIDE AIR INTAKE OPENING. COORDINATE WITH MECHANICAL DRAWINGS.
5. PLUMBING CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT LOCATED ON ROOF WITH MECHANICAL CONTRACTOR.
6. P.C. SHALL COORDINATE ROUTING OF ALL PLUMBING PIPING WITH ELECTRICAL CONTRACTOR FOR CLEARANCE OF ALL ELECTRICAL PANELS AND DEVICES.
7. DOMESTIC REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY & WATER METER TO BE LOCATED IN VAULT. REFER TO SITE UTILITY DRAWING FOR LOCATION.

PLAN NOTES:

(1) FOR CONTINUATION OF 2" DOMESTIC WATER LINE REFER TO SITE UTILITIES DRAWING.

(2) FOR CONTINUATION OF RE–ROUTED 2" GAS LINE REFER TO SITE UTILITIES DRAWING.

(3) 2" DOMESTIC WATER THRU WALL WITH SHUT–OFF VALVE. ALSO REFER TO GENERAL NOTE 6 ON THIS DRAWING.

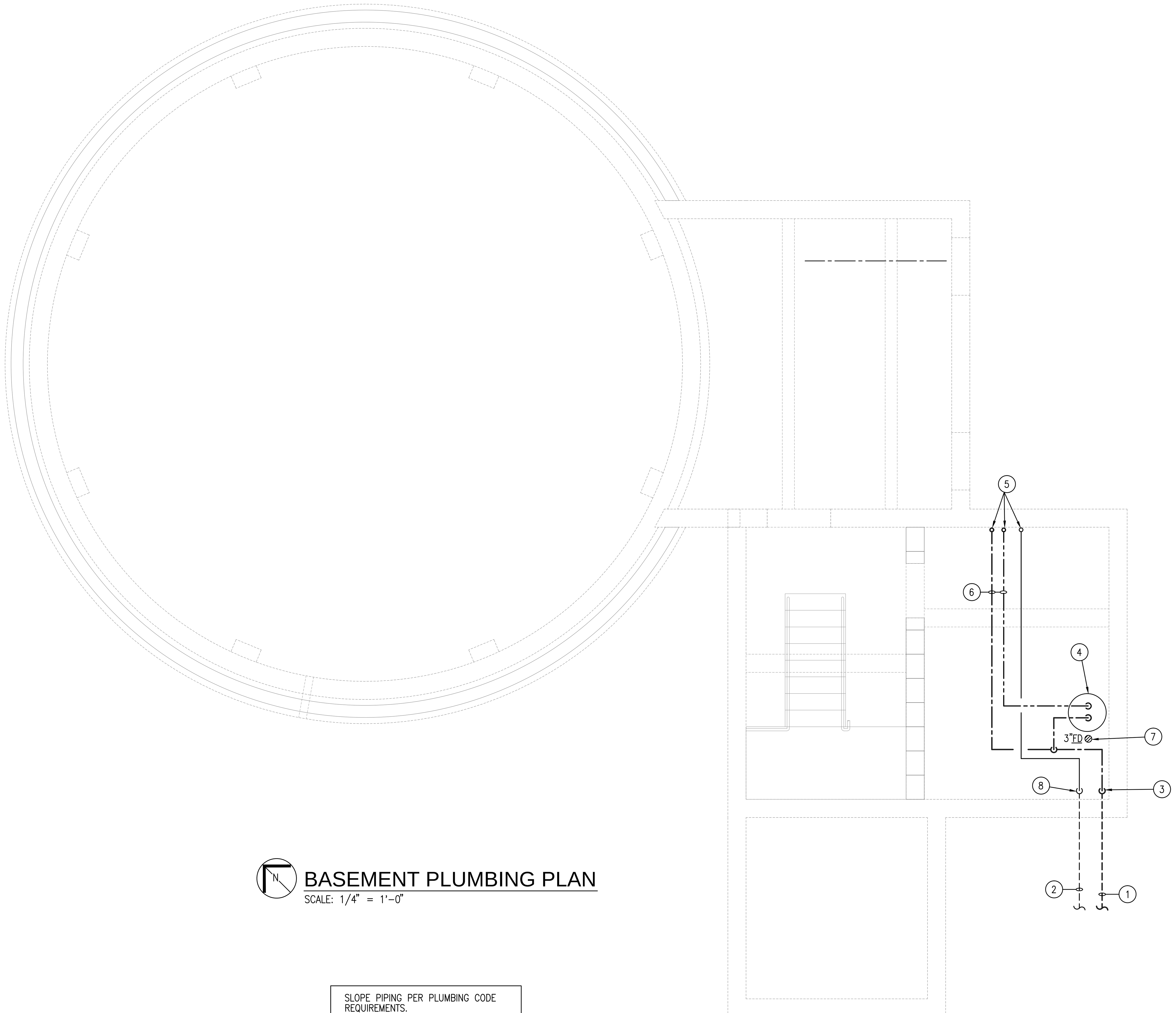
(4) EWH–1, ELECTRIC WATER HEATER. ALSO REFER TO EWH–1 ELECTRIC WATER HEATER PIPING DIAGRAM ON DRAWING P3.

(5) 2" CW, 3/4" HW & 2" GAS LINES UP TO FIRST FLOOR. FOR CONTINUATION OF PIPING REFER DRAWING P1.

(6) 2" CW & 3/4" HW

(7) FURNISH & INSTALL NEW 3" FLOOR DRAIN, IF NOT EXISTING FOR INDIRECT WASTE FROM EWH–1 T&P RELIEF VALVE. CONNECT NEW 3" SANITARY TO EXISTING SANITARY. PROVIDE 1–1/2" VENT, IF REQUIRED & CONNECT TO NEAREST EXISTING VENT. CONTRACTOR SHALL FIELD VERIFY EXACT ROUTING OF ALL PIPING & EXACT LOCATIONS OF ALL EXISTING PIPING & COORDINATE ALL WORK WITH THE OWNER & THE ARCHITECT. ALSO REFER TO GENERAL NOTE 1 ON THIS DRAWING.

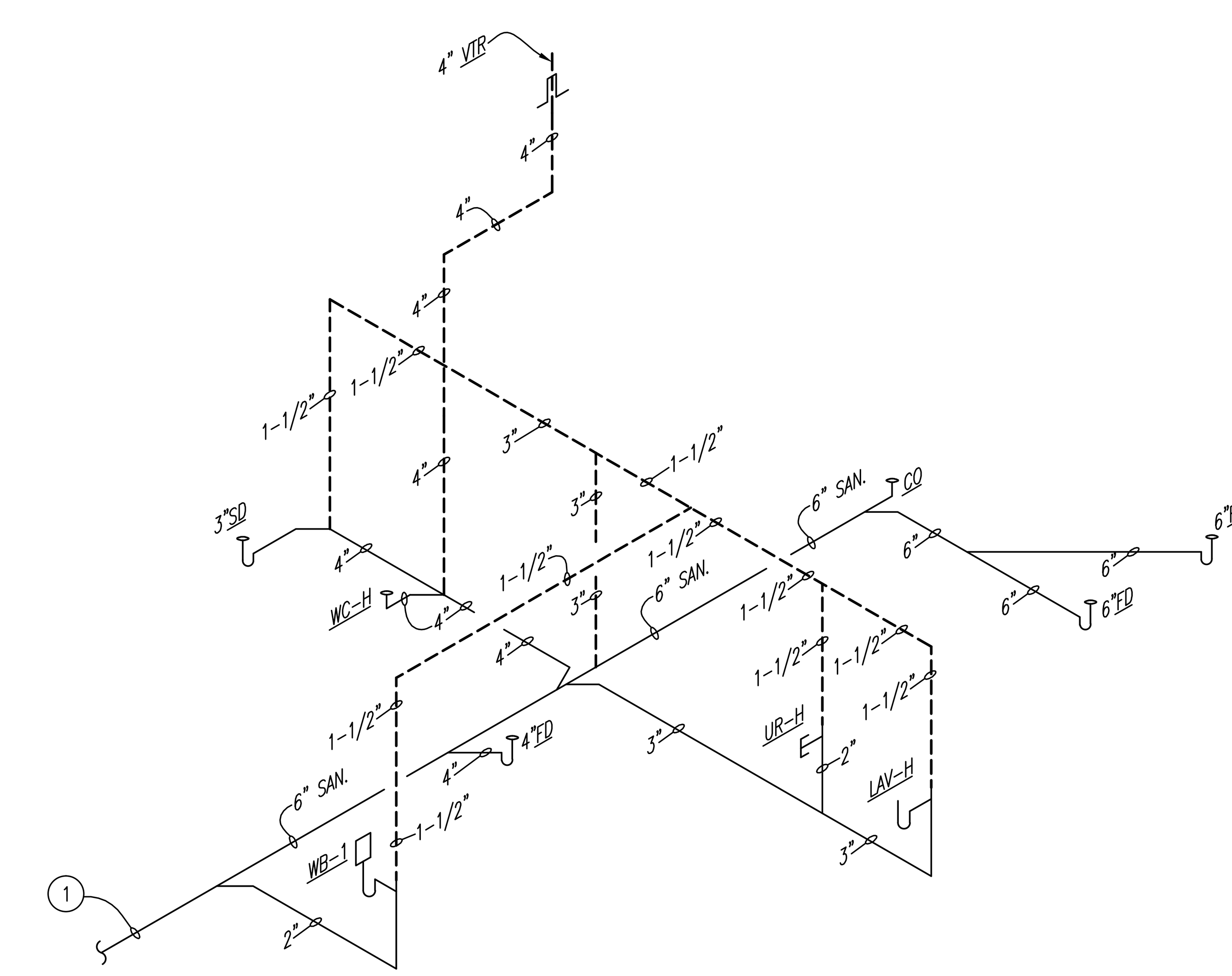
(8) 2" GAS LINE THRU WALL. CONTRACTOR SHALL FIELD VERIFY EXACT ROUTING OF ALL PIPING & COORDINATE WITH THE OWNER & THE ARCHITECT.



BASEMENT PLUMBING PLAN

SCALE: 1/4" = 1'–0"

SLOPE PIPING PER PLUMBING CODE REQUIREMENTS.
2 1/2" OR LESS 1/4"/FOOT
3" TO 6" 1/8"/FOOT
8" & UP 1/16"/FOOT



STACK DIAGRAM "A"

NO SCALE

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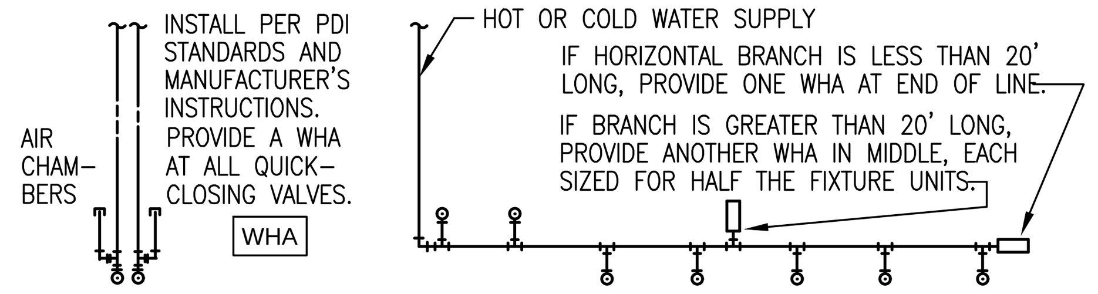
WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
BASEMENT PLUMBING PLAN AND STACK DIAGRAM

VILLAGE OF CRESTLINE

P2
X



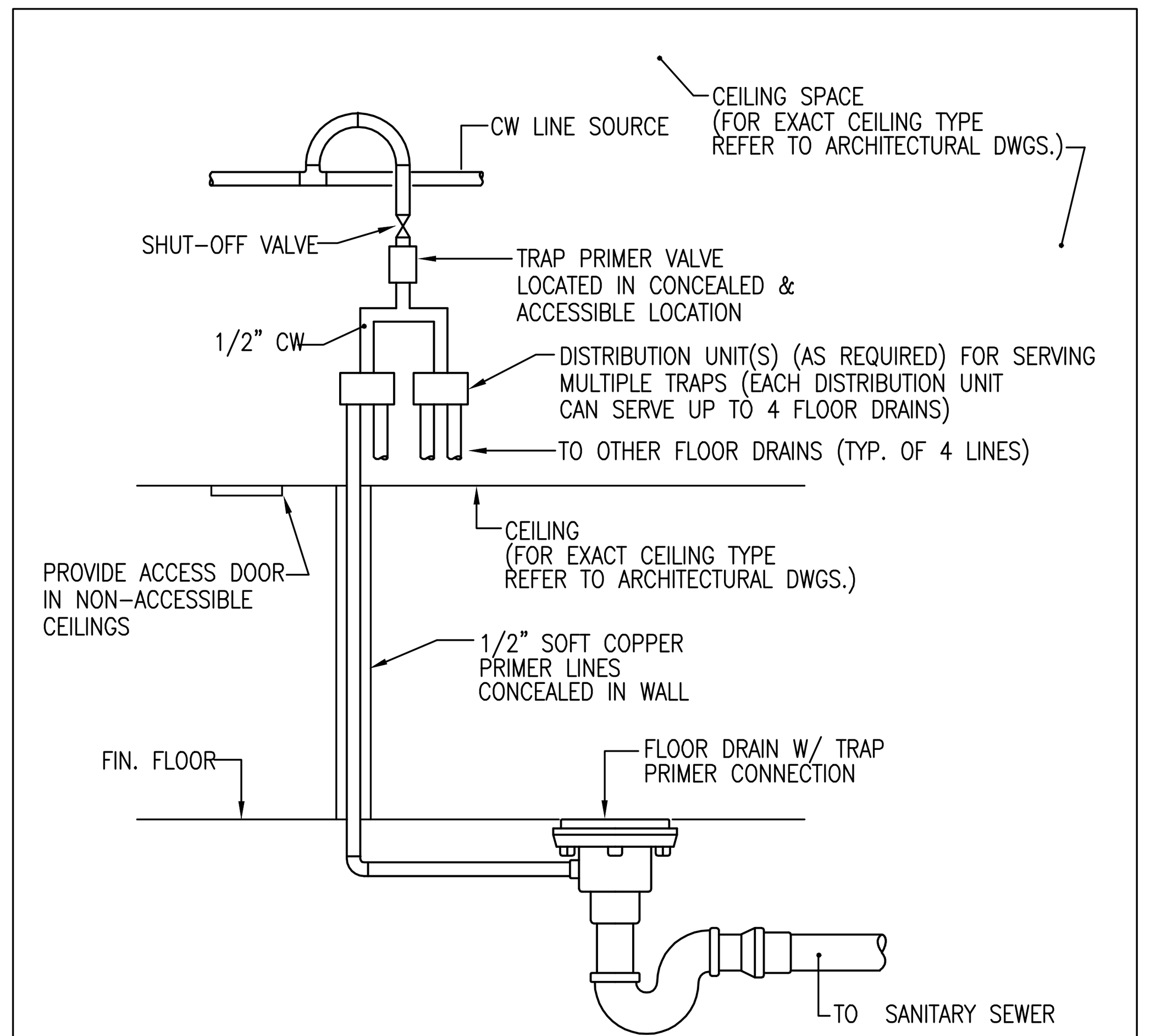
PDI SIZE	PIPE SIZE	FIXTURE UNIT LOAD
A	1/2"	1–11
B	3/4"	12–32
C	1"	33–60
D	1-1/4"	61–113
E	1-1/2"	114–154
F	2"	154–330

FIXTURE UNIT TABULATION		
FIXTURE	COLD	HOT
VALVE WATER CLOSET	10	--
TANK WATER CLOSET	5	--
URINAL	5	--
LAVATORY/SINK	1.5	1.5
JANITOR'S SINK	3	3
SHOWER/BATHTUB	2	2

FOR BATTERIES OF FIXTURES, PROVIDE WATER HAMMER ARRESTERS BY SIOUX CHIEF, PRECISION PLUMBING PRODUCTS, WATTS OR APPROVED EQUIVALENT WITH PISTON AND O-RING CONSTRUCTION, HAVING PDI #WH-201, ASSE # 1010 AND ANSI # A112.26.1M CERTIFICATION. INSTALL IN HORIZONTAL OR VERTICAL POSITION, BUT NEVER UPSIDE DOWN. INSTALL IN LINE WITH WATER FLOW DIRECTION IF POSSIBLE. SIZE THE UNITS AS SHOWN ON THE DRAWINGS AND/OR PER THE TABLES SHOWN ABOVE. PROVIDE ACCESSIBILITY TO "WHA" WHERE REQUIRED BY LOCAL CODE.

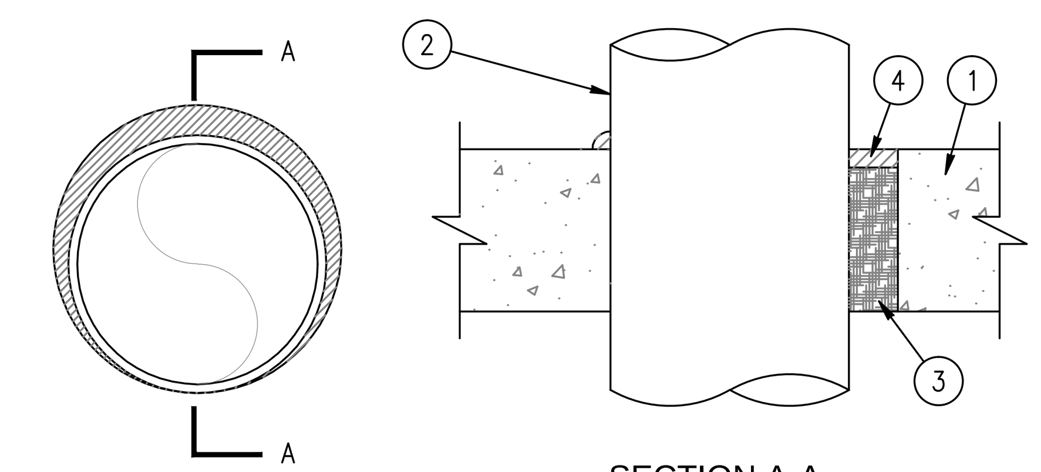
WATER HAMMER ARRESTOR DETAIL

NO SCALE



TRAP PRIMER DETAIL

NO SCALE



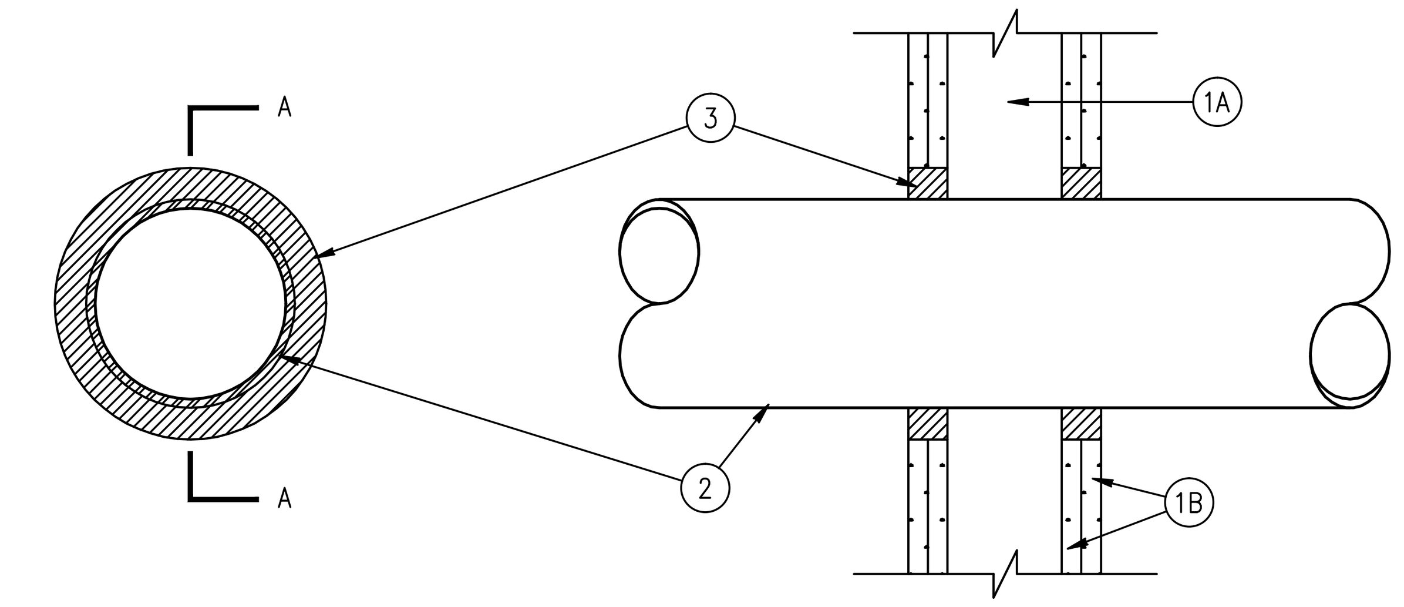
FIRESTOP DETAIL - METAL PIPE 2 HOUR FLOOR/WALL SYSTEM NO C-AJ-1435

SCALE: NONE

F-RATING = 2HR.
T-RATING = 0HR.

NOTES:

1. FLOOR OR WALL ASSEMBLY – MINIMUM 4½" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100–150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS. MAXIMUM DIAMETER OF OPENING IS 8".
2. THROUGH PENETRANTS – ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED CONCENTRICALLY OR ECCENTRICALLY WITHIN FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR ASSEMBLY. THE ANNULAR SPACE BETWEEN PIPE CONDUIT OR TUBING AND THE PERIPHERY OF THE OPENING SHALL BE MINIMUM 0" (POINT OF CONTACT) TO MAXIMUM 1⅞". THE FOLLOWING TYPES OF PIPE, CONDUIT OR TUBING MAY BE USED:
   - A. STEEL PIPE – NOMINAL 30" DIAMETER (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.
   - B. IRON PIPE – NOMINAL 30" DIAMETER (OR SMALLER) CAST OR DUCTILE IRON PIPE.
   - C. CONDUIT – NOMINAL 6" DIAMETER (OR SMALLER) RIGID STEEL CONDUIT.
   - D. CONDUIT – NOMINAL 4" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC CONDUIT.
   - E. COPPER TUBING – NOMINAL 6" DIAMETER (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.
   - F. COPPER PIPE – NOMINAL 6" DIAMETER (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.
3. PACKING MATERIAL – MINIMUM 2" THICKNESS OF MINIMUM 4.0 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.
4. FILL, VOID OR CAVITY MATERIALS – SEALANT SHALL BE MINIMUM 1½" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL.



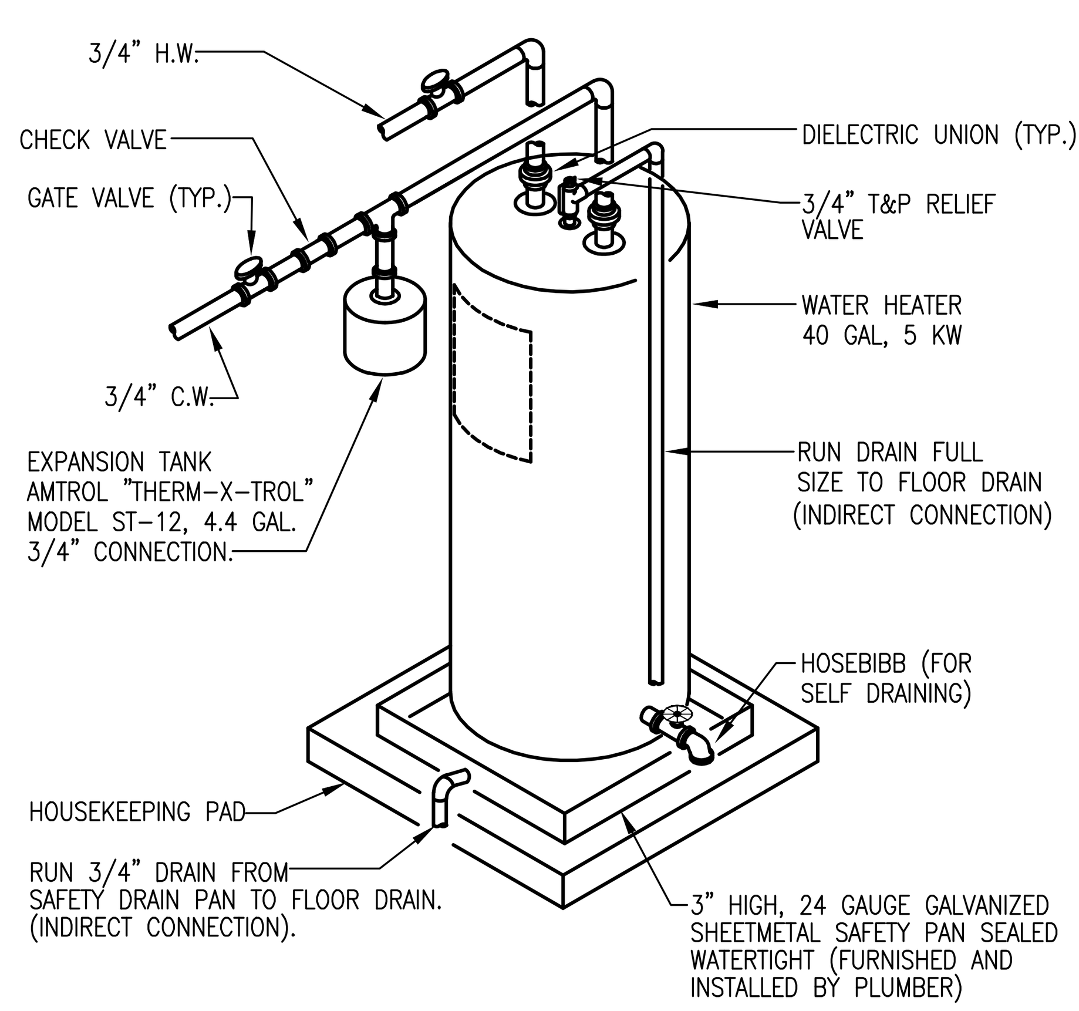
FIRESTOP DETAIL - 1-2 HOUR GYPBOARD WALL SYSTEM NO W-L-1054

SCALE: NONE

F-RATINGS = 1HR. AND 2HR.
T-RATING = 0HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L-RATING AT 400° = 4 CFM/SQ. FT.

NOTES:

1. WALL ASSEMBLY – THE 1 OR 2 HOUR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
   - A. STUDS – WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS SHALL CONSIST OF NOMINAL 2"X4" LUMBER SPACED 16" O.C. STEEL STUDS SHALL BE MINIMUM 2½" WIDE AND SPACED MAXIMUM 24" O.C. WHEN STEEL STUDS ARE USED AND THE DIAMETER OF OPENING EXCEEDS THE WIDTH OF STUD CAVITY, THE OPENING SHALL BE FRAMED ON ALL SIDES USING LENGTHS OF STEEL STUD INSTALLED BETWEEN THE VERTICAL STUDS AND SCREW-ATTACHED TO THE STEEL STUDS AT EACH END. THE FRAMED OPENING IN THE WALL SHALL BE 4" TO 6" WIDER AND 4" TO 6" HIGHER THAN THE DIAMETER OF THE PENETRATING ITEM SUCH THAT, WHEN THE PENETRATING ITEM IS INSTALLED IN THE OPENING, A 2" TO 3" CLEARANCE IS PRESENT BETWEEN THE PENETRATING ITEM AND THE FRAMING ON ALL FOUR SIDES.
   - B. GYPSUM BOARD – ⅝" THICK, 4' WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM BOARD TYPE, THICKNESS, NUMBER *OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAXIMUM DIAMETER OF OPENING IS 32¼" FOR STEEL STUD WALLS. MAXIMUM DIAMETER OF OPENING IS 14½" FOR WOOD STUD WALLS. THE F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE FIRE RATING OF THE WALL ASSEMBLY.
2. THROUGH-PENETRANTS – ONE METALLIC PIPE, CONDUIT OR TUBING SHALL BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE SHALL BE MINIMUM 0" TO MAXIMUM 2¼". PIPE MAY BE INSTALLED WITH CONTINUOUS POINT CONTACT. PIPE, CONDUIT OR TUBING MAY BE INSTALLED AT AN ANGLE NOT GREATER THAN 45 DEGREES FROM PERPENDICULAR. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:
   - A. STEEL PIPE – NOMINAL 30" DIAMETER OR SMALLER (SCHEDULE 10 OR HEAVIER) STEEL PIPE.
   - B. IRON PIPE – NOMINAL 30" DIAMETER OR SMALLER CAST OR DUCTILE IRON PIPE.
   - C. CONDUIT – NOMINAL 4" DIAMETER OR SMALLER STEEL ELECTRICAL METALLIC TUBING OR 6" DIAMETER STEEL CONDUIT.
   - D. COPPER TUBING – NOMINAL 6" DIAMETER OR SMALLER (TYPE L OR HEAVIER) COPPER TUBING.
   - E. COPPER PIPE – NOMINAL 6" DIAMETER OR SMALLER (REGULAR OR HEAVIER) COPPER PIPE.
3. FILL, VOID OR CAVITY MATERIAL BEARING THE UL CLASSIFICATION MARK – SEALANT TO BE MINIMUM ⅝" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH BOTH SURFACES OF WALL. AT THE POINT OR CONTINUOUS CONTACT LOCATIONS BETWEEN PIPE AND WALL, A MINIMUM ½" DIAMETER BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE PIPE WALL INTERFACE ON BOTH SURFACES OF WALL.



(EWH-1) - WATER HEATER PIPING DIAGRAM

NO SCALE

EWH-1 – ELECTRIC WATER HEATER

A.O. SMITH MODEL DEN-40, STATE OR LOCHINVAR 40 GALLON STORAGE,
5 KW UPPER/LOWER ELEMENT, 480 VOLT, THREE PHASE, 20 GPH RECOVERY AT 100°F RISE.
COMPLETE WITH PRESSURE & TEMPERATURE RELIEF VALVE, RUN DRAINS FULL SIZE FROM RELIEF VALVE & SAFETY DRAIN PAN TO FLOOR DRAIN (INDIRECT CONNECTIONS).
PROVIDE EXPANSION TANK AS REQUIRED PER CODES.

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WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I

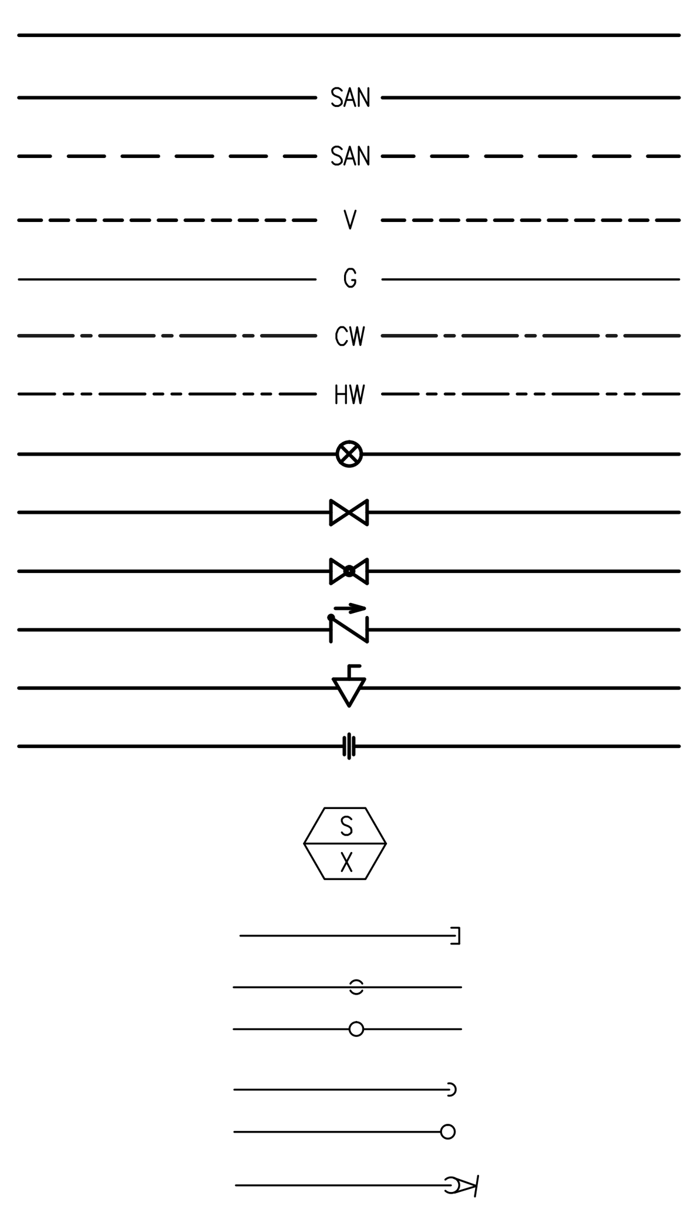
PLUMBING DETAILS AND DIAGRAMS

VILLAGE OF CRESTLINE

P3

X

PLUMBING SYMBOL LEGEND



SYMBOL	DESCRIPTION
(solid line)	NEW PIPING
SAN	SANITARY – ABOVE GROUND
SAN (dashed)	SANITARY – UNDERGROUND
V	VENT LINE
G	GAS LINE
CW	DOMESTIC COLD WATER
HW	DOMESTIC HOT WATER
	BALANCE VALVE
	GATE VALVE
	GLOBE VALVE
	CHECK VALVE
	GAS COCK
	UNION
S / X	SANITARY STACK DESIGNATION
	CAP OR END OF PIPE
DP, DN	TEE LOOKING DOWN
UP	TEE LOOKING UP
DP, DN	ELBOW DOWN OR DROP
UP	ELBOW UP OR RISE
	SHUT–OFF VALVE IN RISER

PLUMBING ABBREVIATIONS

ARCH.	ARCHITECT
CONT.	CONTINUATION
CO	CLEANOUT
CLG.	CEILING
DWG	DRAWING
D	DRYER
EWH	ELECTRIC WATER HEATER
LAV	FIXTURE IDENTIFICATION
FD	FLOOR DRAIN
GWH	GAS WATER HEATER
HB	HOSE BIBB
LAV–H	WALL HUNG LAVATORY HANDICAPPED
MFR.	MANUFACTURER
MBH	THOUSAND BTU PER HOUR
MV	MIXING VALVE
NFWH	NON–FREEZE WALL HYDRANT
PC	PLUMBING CONTRACTOR
SH–H	SHOWER HANDICAPPED
SD	SHOWER DRAIN
TP	TRAP PRIMER
TYP.	TYPICAL
UR–H	URINAL HANDICAPPED
VTR	VENT THRU ROOF
W	WASHER
WB	WASHER BOX
WC–H	WATER CLOSET HANDICAPPED

SLOPE PIPING PER PLUMBING CODE REQUIREMENTS.
2 1/2" OR LESS 1/4"/FOOT
3" TO 6" 1/8"/FOOT
8" & UP 1/16"/FOOT

GENERAL PLUMBING NOTES:

1. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL SHEETS MARKED "P".
2. SHEETS ARE DIAGRAMMATIC: DETERMINE LOCATIONS OF SYSTEMS AND COMPONENTS IN FIELD.
3. DIMENSIONS SHOWN ON PLAN ARE HORIZONTAL. DIMENSIONS SHOWN IN ELEVATION ARE VERTICAL EXCEPT THAT, IN WAY OF STRUCTURAL DIMENSIONS ARE MEASURED PERPENDICULAR TO FLANGE.
4. NEITHER ACCURACY NOR COMPLETION OF UTILITY LOCATIONS SHOWN ON SHEETS ARE GUARANTEED. DETERMINE EXACT LOCATIONS OF EXISTING UTILITIES IN FIELD, WHETHER OR NOT SHOWN ON DRAWINGS. EXERCISE CAUTION AND IDENTIFY LOCATIONS OF UNMARKED UTILITY LINES AS NECESSARY TO PERFORM WORK OF THIS SECTION.
5. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE OHIO PLUMBING CODE & ALL APPLICABLE LOCAL CODES.
6. IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE HIS WORK WITH THAT OF ALL OTHER TRADES, INCLUDING (BUT NOT LIMITED TO), ELECTRICAL, HVAC, PROCESS PIPING, STRUCTURAL AND GENERAL TRADES.
7. ANY INTERFERENCE SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND THE OWNER'S REPRESENTATIVE, AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
8. NO WORK SHALL BE INSTALLED IN VIOLATION OF ANY GOVERNING CODES. ANY WORK SHOWN ON THE DRAWINGS WHICH IS IN VIOLATION OF SUCH CODES SHALL BE BROUGHT TO THE ATTENTION OF THE CONSTRUCTION MANAGER AND THE OWNER'S REPRESENTATIVE AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF THE WORK INVOLVED.
9. ALL PIPING PENETRATING CEILINGS AND WALLS SHALL BE INSTALLED WITH CHROME PLATED ESCUTCHEONS AT THE PENETRATION. ALL PIPING PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE FLASHED IN AN APPROVED MANNER AND SHALL BE SEALED WEATHERTIGHT. PIPING PENETRATING RATED PARTITIONS SHALL BE PROTECTED AS REQUIRED BY LOCAL CODE AUTHORITY.
10. MANUFACTURERS' MODEL NUMBERS ARE SPECIFIED SOLELY TO ESTABLISH STANDARDS OF QUALITY FOR PERFORMANCE AND MATERIALS.
11. PRODUCT INSTALLATION SHALL ADHERE TO MANUFACTURERS' RECOMMENDATIONS.
12. PROVIDE ACCESS PANELS FOR EQUIPMENT THAT REQUIRES PERIODIC SERVICE.
13. ALL PIPING ABOVE GRADE SHALL BE PROPERLY SUPPORTED BY THE BUILDING STRUCTURE AND SHALL NOT REST ON CEILING TILES OR CEILING STRUCTURE.
14. CONTRACTOR SHALL COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF ALL PLUMBING EQUIPMENT WITH THE ELECTRICAL DRAWINGS AND SHALL FURNISH EQUIPMENT WIRED FOR THE VOLTAGES SHOWN HEREIN.
15. ALL PLUMBING EQUIPMENT, PIPING, INSULATION, ETC., INSTALLED IN HVAC PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY. DO NOT USE "PVC" PIPING IN AREAS WHERE CEILING SPACES ARE USED FOR RETURN–AIR PLENUM.
16. PROVIDE SHUTOFF VALVES ON ALL BRANCH PIPING AND ON ALL SUPPLIES TO INDIVIDUAL FIXTURES AND EQUIPMENT. PROVIDE BALL VALVES ON ALL WATER MAIN BRANCHES IN CORRIDORS AND WHERE INDICATED ON DRAWINGS. (NIBCO S–595–Y)
17. ALL SLEEVES THROUGH CONCRETE FLOORS AND ALL CORE DRILLING OF CONCRETE FLOORS AND WALLS SHALL BE BY THIS CONTRACTOR.
18. CONCRETE PADS AND PLATFORMS FOR WORK OF THIS SECTION WILL BE PROVIDED BY GENERAL CONTRACTOR. PROVIDE INFORMATION AND HARDWARE AS NECESSARY TO COORDINATE WORK.
19. SCHEDULE WORK OF THIS SECTION TO AVOID INTERFERING WITH FIREPROOFING WORK.
20. RUN PIPING CONCEALED, UNLESS SPECIFIED OTHERWISE, AND CLEAR OF CEILING INSERTS.
21. STRUCTURAL WELDING SHALL BE 1/4–INCH FILLET UNLESS REQUIRED OTHERWISE.
22. PROVIDE CLAMPS, OFFSETS, EXPANSION JOINTS, ANCHORS AND GUIDES AS NECESSARY TO PREVENT STRESS ON PIPING.
23. PROVIDE MANUAL AIR VENTS AT HIGH POINTS IN PIPING SYSTEMS AND DRAIN VALVES AT LOW POINTS.
24. PITCH PRESSURE PIPING IN DIRECTION OF FLOW.
25. WATER HAMMER PROTECTION SHALL BE PROVIDED WHERE REQUIRED PER OHIO PLUMBING CODE 604.9
26. NEW OR REPAIRED POTABLE WATER SUPPLY SYSTEMS SHALL BE PURGED OF DELETERIOUS MATTER AND DISINFECTED PRIOR TO USE, PER OHIO PLUMBING CODE 610.
27. PLUMBING SYSTEM PIPING SHALL BE TESTED AND INSPECTED PER OHIO PLUMBING CODE SECTION 312.
28. EACH FIXTURE TRAP SHALL HAVE A TRAP SEAL INCLUDING BUT NOT LIMITED TO FLOOR DRAINS, STANDPIPES & ALL PLUMBING FIXTURES THAT HAVE A TRAP. WHERE A TRAP SEAL IS SUBJECT TO LOSS BY EVAPORATION, A TRAP SEAL PRIMER VALVE SHALL BE INSTALLED AND SHALL COMPLY WITH OHIO PLUMBING CODE SECTION 1002.4
29. ALL PLUMBING PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH OHIO PLUMBING CODE SECTION 308.
30. SUBSOIL DRAIN PIPE MATERIAL AND INSTALLATION SHALL BE IN COMPLIANCE WITH OHIO PLUMBING CODE SECTION 1111.
31. WATER PIPING JOINTS BETWEEN DIFFERENT MATERIALS SHALL BE PER OHIO PLUMBING CODE SECTION 605.22.
32. BACKFLOW PREVENTION DEVICES SHALL BE PROVIDED ON THE POTABLE WATER SUPPLY SYSTEM TO PREVENT CONTAMINATION FROM NON–POTABLE LIQUIDS, SOLIDS, OR GASES PER OHIO PLUMBING CODE SECTION 608.
33. IN THE INSTALLATION OR REMOVAL OF ANY PART OF A DRAINAGE SYSTEM, DEAD ENDS SHALL BE PROHIBITED. CLEANOUT EXTENSIONS AND APPROVED FUTURE FIXTURE DRAINAGE PIPING SHALL NOT BE CONSIDERED AS DEAD ENDS PER OHIO PLUMBING CODE SECTION 704.5.
34. HANDICAPPED TOILET FIXTURES AND INSTALLATION SHALL CONFORM TO THE OHIO PLUMBING CODE SECTIONS 404 AND 405, OHIO BUILDING CODE CHAPTER 11 AND THE OHIO ACCESSIBILITY GUIDELINES (A.D.A.A.F.)
35. LOCATE ALL VTR'S (VENT THRU ROOF) A MINIMUM OF 10'–0" AWAY FROM ALL FRESH AIR INTAKES.
36. FIELD VERIFY EXACT LOCATION OF ALL FIXTURES, EQUIPMENT AND DRAINS WITH ARCHITECT PRIOR TO ROUGH–IN.
37. ALL FLOOR/TRENCH DRAINS SHALL BE INSTALLED IN LOW POINTS OF FLOORS TO INSURE PROPER DRAINAGE.
38. MAXIMUM FLOW RATES FOR PUBLIC LAVATORY FAUCETS SHALL BE 0.5 GPM PER OHIO PLUMBING CODE 604.4
39. TEMPERED WATER (85'–110' DEGREES) SHALL BE DELIVERED TO PUBLIC HAND–WASHING FACILITIES AND WHERE SHOWN ON PLUMBING DRAWINGS PER OHIO PLUMBING CODE SECTION 607.1
40. CLEANOUTS SHALL BE NOT MORE THAN 100 FEET APART IN HORIZONTAL DRAINAGE LINES PER OHIO PLUMBING CODE SECTIONS 708.3.1 THRU 708.5. ALL CLEANOUTS SHALL BE ACCESSIBLE. INSTALL AT DRAIN DIRECTION CHANGES OF OVER 45 DEGREES. INSTALL CLEANOUTS AT OR NEAR THE FOOT OF EACH VERTICAL WASTE OR SOIL STACK.

GENERAL PLUMBING NOTES:

41. WATER HEATERS SHALL COMPLY WITH THE MATERIALS, DESIGN AND INSTALLATION REQUIREMENTS AS REFERENCED IN THE OHIO PLUMBING CODE CHAPTER 5 AND OHIO MECHANICAL CODE SECTION 1002.
42. GAS PIPING AND ALL RELATED INSTALLATIONS SHALL COMPLY WITH THE INTERNATIONAL FUEL GAS CODE.
43. INSTALLATION OF BACKFLOW PREVENTER SHALL BE IN ACCORDANCE PER WATER DEPARTMENT STANDARDS.
44. GENERAL DOMESTIC WATER PRESSURE IN BUILDING SHALL NOT EXCEED 80 PSI STATIC PER OHIO PLUMBING CODE SECTION 604.8 P.C. SHALL FURNISH & INSTALL PRESSURE REDUCING VALVE WITH STRAINER JUST DOWN STREAM OF BUILDING MAIN ISOLATION VALVE FOR WATER PRESSURES EXCEEDING 80 PSI AS MANUFACTURED BY WATTS OR APPROVED EQUAL.
45. INSTALL ALL THREADED CLEANOUT PLUGS WITH PIPE DOPE TO ALLOW FOR EASY REMOVAL IN THE FUTURE.
46. IT WILL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO INSURE THAT ITEMS TO BE FURNISHED UNDER PLUMBING CONTRACT WILL FIT THE SPACE AVAILABLE – PLUMBING CONTRACTOR SHALL MAKE NECESSARY FIELD MEASUREMENTS TO ASCERTAIN SPACE REQUIREMENTS, INCLUDING THOSE FOR CONNECTIONS AND SHALL FURNISH AND INSTALL SUCH SIZES AND SHAPES OF EQUIPMENT THAT ARE THE TRUE INTENT OF THE DRAWINGS AND SPECIFICATIONS.
47. PLUMBING CONTRACTOR SHALL SUPPLY AND INSTALL GAS PIPING AS SHOWN ON PLANS. PROVIDE GAS COCK, UNION AND DIRT LEG TO EACH PIECE OF GAS FIRED EQUIPMENT. ALL GAS PIPING SHALL COMPLY WITH LOCAL CODES. PLUMBING CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS TO ALL GAS EQUIPMENT. PROVIDE/INSTALL REGULATORS AT HVAC AND WATER HEATER EQUIPMENT WHERE REQUIRED OR AS SHOWN ON PLUMBING DRAWINGS TO REDUCE TO NORMAL OPERATING PRESSURE OF THE EQUIPMENT AS INDICATED ON THE EQUIPMENT NAME PLATES. PRESSURE CHECK GAS LINES WHEN HOOKED UP TO EQUIPMENT OR HVAC UNITS. FINAL LEAK TEST FROM SHUT–OFF TO EQUIPMENT SHALL BE DONE UNDER NORMAL PRESSURE WITH SOAP/WATER SOLUTION AFTER GAS PIPING IS CONNECTED.
48. P.C. SHALL PROVIDE MATERIAL AND LABOR WHICH IS NEITHER DRAWN (NOT SHOWN ON PLUMBING DRAWINGS) NOR SPECIFIED, BUT WHICH IS OBVIOUSLY A COMPONENT PART OF AND NECESSARY TO COMPLETE WORK AND WHICH IS CUSTOMARILY A PART OF WORK OF SIMILAR CHARACTER.
49. FOR ANY ALTERNATES ON THE PROJECT ALSO REFER TO DIVISION 1 (ONE) SPECIFICATIONS.

GENERAL FIRE PROTECTION NOTES:

1. THE FIRE PROTECTION SYSTEM FOR THIS PROJECT SHALL BE DESIGNED, SUBMITTED FOR REVIEW, AND INSTALLED BY THE CONTRACTOR. THE FIRE PROTECTION SUBCONTRACTOR IS RESPONSIBLE TO PROVIDE A COMPLETE SET OF SHOP DRAWINGS WHICH SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER DULY LICENSED IN THE STATE OF OHIO.
2. FIRE PROTECTION WORK INDICATED ON THESE SHEETS MUST BE BID AS A SEPARATE DISCIPLINE FROM PLUMBING & MUST CONFORM TO LATEST NFPA 13.
3. SPRINKLER PIPE SIZES ARE TO BE CALCULATED HYDRAULICALLY BY THE STATE CERTIFIED SPRINKLER DESIGNER.
4. FIRE PROTECTION SUBCONTRACTOR IS TO CAREFULLY COORDINATE SPRINKLER HEADS AND PIPING LOCATIONS WITH ARCHITECT PRIOR TO RUNNING ANY PIPING.
5. REVIEW OF SHEETS IS CONTINGENT UPON SUBMISSION. REVIEW OF COMPLETE COORDINATION DRAWINGS IS AS SPECIFIED BY ARCHITECT.
6. CERTIFIED SPRINKLER CONTRACTOR SHALL ALSO REFER TO ARCHITECTURAL DRAWINGS AND VERIFY WITH OWNER & ARCHITECT AREAS THAT SHALL BE PROVIDED WITH FIRE PROTECTION SYSTEM.

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE	SAN.	VENT	H.W.	C.W.	MANUFACTURER & MODEL NUMBER
WC–H	FLOOR MOUNTED WATER CLOSET TANK TYPE A.D.A. COMPLIANT	4"	2"	–	1/2"	AMERICAN STANDARD "CADET" #2428.012, VITREOUS CHINA, FLOOR MOUNTED WITH CLOSE COUPLED TANK AND ELONGATED BOWL WITH OPEN FRONT SEAT COVER, 17" HIGH BOWL AND BOLT CAPS.
UR–H	WALL HUNG URINAL A.D.A. COMPLIANT	2"	1–1/2"	–	3/4"	AMERICAN STANDARD "WASHBROOK" #6501.010 URINAL, VITREOUS CHINA, WALL HUNG, 3/4" TOP SPUD WITH ZURN #Z–6003XL–WS1 FLUSH VALVE W/ VACUUM BREAKER, "J.R. SMITH CO." FIG. #634 WALL HANGER SUPPORT.
* LAV–H	WALL HUNG LAVATORY A.D.A. COMPLIANT	1–1/2"	1–1/2"	1/2"	1/2"	AMERICAN STANDARD WALL HUNG "LUCERNE" #0355.012 COMPLETE WITH MOEN SANI–STREAM SINGLE LEVER FAUCET #8425 & GRID STRAINER, PROVIDE MIFAB WALL CARRIER.
SH–H	SHOWER A.D.A. COMPLIANT	3" SHOWER DRAIN	1–1/2"	1/2"	1/2"	SHOWER BASIN AND PANELS FURNISHED BY OTHERS. PLUMBER SHALL PROVIDE SHOWER TRIMS AND SHOWER DRAIN. FAUCET SHALL BE MOEN MODEL 8342 PRESSURE BALANCING DESIGN, WITH 1/4 TURN STOPS, 3 FUNCTION TRANSFER VALVE, SHOWERHEAD, HAND–HELD SHOWER, 69" METAL HOSE, 30" SLIDE BAR, DROP ELL & VACUUM BREAKER & ADJUSTABLE TEMPERATURE LIMIT STOP.
WB–1	WASHER BOX	2"	1–1/2"	1/2"	1/2"	SYMMONS LAUNDRY–MATE W–602

* INSULATE EXPOSED PIPING AT HANDICAPPED LAVATORY WITH MOLDED INSULATION KITS, AS MANUFACTURED BY HANDI–GUARD, HANDY SHIELD OR AS APPROVED.

A.D.A. COMPLIANT URINAL WILL BE MOUNTED WITH LIP AT 17" A.F.F.

A.D.A. COMPLIANT LAVATORIES WILL BE MOUNTED AT A MAXIMUM OF 34" A.F.F.

ALL LAVATORIES HAVING EXPOSED PIPING SHALL HAVE PIPE INSULATION TO PREVENT AGAINST CONTACT. THERE WILL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORES.

PLUMBING FIXTURE SCHEDULE NOTES:

1. ALL FIXTURES AS NOTED TO MEET ALL REQUIRED A.D.A./CODE COMPLIANCE STANDARDS IN ACCESSIBLE STALLS.
2. FOR EXACT LOCATIONS OF PLUMBING FIXTURES ALSO REFER TO ARCHITECTURAL DRAWINGS.
3. MAXIMUM FLOW RATES FOR PUBLIC LAVATORY FAUCETS SHALL BE 0.5 GPM PER OHIO PLUMBING CODE 604.4
4. ALL PLUMBING FIXTURES & FAUCETS SHALL BE CONTINGENT UPON BUILDING OWNER APPROVAL AND SHALL RECEIVE BUILDING OWNERS WRITTEN SIGN OFF PRIOR TO INSTALLATION.
5. TEMPERED WATER (85°F–110°F) SHALL BE PROVIDED TO FIXTURES LAV–H AND SH–H VIA MIXING VALVE MV–1. REFER TO PLUMBING FLOOR PLAN ON DRAWING P1 FOR MIXING VALVE LOCATIONS AND EXACT DESIGNATIONS.

STATE OF OHIO
TIMOTHY J. NORRIS
E–40336
REGISTERED PROFESSIONAL ENGINEER

CALCULATED	CHECKED
M.S.K.	T.J.N.

REV. NO.	DATE
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WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
PLUMBING LEGEND, FIXTURE SCHEDULE AND NOTES

VILLAGE OF CRESTLINE

P4
X

PLUMBING SPECIFICATIONS

GENERAL SPECIFICATIONS/PLUMBING

1. PERFORM WORK, PROVIDE MATERIALS AND EQUIPMENT FOR SYSTEMS SHOWN, SPECIFIED AND DESCRIBED ON DRAWINGS. COMPLETELY COORDINATE WORK OF THIS CONTRACT WITH WORK OF OTHER CONTRACTORS AND PROVIDE COMPLETE AND FULLY FUNCTIONAL INSTALLATION. REMOVE ALL DEBRIS CAUSED BY THIS CONTRACTOR'S WORK.

2. ADDRESS QUESTIONS REGARDING DRAWINGS TO ARCHITECT IN WRITING BEFORE AWARD OF CONTRACT. OTHERWISE, ARCHITECT'S INTERPRETATION OF MEANING AND INTENT OF SHEETS SHALL BE FINAL.

3. SHEETS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK INCLUDED IN THE CONTRACT. IT IS NOT INTENDED TO SPECIFY OR SHOW EVERY OFFSET, FITTING OR COMPONENT, HOWEVER, CONTRACT DOCUMENTS REQUIRE COMPONENTS AND MATERIALS WHETHER OR NOT INDICATED OR SPECIFIED AS NECESSARY TO MAKE THE SYSTEMS BEING INSTALLED COMPLETE, TESTED AND OPERATIONAL. DETERMINE EXACT LOCATIONS OF UTILITIES, SYSTEMS AND COMPONENTS IN FIELD.

4. GIVE NOTICES, FILE PLANS, OBTAIN PERMITS AND LICENSES, PAY FEES AND BACK CHARGES AND OBTAIN NECESSARY APPROVALS FROM AUTHORITIES THAT HAVE JURISDICTION.

5. GUARANTEE WORK OF THIS CONTRACTOR IN WRITING FOR ONE YEAR FROM THE DATE OF OWNER'S ACCEPTANCE OF CERTIFICATE OF SUBSTANTIAL COMPLETION. PROMPTLY, REPAIR OR REPLACE DEFECTIVE MATERIALS, EQUIPMENT, WORKMANSHIP AND INSTALLATIONS THAT DEVELOP DEFECTS WITHIN THIS PERIOD. PROMPTLY AND TO OWNERS SATISFACTION, CORRECT DAMAGE CAUSED IN MAKING NECESSARY REPAIRS AND REPLACEMENTS UNDER GUARANTEE AT NO ADDITIONAL COST TO OWNER.

6. ALL MATERIALS, EQUIPMENT AND METHOD OF INSTALLATION SHALL BE IN ACCORDANCE WITH THE STANDARDS, REGULATIONS, CODES, ORDINANCES, AND LAWS OF LOCAL, STATE, AND FEDERAL GOVERNMENTS, AND OTHER AUTHORITIES THAT HAVE LAWFUL JURISDICTION.

7. PRIOR TO COMMENCING WORK, CONTRACTOR SHALL SUBMIT SIX COPIES OF THE SHOP DRAWINGS AND EQUIPMENT DATA FOR MATERIALS AND EQUIPMENT TO THE ARCHITECT FOR REVIEW AND APPROVAL. MATERIALS AND EQUIPMENT SHALL NOT BE INSTALLED BEFORE SHOP DRAWINGS ARE REVIEWED AND APPROVED.

8. MATERIALS AND EQUIPMENT SHALL BE LISTED BY UNDERWRITERS LABORATORIES (UL) AND APPROVED BY NFPA, ASME, AND AGA FOR INTENDED SERVICE.

9. GENERAL NOTES, SYMBOLS LIST AND DETAILS ARE APPLICABLE TO ALL PLUMBING DRAWINGS.

10. WORK SHALL BE EXECUTED IN A WORKMANLIKE MANNER AND SHALL PRESENT NEAT, RECTILINEAR APPEARANCE WHEN COMPLETED. MAINTAIN MAXIMUM HEADROOM AT ALL TIMES. DO NOT RUN PIPES, CONDUITS, OR DUCTS EXPOSED UNLESS SHOWN AND NOTED TO BE EXPOSED ON DRAWINGS. MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS, SO THAT COMPLETED INSTALLATION SHALL OPERATE SAFELY AND EFFICIENTLY. COORDINATE INSTALLATION WITH OTHER TRADES.

11. AS WORK PROGRESSES AND FOR DURATION OF CONTRACT, MAINTAIN COMPLETE SET OF PRINTS OF CONTRACT DRAWINGS AT JOB SITE AT ALL TIMES. RECORD WORK COMPLETED AND ALL CHANGES FROM ORIGINAL CONTRACT DRAWINGS CLEARLY AND ACCURATELY INCLUDING WORK INSTALLED AS A MODIFICATION OR ADDITION TO THE ORIGINAL DESIGN.

12. ALL EQUIPMENT, PIPING, WIRING AND INSULATION, ETC., INSTALLED IN HVAC AIR PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY.

13. ALL SLEEVES THROUGH CONCRETE FLOORS AND FIRE RATED WALLS OR PARTITIONS SHALL BE FIRESTOPPED WITH UL RATED ASSEMBLIES WITH EQUAL FIRE RATING.

14. PLUMBING FIXTURES AND TRIM:
    a. REFER TO ARCHITECTURAL AND PLUMBING SHEETS FOR QUANTITIES, LOCATIONS, AND MOUNTING HEIGHTS OF FIXTURES PROVIDED UNDER THIS SECTION.
    b. PLUMBING FIXTURES: FURNISH AND INSTALL PLUMBING FIXTURES COMPLETE WITH TRIM, HANGERS, CARRIERS, TRAPS, SUPPLIES, STOP VALVES, ANCHORS AND SUPPORTS. EXPOSED TRIM SHALL BE CHROME PLATED. PROVIDE CHROME PLATED ESCUTCHEONS AT ALL PIPES PENETRATING WALLS. FAUCETS SHALL HAVE RENEWABLE SEATS AND DISCS. FLUSH VALVES SHALL HAVE STOPS, VACUUM BREAKERS AND METAL HANDLES. FIXTURES SHALL BE AMERICAN STANDARD, KOHLER, CRANE, ELJER, TOTO, ZURN OR AS APPROVED. FIXTURES SHALL BE WHITE. PLUMBING CONTRACTOR SHALL ALSO COORDINATE WITH THE OWNER & ARCHITECT.

PLUMBING SYSTEMS & EQUIPMENT

1. DOMESTIC HOT WATER & HOT WATER RETURN (WHERE APPLICABLE) PIPE INSULATION: OWENS-CORNING FIBERGLASS 25 ASJ/SSL TWO PIECE HEAVY DENSITY PIPE COVERING, FINISHED VAPOR BARRIER JACKET. JACKET TO BE SELF-SEALING. HOT WATER PIPES 1-1/2" AND SMALLER TO HAVE 1-1/2" THICKNESS OF INSULATION. HOT WATER PIPES 1-1/2" AND GREATER TO HAVE 2" THICKNESS OF INSULATION. USE BUTT STRIPS AT JOINTS. INSULATION SHALL BE APPLIED ON ALL HOT WATER PIPING.

2. COLD WATER PIPE INSULATION: USE FIBERGLAS, TWO-PIECE, HEAVY DENSITY, PRE-MOLDED, WITH OWENS-CORNING 25 ASJ/SSL TWO PIECE HEAVY DENSITY VAPOR PROOF. JACKET. PIPES 1-1/2" AND SMALLER TO HAVE 1/2" THICKNESS OF INSULATION AND PIPES 2" AND LARGER TO HAVE 1" THICKNESS OF INSULATION. USE BUTT STRIPS AT JOINTS. INSULATION SHALL BE APPLIED ON ALL COLD WATER PIPING.

3. HORIZONTAL OFFSETS OF STORM PIPING ABOVE CEILING AND DOWNSPOUTS SHALL BE INSULATED AS SPECIFIED FOR COLD WATER SUPPLY PIPING. IN ADDITION, CONTINUOUS VAPOR BARRIER SHALL BE MAINTAINED.

4. INSULATION SHALL BE BY OWENS CORNING, CERTAIN-TEED OR SCHULLER.

5. INSULATION, JACKETS AND ADHESIVES SHALL BE FLAME RETARDANT AND SHALL HAVE ASTM E-84 FIRE HAZARD RATINGS OF 25 FLAME SPREAD, 50 SMOKE DEVELOPED AND 50 FUEL CONTRIBUTED.

6. ALL FITTINGS, VALVES, ETC., EXCEPT UNION: FITTINGS ARE TO BE INSULATED WITH MITERED SEGMENTED FIBERGLAS, COATED WITH SC-30 INSULATING CEMENT, COVERED WITH FIBERGLAS FITTING TAPE, AND O-CF FITTING MASTIC. FINISH MUST BE VAPORPROOF.

7. HOT AND COLD WATER PIPES: HOT AND COLD WATER PIPING THROUGHOUT THE BUILDING SHALL BE TYPE "L" HARD COPPER WITH BRASS FITTINGS AND SILVER SOLDERED JOINTS, USING 95/5 SOLDER. UNDERGROUND WATER LINES: TYPE "K" SOFT COPPER WITH NO JOINTS. INSTALL AIR CHAMBER OF 3/4 PIPE 9" LONG ABOVE EACH FIXTURE.

8. VENT PIPING: VENT PIPING SHALL BE SCALE FREE ANNEALED STEEL PIPE HEAVILY GALVANIZED INSIDE AND OUT. SCHEDULE 40, AND OF STANDARD WEIGHT. FITTINGS TO BE CAST IRON DRAINAGE TYPE.

9. CAST IRON SOIL PIPE AND FITTINGS: SANITARY SEWER AND STACKS SHALL BE CAST IRON SOIL PIPE AND FITTINGS. SAME SHALL BE CLOW'S ALABAMA AND TYLER SERVICE WEIGHT TESTED, ASPHALT COATED INSIDE AND OUT, AND EACH PIECE SHALL HAVE THE MAKER'S NAME OR TRADEMARK CAST IN SAME. SOIL PIPE SHALL BE BELL AND SPIGOT TYPE FOR LEAD CAULK JOINTS. AT THE CONTRACTOR'S OPTION AND WHERE PERMITTED BY LOCAL CODE, JOINTS MAY BE NEOPRENE "O" RING OR "NO-HUB".

10. AT THIS CONTRACTOR'S OPTION AND WHERE PERMITTED BY LOCAL CODE, HE MAY USE PLASTIC PIPING FOR WASTE AND VENT STACKS. ALL PLASTIC WASTE AND VENT PIPING TO BE SCHEDULE 40 PVC PIPE WITH SOLVENT WELDED JOINTS. (DO NOT USE PVC PIPING IN AREAS WHERE CEILING SPACES ARE USED FOR RETURN-AIR PLENUM).

11. WASTE PIPING: WASTE PIPING 2" AND OVER SHALL BE SERVICE WEIGHT CAST IRON, SOIL PIPE AND FITTING, 1-1/2" AND UNDER SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE WITH BLACK CAST IRON DRAINAGE FITTINGS.

12. GAS PIPING: FURNISH AND INSTALL COMPLETE DISTRIBUTION OF GAS PIPING. ALL CONNECTIONS TO HAVE BRASS UNIONS. AT EACH APPLIANCE INSTALL LEVER HANDLE GAS COCK AND 6" LONG DIRT LEG IN GAS LINE. CONSTRUCT METER MANIFOLD IN ACCORDANCE WITH GAS COMPANY REQUIREMENTS. ALL GAS PIPING SHALL BE PAINTED. COORDINATE WITH THE ARCHITECT.

13. HANGERS, ANCHORS, CLAMPS AND INSERTS
    a. PROVIDE ADJUSTABLE CLEVIS HANGERS FOR PIPING 2" AND LARGER, AND CAST BRASS SPLIT-RING HINGED HANGERS FOR SMALLER PIPING. SUPPORT PIPING FROM BUILDING STRUCTURE TO MAINTAIN REQUIRED GRADE AND PITCH OF PIPE LINES, PREVENT VIBRATION, SECURE PIPING IN PLACE. SECURE HANGERS TO INSERTS WHERE PRACTICAL. HANGER RODS SHALL HAVE MACHINE THREADS.
    b. HANGER RODS SHALL BE CONNECTED TO BEAM CLAMP, UL-APPROVED CONCRETE INSERTS OR PHILLIPS OR APPROVED EQUAL EXPANSION SHIELDS. RAMSET OR POWER DRIVEN INSERTS WILL NOT BE ALLOWED.
    c. HANGER SPACING SHALL MEET REQUIREMENTS OF STATE AND LOCAL CODES.

14. SLEEVES AND PENETRATIONS
    a. PIPE SLEEVES THROUGH FIRE-RATED CONSTRUCTION SHALL BE SCHEDULE 40 STEEL. SLEEVES THROUGH PARTITIONS AND NON-FIRE-RATED CONSTRUCTION SHALL BE 26 GAUGE GALVANIZED STEEL WITH LOCK LONGITUDINAL SEAMS.
    b. FIRE STOP PENETRATION SEALS IN FIRE-RATED CONSTRUCTION SHALL BE CERAMIC FIBRE, MINERAL FIBRE, OR SILICONE FOAM. PROVIDE MINERAL FIBRE BOARD, MATTING OR PUTTY FOR DAMMING AND FORMING. FINISH SEALS FLUSH TO WALL SURFACE AND FILL GAPS WITH SILICONE ADHESIVE SEALANT CAULKING.
    c. PACKING FOR SLEEVES THAT DO NOT REQUIRE MAINTENANCE OF FIRE RATING SHALL BE OAKUM, SILICATE FOAM, CERAMIC FIBRE WITH APPROVED SEALANT. PACK OR FOAM TO WITHIN ONE INCH OF BOTH WALL SURFACES. SEAL PENETRATION PACKING WITH APPROVED CAULKING AND PAINTABLE WATER-PROOF MASTIC SURFACE FINISH OR SILICONE CAULKING.

15. ACCESS
    a. PROVIDE PROPER ACCESS TO EQUIPMENT THAT REQUIRE INSPECTION, REPLACEMENT OR REPAIR. ACCESS PANELS SHALL BE A MINIMUM OF 12"x12".

16. CLEANING
    a. CLEAN SYSTEMS THOROUGHLY BEFORE TESTING. FIXTURES, EQUIPMENT, PIPE, VALVES, AND FITTINGS SHALL BE FREE OF GREASE, METAL CUTTINGS, DIRT AND OTHER FOREIGN MATERIAL.
    b. REPAIR STOPPAGE, DISCOLORATION AND DAMAGE TO PARTS OF BUILDING, FINISH AND FURNISHINGS DUE TO FAILURE TO PROPERLY CLEAN PIPING SYSTEM.

17. GAS PIPING UNDERGROUND: SCHEDULE 40 BLACK STEEL PIPE MILL WRAPPED WITH HILL-HUBBELL SERIES MGA-2 SEMI-PLASTIC RED ENAMEL OR SERIES OGA-2 PLASTIC RED ENAMEL, BOTH ENAMELS USING GLASS MAT AND FELT. THE TYPE OF WRAPPING USED SHALL BE DETERMINED BY OUTSIDE AIR TEMPERATURE AT THE TIME OF INSTALLATION OF PIPING. THE SERIES MGA BEING USED IF THE TEMPERATURE IS BELOW 32 DEGREES. ALL FITTINGS AND TEARS IN THE WRAPPING SHALL BE WRAPPED WITH 20 MILT THICK POLYKEN NO. 940 POLYETHYLENE OR SCOTCH NO. 51 POLYVINYL PRESSURE SENSITIVE TAPE. UNDERGROUND PIPING SHALL BE CONNECTED TO ABOVE GROUND PIPING WITH A MALONEY FLANGE INSULATION KIT OR STYLE 39 DRESSER COUPLING. FITTING SHALL BE FORGED LONG RADIUS WELDING FITTINGS. PROVIDE CATHODIC PROTECTION OF UNDERGROUND GAS PIPING BY USE OF MAGNESIUM ANODES OF NUMBER AND IN LOCATION APPROVED BY THE LOCAL GAS COMPANY PRIOR TO INSTALLATION OF ANY PIPING.

18. GAS PIPING ABOVE GROUND: GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL PIPE. FITTINGS IN 1-1/2" SMALLER PIPE SHALL BE CAST IRON SCREWED FITTINGS; FITTINGS IN 2-1/2" AND LARGER PIPE SHALL BE FORGED LONG RADIUS WELDING FITTINGS.

19. AT THE CONTRACTOR'S OPTION AND WHERE PERMITTED BY LOCAL CODE, THE CONTRACTOR MAY USE FOR GAS PIPING MATERIAL "TRACPIPE" FLEXIBLE GAS PIPING CORRUGATED STAINLESS STEEL TUBING (CSST) BY OMEGAFLEX, INC. OR APPROVED EQUAL FOR ABOVE GROUND AND UNDERGROUND GAS PIPING. GAS PRESSURE CARRIER SHALL BE SERIES 300 STAINLESS STEEL PER ASTM A240; NO ANNEALING OR HEAT-TRACING PERMITTED AFTER CORRUGATING OPERATION. FITTINGS SHALL BE AUTOFLARE MECHANICAL ATTACHMENT FITTINGS, MATERIAL: YELLOW BRASS WITH SERIES 300 STAINLESS STEEL INSERT. FITTINGS SHALL TERMINATE IN CLEANLY CUT TAPER PIPE THREADS CONFORMING TO THE STANDARD FOR PIPE THREADS, GENERAL PURPOSE, ANSI/ASME B1.20.1. A FLARED METAL-TO-METAL SEAT SHALL BE USED TO ACCOMPLISH GAS SEALING. NO ELASTOMER SEALING RINGS OR FIBER GASKETS PERMITTED. NON-METALLIC JACKET SHALL BE COLORED YELLOW TO VISIBLY INDICATE CONVEYANCE OF FUEL GAS. JACKET MATERIAL SHALL BE NON-HALOGENATED, FIRE RETARDANT POLYETHYLENE. POLYVINYL CHLORIDE (PVC) IS NOT PERMITTED. ASTM E84 RATINGS SHALL BE LESS THAN 14 FOR FLAME SPREAD AND SMOKE. PIPE SIZING AND ALL INSTALLATION REQUIREMENTS SHALL BE PER TRACPIPE DESIGN AND INSTALLATION GUIDE.

19. CAULKED JOINTS: CAULKED JOINTS IN CAST IRON PIPING SHALL BE CAULKED SOLID WITH CLEAN SPUN OAKUM, THEN RUN FULL WITH PURE LEAD AT ONE POURING. LEAD SHALL THEN BE CAULKED SOLID AND TIGHT WITH PROPER TOOLS AND FINISHED SLIGHTLY BELOW THE TOPS OF THE HUBS.

20. SCREWED JOINTS: SCREWED JOINTS SHALL BE MADE BY SCREWING THE PIPE WELL INTO THE SEAT TO GIVE THE PIPE A LONG GRIP. ALL SCREWED JOINTS SHALL BE MADE TIGHT WITHOUT THE USE OF FILLING SUBSTANCES OR BY CAULKING. A COAT OF RED LEAD OR GRAPHITE AND OIL MAY BE USED ON THE MALE THREAD ONLY.

21. UNION JOINTS: UNION JOINTS SHALL BE PROVIDED IN THE WATER CONNECTIONS TO ALL FIXTURES AND IN THE WASTE CONNECTIONS TO LAVATORIES, SINKS, ETC. WHERE UNIONS ARE NOT SUPPLIED AS A PART OF THE FIXTURE TRIMMING, CRANE ALL BRASS GROUND JOINTS UNIONS SHALL BE USED. UNIONS SHALL ALSO BE PLACED IN THE CONNECTION TO WATER, ETC., AND AT INTERVALS THROUGHOUT SO THAT ANY PORTION OF THE PIPING CAN BE REMOVED FOR REPAIRS WITHOUT CUTTING OR BREAKING THE PIPE. UNIONS MAY BE NIBCO, NATIONAL OR EQUAL.

22. CLEANOUTS: CLEANOUTS SHALL BE PROVIDED IN ALL SOIL AND WASTE PIPE LINES AT SUCH LOCATIONS AS WILL ALLOW THE ENTIRE DRAINAGE SYSTEM TO BE RODDED OUT, AND WHERE PERMITTED BY CODE.

23. VENT AND SOIL EXTENSIONS ABOVE THE ROOF SHALL BE FLASHED WITH 4 LB. LEAD SLEEVES AND SQUARE FLASHING, ALL BURNT AND MADE TIGHT. SLEEVES SHALL BE EXTENDED TO THE TOP OF THE VENT PIPING AND TURNED DOWN INSIDE THE PIPE. JOINT BETWEEN THE LEAD FLASHINGS AND THE ROOFING MATERIALS WILL BE MADE BY THE ROOFING CONTRACTOR.

24. VALVES:
    A. BRANCH WATER LINES TO BE CRANE 1320 ALL BRONZE UP TO AND INCLUDING 2" IN SIZE. VALVES MAY BE FAIRBANKS, JENKINS BROS., OR EQUAL.
    B. BALL VALVES – 2" AND SMALLER MILWAUKEE VALVE COMPANY #BA-100
    C. SHUT-OFF VALVES SHALL BE PLACED IN ALL HOT AND COLD WATER SUPPLY CONNECTIONS TO ALL FIXTURES.
    D. CHECK VALVE – 2" AND SMALLER CRANE #37.
    E. BALANCE VALVE – BELL & GOSSETT "CIRCUIT SETTER"
    F. FUEL GAS COCKS – CRANE 254, HAYS 7005 OR MUELLER H-11003

25. INSULATE ANY EXPOSED WATER PIPING UNDER LAVATORY WITH TRUEBRO PROTECTIVE COVERING OR APPROVED EQUAL.

26. DISINFECTION OF WATER SYSTEMS
    a. WATER PIPING SYSTEMS SHALL BE THOROUGHLY DISINFECTED WITH A SOLUTION CONTAINING NO LESS THAN 50 PARTS PER MILLION OF AVAILABLE CHLORINE. CHLORINATING MATERIALS SHALL BE EITHER LIQUID CHLORINE OR SODIUM HYPOCHLORITE SOLUTION, SHALL BE INTRODUCED INTO THE SYSTEM AND DRAWN TO ALL POINTS IN THE SYSTEM. DISINFECTION SOLUTION SHALL BE ALLOWED TO REMAIN IN SYSTEM FOR 24 HOURS, DURING THIS TIME, VALVES AND FAUCETS SHALL BE OPENED AND CLOSED SEVERAL TIMES. AFTER DISINFECTION, SOLUTION SHALL BE FLUSHED FROM THE SYSTEM WITH CLEAR WATER UNTIL RESIDUAL CHLORINE CONTENT IS NO GREATER THAN 0.2 PARTS PER MILLION.

27. INDIRECT WASTE PIPING SHALL BE DWV COPPER PIPE AND FITTINGS WITH 50/50 SOLDERED JOINTS. PITCH PIPING TO THE DRAIN AT NO LESS THAN 1/4" PER FOOT SLOPE.

28. CONTRACTOR SHALL PROVIDE ALL ROUGH-INS FOR "OWNER FURNISHED" EQUIPMENT AND MAKE FINAL CONNECTIONS. PROVIDE ALL PIPING, VALVES AND ACCESSORIES AS REQUIRED FOR COMPLETE INSTALLATION OF SYSTEM.

29. ALL PLUMBING PIPING SHALL BE PROPERLY IDENTIFIED WITH RELATED COLOR CODED ID PIPE MARKERS AS MANUFACTURED BY SETON OR APPROVED EQUAL.

27. PLUMBING CONTRACTOR SHALL FURNISH & INSTALL ALL MATERIAL, FIXTURES & LABOR WHICH IS NEITHER DRAWN NOR SPECIFIED, BUT WHICH IS OBVIOUSLY A COMPONENT PART OF, AND NECESSARY TO COMPLETE WORK, AND WHICH IS CUSTOMARILY A PART OF WORK OF SIMILAR CHARACTER.

PLUMBING SPECIALTIES:

1. SHOCK ABSORBERS: PROVIDE AND INSTALL ON BRANCH WATER LINE TO EACH GROUP OF FIXTURES A FACTORY-BUILT SHOCK ABSORBER TO PREVENT WATER HAMMER. ZURN Z-17W, JOSAM OR J.R. SMITH.

2. SHOWER DRAINS JOSAM #30000A SERIES.

3. FLOOR DRAINS IN GARAGE & SLUDGE PRESS AREAS (VEHICULAR TRAFFIC) SHALL BE ZURN ZN-415-6B-HD WITH TRAP PRIMER CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL FLOOR DRAINS WITH THE OWNER & THE ARCHITECT.

4. FLOOR DRAINS IN TOILET ROOMS JOSAM #30000A SERIES.

5. CLEANOUT: FLUSH FLOOR TYPE JOSAM #56000 SATIN NIKALOY TOP AND MARKED "C.O.". WALL CLEANOUTS SHALL BE JOSAM #58770 WITH SQUARE ACCESS COVER,

6. TRAP PRIMER: PRECISION PLUMBING PRODUCTS, INC. 1/2" INLET/OUTLET. AUTOMATIC BRASS TRAP PRIMERS ACTIVATED BY A DROP IN BUILDING WATER PRESSURE. MODEL P-2 (PART NUMBER P2-500) FOR ONE (1) OR TWO (2) DRAINS WITH DISTRIBUTION UNIT, AND MODEL P-1 (PART NUMBER P1-500) WITH DISTRIBUTION UNIT PRIMING THREE (3) TO EIGHT (8) DRAINS. LOCATED IN AN ACTIVE COLD FRESH WATER LINE, AS INDICATED ON DRAWING OR REQUIRED BY CODE, OR APPROVED EQUAL.

7. NON-FREEZE WALL HYDRANT (NFWH) SHALL BE ZURN Z-1321 ANTI-SIPHON AND AUTOMATIC DRAINING.

8. HOSE BIBB (HB):
   "ZURN" MODEL Z1350-VB, ENCASED WALL HYDRANT FOR NARROW WALL INSTALLATION. COMPLETE WITH BRONZE BODY, ALL BRONZE INTERIOR PARTS, REPLACEABLE SEAT WASHER, SCREWDRIVER OPERATED STOP VALVE IN SUPPLY, KEY OPERATED CONTROL VALVE AND 3/4" FEMALE INLET AND 3/4" MALE HOSE CONNECTION WITH VACUUM BREAKER (VB). STAINLESS STEEL BOX AND HINGED COVER WITH CYLINDER LOCK AND "WATER" STAMPED ON COVER. CAULKING OF INSIDE JOINTS BY PLUMBING CONTRACTOR.

9. MIXING VALVE (MV-1): POWERS HYDRO GUARD SERIES LM496. CAPACITY OF THE VALVE SHALL BE 12 GPM AT 45 PSIG DIFFERENTIAL. VALVE SHALL PERFORM TO A MINIMUM FLOW 0.5 GPM TO ASSE 1016 AND ASSE 1070. CONTROL TEMPERATURE SHALL BE ADJUSTABLE BETWEEN 80'-120'F. THE VALVE SHALL FEATURE A VANDAL-RESISTANT LOCKABLE HANDLE TO PREVENT TAMPERING. THE VALVE SHALL FEATURE INTEGRAL CHECKS TO PREVENT CROSS-FLOW AND INLET SCREENS TO FILTER OUT DEBRIS. THE VALVE SHALL BE CSA B125 CERTIFIED, ASSE 1016 AND ASSE 1070 LISTED. INSTALLATION AND LOCATION OF MIXING VALVE SHALL BE PER MANUFACTURER'S RECOMMENDATIONS.

STATE OF OHIO
TIMOTHY J. NORRIS
E-40336
REGISTERED PROFESSIONAL ENGINEER

REV. NO.	DATE	CALCULATED M.S.K.
BID & PERMIT	04\10\14	CHECKED T.J.N.

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WASTEWATER TREATMENT PLANT IMPROVEMENTS - PHASE I
PLUMBING SPECIFICATIONS

VILLAGE OF CRESTLINE