PLUMBING NOTES

1. **ALL DRAWINGS AND NOTES MUST BE READ, REVIEWED & UNDERSTOOD BY THE CONTRACTOR PRIOR TO ORDERING AND/OR INSTALLATION OF ANY AND ALL PLUMBING SYSTEMS.**
2. THE PLUMBING SYSTEM WITH FIXTURES, WATER HEATER, DRAINS, VENTS, WATER PIPING, INSULATION, GAS PIPING, ETC., SHALL BE BY THE PLUMBING CONTRACTOR IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. ALL PLUMBING LINES, PLUMBING PENETRATIONS, PLUMBING EQUIPMENT, ETC., ARE APPROXIMATE LOCATIONS. PIPING IS SPACED AND SHOWN A CERTAIN DISTANCE FROM WALLS, EQUIPMENT, ETC., FOR CLARITY AND COORDINATION. FIELD VERIFY ALL PLUMBING LINE ROUTING, PLUMBING PENETRATION LOCATIONS, PLUMBING EQUIPMENT, ETC., WITH ALL OTHER TRADES, AS WELL AS THE OWNER/ARCHITECT, PRIOR TO INSTALLATION AS DESIGN DRAWINGS MAY DIFFER FROM ACTUAL INSTALLATION CONDITIONS. VERIFY ALL PLUMBING WITH STRUCTURAL, MECHANICAL AND ELECTRICAL, INTERIOR DESIGNER CONTRACTORS, LANDSCAPE/IRRIGATION CONTRACTORS, KITCHEN EQUIPMENT CONTRACTORS, ETC., PRIOR TO INSTALLATION OF ANY AND ALL PLUMBING SYSTEMS.
4. STORM LINES BELOW GRADE MAY NEED TO BE A MINIMUM OF 3" OR 4" IN SIZE. VERIFY WITH CITY AND/OR CIVIL ENGINEER PRIOR TO THE INSTALLATION OF THE UNDERGROUND STORM PIPING BELOW GRADE. IF THEY DO NEED TO BE A MINIMUM OF 3" OR 4", THEN INCREASE SIZE APPROPRIATELY WHEN INSTALLING THE STORM LINES BELOW GRADE.
5. ALL SANITARY WASTE VENTS, SAND/OIL WASTE VENTS & LIFT STATION/SUMP PUMP PIT/BASIN VENTS TO BE A MINIMUM OF 10'-0" FROM ANY AND ALL OPERABLE WINDOWS AND AIR INTAKES INTO THE BUILDING AND TO MECHANICAL EQUIPMENT OR HAVE THE TERMINATION LOCATION A MINIMUM OF 3'-0" ABOVE THE HIGHEST POINT OF THE WINDOW OR AIR INTAKE INTO THE BUILDING OR MECHANICAL EQUIPMENT.
6. PLUMBING CONTRACTOR TO FIELD VERIFY ALL NEW & EXISTING PLUMBING CONDITIONS INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, LOCATIONS, PIPING, SIZING, FLOW OF DIRECTION, INVERT ELEVATIONS, UTILITIES, VENTS THRU ROOF, ETC, PRIOR TO ORDERING, INSTALLATION AND ANY WORK BEING DONE. NOTIFY ENGINEER IN WRITING FOR ANY DESIGN/DRAWING DISCREPANCIES.
7. USE ONLY BALL VALVES. NO GATE VALVES ALLOWED ON PROJECT.
8. PROVIDE SOUND ATTENUATING INSULATION, MINIMUM 1/2", FOR ALL ROOF DRAINS.
9. PLUMBING CONTRACTOR TO VERIFY & COORDINATE WITH OWNER/ARCHITECT ALL OF THE MANUFACTURER & MODEL NUMBER, LOCATIONS, SIZES, WALL THICKNESS AND NUMBER OF EACH HOSE BIBB (INTERIOR, NON-FREEZELESS), WALL HYDRANT (EXTERIOR, FREEZELESS) AND 1-1/2" FIRE TRUCK NH WITH THREADS HOSE BIBB. VERIFY & COORDINATE WITH SPRINKLER/IRRIGATION CONTRACTOR AS WELL, IF NECESSARY.
10. HOT WATER MAIN LINES TO GO DOWN IN WALL TO WITHIN 2 FEET MAXIMUM OF THE HOT WATER SUPPLY TO ALL PUBLIC LAVATORIES, PER IECC TABLE C404.5.1, AND THEN BACK UP IN WALL TO ABOVE THE CEILING AND THEN ROUTED TOWARDS THE REMAINING HOT WATER PLUMBING FIXTURES WITH A HOT WATER RECIRCULATION LINE FROM THE FURTHEST HOT WATER PLUMBING FIXTURE BACK TO RCP1 & THE HOT WATER HEATER.
11. ALL PLUMBING SHALL BE IN ACCORDANCE WITH THE LOCAL PLUMBING CODES AND/OR ORDINANCES, INCLUDING BUT NOT LIMITED TO PIPE SIZES.
12. ALL ACCESS PANELS TO BE LOCATED EITHER IN THE CEILING OR CONCEALED WITHIN A CABINET. NO ACCESS PANELS TO BE LOCATED ON WALLS WHERE IT CONFLICTS WITH THE AESTHETIC OF THE ROOM/WALLS. ALL ACCESS PANEL LOCATIONS TO BE VERIFIED WITH OWNER/ARCHITECT PRIOR TO INSTALLATION.
13. PROVIDE ISOLATION VALVES ON THE MOP SINK FAUCETS.
14. PROVIDE 1/4 TURN SHUTOFFS AT ALL PLUMBING FIXTURES. PROVIDE ISOLATION VALVES AT RISERS, BRANCHES AND ALL EQUIPMENT.
15. CONTRACTOR TO VERIFY WITH OWNER/ARCHITECT THE LOCATIONS OF ALL RVB1S FOR REFRIGERATORS AND COFFEE MAKERS. FIELD VERIFY & COORDINATE WHETHER COFFEE MAKER RVB1S ARE TO BE BELOW OR ABOVE THE COUNTERTOPS.
16. ANY PLUMBING PIPING THRU A FIRE RATED FLOOR OR WALL PENETRATION TO BE ADDRESSED WITH FIRE CALKING. ALL FIRE RATINGS ARE TO BE MAINTAINED.
17. WATER DISTRIBUTION NOTES: ON ALL LIVING UNITS WITH A ROOF ABOVE, WATER PIPING TO BE DISTRIBUTED BELOW FLOOR, PER UNIT PLAN ROUTINGS. ON ALL UNDERFLOOR ROUTING WITH UNHEATED SPACES AND GARAGES BELOW, INSTALL PER DETAIL, FOR FREEZE PROTECTION. ALL UNDERGROUND WATER PIPE SHALL BE TYPE K COPPER WITH A CONTINUOUS PLASTIC SLEEVE. ALL PLUMBING PIPING ROUTING TO BE APPROVED BY THE OWNER/ARCHITECT PRIOR TO INSTALLATION.
18. PRESSURE REDUCING VALVES, PRVS, TO CONTAIN NO PLASTIC PARTS WHATSOEVER.
19. FIRE LINE SIZES ARE APPROXIMATE SIZES ONLY FOR LOCATION AND DIMENSIONAL PURPOSES. ALL FIRE LINE SIZES, REQUIRED PSI FOR FIRE SUPPRESSION SYSTEMS AND GPM FLOW RATES ARE TO BE PROVIDED BY & SIZED PER THE FIRE SUPPRESSION DESIGNER'S OR FIRE PROTECTION ENGINEER'S HYDRAULIC CALCULATIONS AND RECOMMENDATIONS.
20. DOMESTIC WATER PIPING SHALL BE TYPE "L" HARD DRAWN COPPER WITH WROUGHT COPPER SWEAT FITTINGS. USE ONLY CANFIELD 100% WATER SAFE SOLDER (95% TIN, 4% COPPER, 1% SILVER) OR APPROVED EQUAL. DO NOT USE LEAD OR ANTIMONY SOLDERS. **[AT CONTRACTORS OPTION DOMESTIC WATER PIPE 2" AND BELOW AFTER WATER ENTRY ASSEMBLY MAY BE CPVC PIPE IF APPROVED BY THE LOCAL AHJ, OWNER AND CODE. NOTIFY ENGINEER IN WRITING IF ANY MATERIAL OTHER THAN COPPER IS GOING TO BE USED FOR POSSIBLE RESIZING OF WATER LINES, PUMP HEAD LOSS, EXPANSION LOOPS, INSULATION, ETC. USE ONLY FLOWGUARD GOLD PIPE WITH FLOWGUARD GOLD ONE STEP CEMENT ON PIPES 1/2" THROUGH 2". NO CPVC SUBSTITUTIONS ARE ALLOWED. PROVIDE CSA APPROVED HARDENED STRIKER PLATES LISTED FOR CSST AND CPVC SYSTEMS AT ALL LOCATIONS WHERE TUBING IS CONCEALED AND PUNCTURE FROM NAILS OR SCREWS IS A POSSIBLE THREAT. SUPPORT ALL PIPE PER DETAILS, BUILDING CODE, AND MANUFACTURER REQUIREMENTS.]**
21. COPPER TUBING INSTALLED WITHIN A BUILDING AND IN OR UNDER A CONCRETE FLOOR SHALL BE TYPE "K" COOPER AND INSTALLED WITHOUT JOINTS. WHERE JOINTS ARE PERMITTED, THEY SHALL BE BRAZED AND FITTINGS SHALL BE WROUGHT COPPER.
22. INTERIOR SOIL AND WASTE PIPING ABOVE GRADE SHALL BE SERVICE WEIGHT IRON SOIL PIPE AND NO-HUB FITTINGS. APPROVED PIPE MANUFACTURERS AB&I FOUNDRY, CHARLOTTE PIPE, AND TYLER PIPE BEARING THE TRADEMARK OF CISPI. NO HUB COUPLINGS SHALL BE NSF CERTIFIED, MEET CISPI 310 STANDARD MANUFACTURED BY TYLER, ANACO, IDEAL, AND MISSION. INSTALL PER THE CISPI 301 STANDARD LATEST VERSION. NO ABS PIPE OR PVC FOAMCORE PIPE ALLOWED ON THE PROJECT. **[PVC SCHEDULE-40 SOLID CORE PLASTIC PIPE AND FITTINGS MAY BE USED WHERE APPROVED BY OWNER AND ALLOWED BY THE BUILDING DEPARTMENT. INSTALL ALL PVC PIPE PER ASTM D2321 REQUIREMENTS AND RECOMMENDATIONS. NO FOAM CORE ALLOWED. NO PVC PIPING LOCATED IN RETURN AIR PLENUMS. COORDINATE ALL PIPING ROUTING AND MATERIAL WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION AND ORDERING]**
23. EXTERIOR SOIL AND WASTE PIPING BELOW GRADE SHALL BE SERVICE WEIGHT CAST IRON HUB AND SPIGOT SOIL PIPE AND FITTINGS WITH NEOPRENE GASKETS APPROVED MANUFACTURERS AB&I FOUNDRY, CHARLOTTE PIPE, AND TYLER PIPE BEARING THE TRADEMARK OF CISPI. INSTALL PER THE CISPI 301 STANDARD LATEST VERSION. NO ABS PIPE OR PVC FOAMCORE PIPE ALLOWED ON THE PROJECT. **[PVC SCHEDULE-40 SOLID CORE PLASTIC PIPE AND FITTINGS MAY BE USED WHERE ALLOWED BY THE BUILDING DEPARTMENT. INSTALL ALL PVC PIPE PER ASTM D2321 REQUIREMENTS AND RECOMMENDATIONS. NO FOAM CORE ALLOWED. NO PVC PIPING LOCATED IN RETURN AIR PLENUMS. COORDINATE ALL PIPING ROUTING AND MATERIAL WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION AND ORDERING]**
24. SANITARY WASTE LINES TO GRAVITY DRAIN AT 1/4" SLOPE/FOOT FOR ALL PIPING 2" AND SMALLER. SANITARY WASTE LINES TO GRAVITY DRAIN AT 1/8" SLOPE/FOOT FOR ALL PIPING 3" AND LARGER, UNLESS OTHERWISE SPECIFIED ON THE DRAWINGS.
25. GAS PIPING 2" AND SMALLER SHALL BE THREADED SCHEDULE 40 STEEL PIPE WITH MALLEABLE IRON FITTINGS. PROVIDE THREADED GAS PIPING ON GAS IPING LARGER THAN 2" IF ALLOWED BY THE LOCAL AHJ AND CODE. INTERIOR GAS PIPING IN CONCEALED LOCATIONS SHALL BE WELDED. ALL GAS PIPE OVER 2" SHALL BE WELDED. PAINT ALL EXTERIOR EXPOSED GAS PIPING WITH TWO HEAVY COATS OF OUTDOOR ENAMEL. SUPPORT GAS PIPING ABOVE THE ROOF AS REQUIRED BY LOCAL AUTHORITIES AND DETAILS ON DRAWINGS. **[AT CONTRACTOR'S OPTION GAS PIPE MAY BE TRACPIPE PSII PIPE AND FITTINGS FOR INTERIOR GAS PIPE (ALSO TO BE PROVIDED AS UNDERGROUND RATED GAS PIPING) AND TRACPIPE COUNTER STRIKE PIPE AND FITTINGS WITH UV PROTECTION FOR EXTERIOR GAS PIPE. GASTITE IS AN APPROVED EQUAL. IF GASTITE IS USED, RE-SIZE GAS PIPING PER GASTITE SIZING SPECIFICATIONS. FOR UNDERGROUND GASTITE INSTALLATIONS, INSTALL PIPE WITHIN WATERTIGHT CONDUIT (WITH VENTS) IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION AND CODE REQUIREMENTS. IF TRACPIPE PS II IS USED FOR UNDERGROUND INSTALLATIONS, INSTALL PER ALL TRACPIPE GUIDELINES FOR UNDERGROUND INSTALLATION. IF TRACPIPE COUNTER STRIKE IS USED NO PAINTING IS REQUIRED. PROVIDE CSA APPROVED HARDENED STRIKER PLATES LISTED FOR CSST SYSTEMS AT ALL LOCATIONS WHERE TUBING IS CONCEALED AND PUNCTURE FROM NAILS OR SCREWS IS A POSSIBLE THREAT. SUPPORT ALL PIPE PER DETAILS, BUILDING CODE, AND MANUFACTURER REQUIREMENTS.]**
26. FOR COMMERCIAL APPLICATIONS, INSULATE ALL DOMESTIC HOT WATER AND RECIRCULATED DOMESTIC HOT WATER PIPING UP TO, AND LESS THAN, 1-1/2" PIPE SIZE WITH 1" THICK PREFORMED FIBERGLASS WITH A "K" FACTOR OF 0.28 MAXIMUM AND 1-1/2" THICK ON ALL LARGER PIPE SIZES 1-1/2" AND LARGER, PER IECC SECTION C404.4 AND TABLE C403.11.3. ALL VALVES AND FITTINGS SHALL ALSO BE INSULATED UNLESS OTHERWISE NOTED. ON BOTH THE INLET AND THE OUTLET PIPING OF A STORAGE WATER HEATER OR HEATED WATER STORAGE TANK, THE PIPING TO A HEAT TRAP OR THE FIRST 8 FEET (WHICHEVER IS LESS, SHALL BE INSULATED. JACKET SHALL BE ASJ WITH ZESTON FITTINGS AND WITH VAPOR BARRIER ON ALL COLD SURFACE PIPES. ALL INSULATION MATERIALS SHALL CONFORM TO ASTM 84, NFPA 50A AND 255, AND UL 723 NOT TO EXCEED RATINGS OF 25 FLAME SPREAD AND 50 SMOKE DEVELOPED. ALL INSTALLED INSULATION SHALL MEET OR EXCEED CURRENT ASHRAE STANDARDS.
27. THE FIRST 8 FEET OF COLD WATER PIPING IN NON-CIRCULATING SYSTEMS SERVED BY EQUIPMENT WITHOUT INTEGRAL HEAT TRAPS SHALL BE INSULATED WITH 1 INCH OF MATERIAL HAVING A "K" FACTOR NOT GREATER THAN 0.23 AT 75 DEG F MEAN TEMPERATURE.
28. WATER-HEATING EQUIPMENT NOT SUPPLIED WITH INTEGRAL HEAT TRAPS AND SERVING NON-CIRCULATED SYSTEMS SHALL BE PROVIDED WITH HEAT TRAPS ON THE SUPPLY AND DISCHARGE PIPING ASSOCIATED WITH THE EQUIPMENT.
29. ALL CONDENSING WATER HEATERS SHALL BE STARTED UP BY AN INDEPENDENT, FACTORY TRAINED AND CERTIFIED TECHNICIAN. A COMPLETE STARTUP REPORT SHALL BE PROVIDED TO THE OWNER AND ENGINEER WITHIN ONE WEEK OF STARTUP THAT CLEARLY NOTES ALL PROBLEMS OR DEFICIENCIES WITH THE INSTALLATION.
30. PROVIDE A VACUUM BREAKER AT THE TOP OF THE COLD WATER SUPPLY LINE, TO THE HOT WATER HEATER, FOR ALL BOTTOM-FED COLD WATER SUPPLY HOT WATER HEATERS. PROVIDE WATTS N360 (OR EQUAL) VACUUM BREAKER/RELIEF VALVE.
31. MOUNT LAVATORY AT REQUIRED ELEVATION FOR HANDICAP USAGE WHERE REQUIRED. INSULATE ALL EXPOSED PIPING SUPPLIES AND DRAINS PER ADA REQUIREMENTS AND DRAWING SPECIFICATIONS.
32. WEATHERPROOF ALL PLUMBING ROOF PENETRATIONS PER CODES AND ROOFING MANUFACTURER RECOMMENDATIONS. LOCATE ALL PLUMBING VENTS THROUGH PITCHED ROOFS WITHIN 5' OF ROOF RIDGE. PLUMBING VENT PENETRATIONS SHALL BE CAST IRON AND ONE SIZE LARGER THAN REQUIRED VENT SIZE.
33. ALL SANITARY WASTE VENT RISERS TO BE LOCATED IN SAME WALL, AND NEXT TO, SANITARY WASTE RISERS, WHERE APPLICABLE AND POSSIBLE.
34. ALL 4" SANITARY WASTE RISERS/STACKS/ TO BE LOCATED IN A MINIMUM 6" WIDE WALL. VERIFY ALL SANITARY WASTE RISER/STACK LOCATIONS PRIOR TO ROUTING SANITARY WASTE LINES AND INSTALLATION OF RISERS/STACKS. WASTE RISERS/STACKS MAY ALSO BE EXPOSED AND LOCATED WITHIN CLOSETS, UTILITY ROOMS, ETC.
35. PROVIDE LINE SIZE SHUT-OFF VALVE, MALLEABLE UNION, AND DIRT LEG ON ALL GAS EQUIPMENT. PIPE SIZE REDUCER SHALL OCCUR AFTER VALVE AND DIRT LEG.
36. WATER HAMMER SHOCK-ARRESTER SHALL BE PROVIDED AND INSTALLED ON ALL QUICK CLOSING VALVES INCLUDING DISH AND CLOTHES WASHER TO PREVENT PIPING SHOCK OR HAMMER. SIZE ARRESTER PER INDUSTRY STANDARDS.
37. PROVIDE AUTOMATIC COLD WATER INJECTION FOR DISHWASHERS DISCHARGING WASTE AT A TEMPERATURE OF 140 DEGREES F OR GREATER.
38. PROVIDE BACKFLOW PREVENTION DEVICE, WILKINS MODEL 705 (DUAL CHECK VALVE BACKFLOW PREVENTER), OR PROTECTION APPROVED BY THE AHJ, FOR ICEMAKERS, SODA DISPENSERS (ANDERSON BRASS ABF ASSE1022), RVB1 AND ANY OTHER WATER SUPPLIED EQUIPMENT THAT DOES NOT CONTAIN AN INTERNAL BACKWASH PREVENTION DEVICE OR INTERNAL PROTECTION THROUGH AN AIR GAP FILL.
39. ALL MATERIALS AND EQUIPMENT PROVIDED AND INSTALLED UNDER THIS SECTION SHALL BE NEW AND IN CLEAN AND BRIGHT CONDITION. THE CONTRACTOR SHALL TAKE ANY MEASURE NECESSARY TO ENSURE AND MAINTAIN THE QUALITY OF THE INSTALLATION. ALL PIPING SHALL BE FLUSHED WITH CLEAN WATER PRIOR TO BEING PLACED INTO SERVICE TO ENSURE THAT ANY RESIDUAL CUTTING OIL, SLAG, THREAD TAPE; FLUX OR DIRT HAS BEEN PURGED. IN ADDITION TO FLUSHING, THE DOMESTIC WATER PIPING SHALL BE STERILIZED TO ELIMINATE ANY CONTAMINATION IN ACCORDANCE WITH CURRENT IPC RECOMMENDATIONS.
40. ELECTRIC HEAT TRACE TAPE SHALL BE PROVIDED WHERE REQUIRED FOR FREEZE PROTECTION OF WATER PIPES (SANITARY/SAND-OIL/GREASE WASTE, STORM, OVERFLOW, HOT WATER, COLD WATER, RECIRC. WATER, ETC.) WITHIN VESTIBULES, CRAWL SPACES OR OTHER UNHEATED SPACES. PROVIDE (2) 5 WATTS PER FOOT SELF REGULATING HEAT TRACE CABLES @ 120V FOR PLASTIC PIPING (CPVC, PVC, PEX, ETC.). PROVIDE (1) 10 WATTS PER FOOT CABLE @ 120V FOR METAL PIPING (COPPER, STEEL, CAST-IRON, ETC.). HEAT TRACE SUPPLIER TO CONFIRM EXACT POWER REQUIREMENTS TO PREVENT PIPE CONTENTS FROM FREEZING. ALL HEAT TRACED PIPING SHALL BE INSULATED W/ A MIN R-6 PIPE INSULATION. INSULATION JACKET SHALL BE REMOVABLE TO ALLOW HEAT TRACE CABLE TO BE SERVICED. COORDINATE WITH ELECTRICAL CONTRACTOR, IF REQUIRED. FIELD VERIFY WITH OWNER/ARCHITECT LOCATION OF JUNCTION BOXES AS WELL AS COORDINATE WHETHER HEAT TRACE IS TO BE WITHIN THE STORM & OVERFLOW PIPES OR WRAPPED AROUND PIPES PRIOR TO ANY INSTALLATION OF THE STORM & OVERFLOW SYSTEMS. FIELD VERIFY ALL STORM AND OVERFLOW DRAIN AND PIPING LOCATIONS THAT WILL NEED TO BE HEAT TRACED PRIOR TO ORDERING AND INSTALLATION AS COORDINATION WITH THE ELECTRICAL ENGINEER WOULD BE REQUIRED. VERIFY WITH OWNER/ARCHITECT FOR PROVIDING A LEAK DETECTION SYSTEM WHEREVER HEAT TRACE IS REQUIRED. HEAT TRACE SYSTEM SHALL COMPLY WITH SECTION IECC C404.6.3. HEAT TRACE FROM ROOF/OVERFLOW DRAINS ON COLD/FREEZING SIDE TO EXTEND INTO WARM SIDE/BUILDING ENVELOPE BY A MINIMUM OF 1'-0" AND A MAXIMUM OF 2'-0". PROVIDE HEAT TRACE WITHIN PIPING AND NOT WRAPPED AROUND THE PIPING AT LEAST IN CONCEALED, NON-ACCESSIBLE AREAS.
41. ALL PIPING, EQUIPMENT, ETC. SHALL BE IDENTIFIED. ALL PIPING IS TO BE TESTED IN ACCORDANCE WITH ACCEPTED CODES AND STANDARD OF CARE PRACTICES.
42. ALL SAFETY RELIEF VALVES SHALL BE VENTED TO ATMOSPHERE OR PIPED FULL SIZE TO NEAREST FLOOR DRAIN. BACKFLOW PREVENTERS OF APPROPRIATE TYPE SHALL BE INSTALLED WHERE REQUIRED BY CODE, PROVIDED WITH A CATCH FUNNEL PIPED TO THE NEAREST FLOOR DRAIN OR SINK, AND LOCATED BETWEEN 18" AND 60" AFF WITH MINIMUM OF 30" CLEAR IN FRONT OF VALVE FOR SERVICING. PROVIDE BACKFLOW DEVICE TEST FOR FIRE SERVICE AND DOMESTIC SERVICE PRIOR TO FINAL BUILDING INSPECTION.
43. CLEANOUTS SHALL BE INSTALLED AT EACH CHANGE OF DIRECTION GREATER THAN 45 DEGREES IN THE BUILDING SEWER, BUILDING DRAIN AND HORIZONTAL WASTE, SOIL OR STORM LINES. WHERE MORE THAN ONE CHANGE OCCURS IN A RUN OF PIPING, ONLY ONE CLEANOUT SHALL BE REQUIRED FOR EACH 40 FEET OF DEVELOPED LENGTH OF THE DRAINAGE PIPING. (IPC 708.3.3 & 1101.8)
44. PROVIDE TV1 AT ALL PUBLIC SINKS AND LAVS PER CODE.
45. PROVIDE SURESEAL INLINE FLOOR DRAIN TRAP SEALER FOR ALL FLOOR DRAINS, TRENCH DRAINS AND FLOOR SINKS THAT ARE 4" PIPE SIZE AND SMALLER. SURESEAL PROVIDES A MAXIMUM OF 4" PIPE INLINE FLOOR DRAIN TRAP SEALER. PROVIDE TP1 FOR LARGER THAN 4" DIAMETER DRAINS.
46. ALL AIR ADMITTANCE VALVES (AAVS) ARE TO BE ACCESSIBLE. PRIOR TO INSTALLATION, COORDINATE THE TYPE OF HVAC SYSTEM DESIGN WITH THE MECHANICAL CONTRACTOR, AS WELL AS ALL OTHER TRADES. ALL STUDOR AAVS TO BE LOCATED EITHER BELOW A SINK OR IN A WALL W/ AN AAV BOX. AAVS MAY BE INSTALLED ABOVE CEILING AT A MINIMUM OF 6" ABOVE INSULATION. STUDOR AAVS ARE NOT RATED FOR RETURN AIR PLENUM INSTALLATION. SEE PLUMBING DETAILS ON PLUMBING DRAWINGS AND LOCATIONS OF AAVS FOR PROJECT ON SANITARY WASTE FLATOMETRICS. COORDINATE ALL AAV WITH BOX LOCATIONS ON THE PLANS PRIOR TO INSTALLATION. AAVS WITH BOX TO BE LOCATED WITHIN UTILITY-TYPE ROOMS (WATER ENTRY, JANITOR, MECHANICAL, LAUNDRY, ETC. NO AAVS WITH BOX TO BE LOCATED IN COMMON AREAS (CONFERENCE ROOMS, BATHROOMS, BUNK ROOMS, KITCHEN, OFFICES, DINING, ETC.) UNLESS ALLOWED BY THE OWNER/ARCHITECT. PROVIDE WET VENTING OR CONVENTIONALLY PIPED WASTE VENT FOR FIXTURES LOCATED IN COMMON AREAS. FIELD VERIFY WITH OWNER/ARCHITECT WITH ANY AAV WITH BOX LOCATION DISCREPANCIES PRIOR TO INSTALLATION. A CONVENTIONAL PIPED VENTING SYSTEMS MAY BE INSTALLED IN LIEU OF AN AAV VENTING SYSTEM AT THE CONTRACTOR'S EXPENSE.
47. ALL FINAL STORM AND OVERFLOW ROOF DRAINAGE PIPE ROUTING TO BE VERIFIED PRIOR TO THE INSTALLATION OF SYSTEMS. IF SCUPPERS ARE TO BE USED AS SECONDARY DRAINAGE AND/OR EXTERIOR GUTTERS/DOWNSPOUTS, THEN ARCHITECT TO SIZE AND LOCATE SCUPPERS AND EXTERIOR GUTTERS/DOWNSPOUTS DUE TO LOOK, LOCATION, AESTHETIC, ETC., OF THE OUTSIDE OF THE BUILDING. ARCHITECT/OWNER TO PROVIDE ENGINEER WITH ROOF LOAD OF POUNDS PER FOOT FOR CORRECT SCUPPER SIZING.
48. PROVIDE PIPE INSULATION FOR POTENTIAL CONDENSATION AND SOUND ATTENUATION ON ALL STORM AND OVERLFOW PIPING FOR THE FIRST 15 FEET OF PIPING FROM ROOF DRAIN OR HORIZONTAL TO VERTICAL TRANSITION IF LESS THAN 15 FEET. IF REQUESTED BY OWNER/ARCHITECT, PROVIDE INSULATION ON ALL STORM AND OVERFLOW PIPING FOR SOUND ATTENUATION. VERIFY WITH OWNER/ARCHITECT PRIOR TO INSTALLATION OF STORM & OVERFLOW DRAIN SYSTEMS.
49. LABEL ALL PIPING IN ACCESSIBLE AREAS. MEDIUM PRESSURE GAS TO BE MARKED EVERY 6 FEET.
50. ALL PIPING TO BE HUNG ON ADJUSTABLE SPLIT RING HANGERS OR UNISTRUT SUPPORTS WITH CLAMPS OF SIMILAR MATERIAL AS THE PIPE UNLESS OTHERWISE NOTED. GENERAL PRACTICE & ALL CODE REQUIREMENTS IN PROVIDING & INSTALLING PIPE SUPPORTS WITHIN THE CRAWL SPACE ARE TO BE FOLLOWED. COORDINATE WITH STRUCTURAL. PIPE HANGER SPACING IN FEET TO BE AS FOLLOWS:

PIPE TYPE/SIZE	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
COPPER	6	6	6	6	10	10
CAST IRON	PER SECTION 308, TABLE 308.5 OF THE 2018 IPC					
STEEL (SCREWED PIPE-IPS)	12	12	12	12	12	12
PLASTIC - WASTE AND VENT	4	4	4	4	4	4
AQUAPEX - DOMESTIC WATER	2.7	2.7	2.7	4	4	4
POLYPROPYLENE & CPVC	4	4	4	4	4	4.5

PLUMBING FIXTURE LIST GENERAL REQUIREMENTS:

1. ALL TOILET ROOM FIXTURES SHALL BE WHITE, VITREOUS CHINA UNLESS DESIGNATED OTHERWISE IN SCHEDULE.
2. PROVIDE SUITABLE REINFORCEMENTS FOR WALL HANGERS & SUPPORTS.
3. APPROVED EQUALS:
   - DRAINS: ZURN, WADE JOSAM, WATTS DRAINAGE
   - TRAP PRIMERS: MIFAB, PPP, JOSAM, ZURN
   - CHINA: WESTERN, ZURN, KOHLER, AMERICAN STANDARD
   - FIBERGLASS/ACRYLIC: AQUARIUS, AQUAGLASS, KOHLER
   - WATER COOLERS: ELKAY, SUNROC, HAWS
   - MOLDED STONE/TERRAZO: FLORESTONE, STERN WILLIAMS, FIAT
   - STAINLESS SINKS: ELKAY, JUST
   - FAUCETS: SYMMONS, CHICAGO, DELTA
   - SEATS: OLSONITE, CHURCH, BEMIS (OR BY WC MFG)
   - FLUSH VALVES: ZURN, SLOAN, AMTC
   - WALL HYDRANTS: CHICAGO, WOODFORD, WADE
   - BRASS: DEARBORN, CS&B, BRASS-CRAFT, MAGUIRE (P-TRAP & TRAP ARM, ESCUTCHEON)
   - STOPS: ALL MUST BE 1/4 TURN BALL VALVE TYPE. ALL BRASS CONSTRUCTION BY DEARBORN, CS&B, BRASS-CRAFT. OR MAGUIRE
4. RESTROOM FIXTURES MUST COMPLY WITH ALL BUILDING DEPARTMENT CRITERIA FOR WATER CONSERVATION.
5. ALL HANDICAP SINKS MUST HAVE OFFSET TRAPS AND "TRUBRO LAV GUARD", OR "ZURN INSUL-GUARD" INSULATION KITS OR MAGUIRE PREINSULATED TRAPS AND SUPPLIESPER ADA "ARTICLE 4.19.4."
6. VERIFY SHOWER BASE DIMENSIONS W/ARCHITECTURAL PLANS.
7. VERIFY LEFT/RIGHT HAND LEVER LOCATION ON ALL WATER CLOSETS PER ADA REQUIREMENTS AND INSTALL FLUSH HANDLE ON OPEN SIDE OF ADA STALL. FAILURE TO COMPLY WILL REQUIRE FIELD CORRECTION.
8. ALL WATER CLOSETS MUST MEET A MINIMUM MAPP RATING OF 800 AS TESTED BY AN INDEPENDENT AND ACCREDITED LABORATORY.
9. NO PROFLO BRAND NAMED PRODUCTS ARE ALLOWED.

PLUMBING FIXTURE LIST (ALL PLUMBING FIXTURES TO BE VERIFIED BY OWNER/ARCHITECT)

NOTES:

1. **ALL PLUMBING FIXTURE'S MFG, MODEL NUMBER AND SIZES OF FIXTURES TO BE APPROVED BY OWNER/ARCHITECT FOR TYPE, COLOR, FINISHES AND LOCATIONS PRIOR TO BIDDING, ORDERING & INSTALLATION. IF FINISH IS UNKNOWN OR NOT LISTED, THEN CONTRACTOR TO BID MOST EXPENSIVE FINISH AND VERIFY DESIRED FINISH WITH OWNER/ARCHITECT PRIOR TO ORDERING & INSTALLATION**
2. **VERIFY IF ADA LIVING UNITS REQUIRE ADA ALTERNATES - VERIFY WITH OWNER/ARCHITECT LOCATION OF ADA LIVING UNITS AND REQUIRED PLUMBING FIXTURES PRIOR TO ORDERING & INSTALLATION.**
3. **PLUMBING CONTRACTOR IS RESPONSIBLE FOR ANY AND ALL CONNECTIONS.**
4. **FIELD VERIFY ALL SHOWER HEADS, BALANCING/MIXING/DIVERTER VALVES AND/OR SHOWER HEADS / BATHTUB SPOUTS FOR SHOWERS AND BATH TUBS PRIOR TO INSTALLATION WITH OWNER/ARCHITECT REGARDLESS OF THE LOCATION SHOWN ON THE PLUMBING DRAWINGS.**
5. **FIELD VERIFY BEST LOCATIONS FOR SHUT-OFF VALVES WITH OWNER/ARCHITECT PRIOR TO INSTALLATION. PROVIDE ACCESS DOORS IN WALLS OR CEILINGS IF NECESSARY AND AS WHERE REQUIRED FOR ACCESS TO VALVES.**
6. **PROVIDE HOLE IN SINK/COUNTER FOR SOAP DISPENSER AT ALL SINKS AND LAVS UNLESS OTHERWISE SPECIFIED BY THE OWNER/ARCHITECT.**

AAV - AIR ADMITTANCE VALVE W/ BOX IF LOCATED W/ IN WALL
BRAND = STUDOR MINI-VENT FOR BATHROOM GROUPS, STUDOR REDI-VENT FOR SINGLE FIXTURE VENTING
OTHER = NO SUBSTITUTIONS OR EQUALS, REQUIRED TO BE ACCESSIBLE, PROVIDE AAV EITHER BELOW SINK OR IN WALL W/ AAV BOX, MAY BE INSTALLED IN CEILING CAVITY, MIN. 6" ABOVE INSULATION, NOT RATED FOR RETURN AIR PLENUM INSTALLATION

DS1 - DOWNSPOUT NOZZLE
BRAND = ZURN ZARB199
OTHER = ROUGH BRONZE DOWNSPOUT NOZZLE WITH WALL FLANGE

EWC1 - TWO LEVEL ELECTRIC WATER COOLER (VERIFY IF FILTERED OR NON-FILTERED IS RQSTD)
TYPE = WALL MOUNTED with WATER BOTTLE FILLER
BRAND = ELKAY MODEL EZSTLG8WSLK (HIGH EFFICIENCY, NON-FILTERED, ADA COOLER)
WASTE = LK-464, 1-1/4" DRAIN AND TRAP ASSEMBLY
SUPPLY = ZURN Z8804Q-PC 1/4 TURN STOP, BRASS STEM
OTHER = BARRIER FREE ADA APPROVED, FULLY ASSEMBLED FRONT PUSH BAR, VALVE & INLINE FLOW REGULATOR, ZURN Z1225-BL BI-LEVEL FLOOR MOUNTED ELECTRIC WATER COOLER CARRIER, 8 GPH, 115V/60Hz, 7 FLA, 360 WATTS

FD1 - FLOOR DRAIN W/ SURESEAL INLINE FLOOR DRAIN TRAP SEALER
BRAND =ZURN ZN415-5B-P (A TYPE STRAINER ROUND NICKEL BRONZE)
WASTE = 2" NO-HUB (UNLESS SHOWN LARGER ON PLANS)
OTHER = CAST IRON BODY W/FLASHING COLLAR, NICKEL-BRONZE ADJ ROUND STRAINER HEAD

FS1 - FLOOR SINK W/ SURESEAL INLINE FLOOR DRAIN TRAP SEALER
BRAND = ZURN Z1900-K 12"X12"X6" DEEP (3420) ACID RESISTANT ENAMEL INTERIOR, GRATE (PROVIDE ZURN Z1920 FOR 6"FS1 - 16"x16"x7" DEEP, PROVIDE TP1 FOR 6"FS1), or EQUAL BY JR SMITH
OTHER = DOME STRAINER, SEEPAGE FLANGE & HALF TOP GRATE (-2)

GD1 - GARBAGE DISPOSAL
BRAND =IN-SINK-ERATOR EVOLUTION PRO ESSENTIAL, MODEL PRO ES, 3/4 HP, 120V/60, 8.1 AMP
OTHER = 1-1/2" DRAIN CONNECTION, DISHWASHER CONNECTION, STAINLESS STEEL GRINDING ELEMENTS, VERIFY WITH OWNER/ARCHITECT/CHIEF WHICH BASIN GD1 IS TO BE PLACED IN

GWH1 - GAS WATER HEATER (TANK)
BRAND = STATE SUF100 250NEA
OTHER = 250,000 BTUH INPUT, 100 GALLON, 291 GPH @ 100° F TEMP RISE, 1386 POUNDS FILLED, 120V / 1P / 60HZ, PROVIDE CONDENSATE NEUTRALIZATION KIT, PROVIDE CONCENTRIC VENT KIT FOR 4" C.A. & FLUE VENTS, SEE MECHANICAL DRAWINGS FOR FINAL SIZE AND ROUTING OF VENT LINES

HB1 - HOSE BIB
BRAND = ZURN Z1341-C12
OTHER = VACUUM BREAKER/BACKFLOW PREVENTER & 3/4" MAIL HOSE THREAD. ROUGH BRASS (FOR INDOOR INSTALLATION, NOT FOR USE WITH HOT WATER)

HB2 - WALL-MOUNTED UTILITY FAUCET - HOT & COLD WATER (NOT TO BE USED FOR DRINKING WATER APPLICATIONS) (PROVIDE TV1 FOR HB1 IF REQUIRED TEMP TO BE BELOW 140°F)
BRAND =ZURN Z84300-XL SERIES - Z843M1
OTHER = 3/4" MAIL HOSE THREAD, 180° F MAXIMUM WORKING TEMPERATURE, WALL HOOK & ADJUSTABLE WALL BRACE, VACUUM BREAKER & 3/4" MAIL HOSE THREAD, POLISHED CHROME PLATED-CAST BRASS, CERAMIC DISK CARTRIDGE, INTEGRAL SERVICE STOPS

L1 - LAVATORY
TYPE = CHINA COUNTER TOP, UNDERMOUNT
BRAND = KOHLER LADENA MODEL K-2214-0
WASTE = ZURN Z8700 1-1/4" SEMI-CAST TRAP W/CLEANOUT, POP-UP DRAIN
SUPPLIES = ZURN Z804LRQ-LK-8860-12-PC 1/4 TURN STOP, LOOSE KEY W/SS FLEX HOSES
FAUCET = KOHLER RUBICON FAUCET K-R76216-BN (BRONZE NICKEL), PROVIDE POP-UP DRAIN
OTHER = 0.5 GPM, VANDAL RESISTANT SPRAY W/SILICONE COUNTER SEALANT.

LT1 - SINGLE COMP UTILITY SINK
BRAND = ELKAY MODEL DLR312212 - DROP-IN
WASTE = ZURN Z8702 1-1/2" SEMI-CAST TRAP W/CLEANOUT
SUPPLIES = ZURN Z804LRQ-LK-8860-12-PC 1/4 TURN STOP, LOOSE KEY, W/SS FLEX HOSES
FAUCET = T & S BRASS MODEL MPJ-4CLN-08-CR, 1.07 GPM, PRE-RINSE FAUCET W/ ADD-ON FAUCET, DECK MOUNT, 4" CENTERS, 36" HOSE WITH 6" ADJ. WALL BRACKET
OTHER = 18 GA 304 STNLS STEEL, SELF-RIMMING, ZURN Z8741-SS STRAINER W/ 1-1/2" TAILPIECE

MSB1 - MOP SERVICE BASIN
BRAND = FIAT model TSB-500 - 36"x36" W/ SS RIM ON ALL CURBS, OR EQUAL
WASTE = SS DOME STRAINER W/LINT BASKET, 3" DRAIN
TRIM = ZURN Z843-M1-RC FAUCET
OTHER = VERIFY IF VINYL BUMPER GUARDS OR SS RIM IS PREFERRED W/SILICONE FLOOR SEALANT

RVB1 - ICE MAKER OUTLET BOX
BRAND = SIOUX CHIEF 696-1010MF
OTHER = MOUNT SECURELY TO STUD, MINI-RESTER WATER HAMMER ARRESTERS, 1/4" O.D. COMPRESSION OUTLET CONNECTION, PROVIDE SIOUX CHIEF MODEL 696-BC BOX CLIP, PROVIDE WILKINS MODEL 700 DOUBLE CHECK VALVE BACKFLOW PREVENTER UPSTREAM OF ANY KITCHEN EQUIPMENT THAT DOES NOT CONTAIN AN INTERNAL DEVICE THAT RESTRICTS BACKWASH INTO DOMESTIC POTABLE WATER SYSTEM.

RH1 - ROOF HYDRANT
TYPE = AUTOMATIC DRAINING, FREEZELESS, DIVERTER VALVE
BRAND = WOODFORD MODEL RHY2-MS, 1" NPT FEMALE INLET CONNECTION
OTHER = MODEL 50HF VACUUM BREAKER/BACKFLOW PREVENTER & 3/4" MALE HOSE THREAD, FIELD VERIFY FINAL LOCATION OF HYDRANT, CONTRACTOR TO MAKE SURE THAT STOP IS LOCATED ON WARM SIDE OF THE THERMAL BARRIER, INCLUDES 1/2" NPT DRAIN PORT TO FLOOR DRAIN/SINK OR UPSTREAM OF PLUMBING FIXTURE P-TRAP IN THE WASTE LINE TAILPIECE

RD - ROOF DRAIN
BRAND = ZURN ZC100-DP
OTHER = FLASHING CLAMP & GRAVEL STOP, CAST IRON DOME; (-DP) DECK PLATE COMBO SUMP RECEIVER & UNDER DECK CLAMP

RDO1 - OVERFLOW DRAIN
BRAND = ZURN ZC100-W2-DP
OTHER = FLASHING CLAMP, GRAVEL STOP (-W2) 2" WATER DAM, CAST IRON DOME, & UNDER DECK CLAMPS. (-DP) DECK PLATE COMBO SUMP RECEIVER & UNDER-DECK CLAMP

S1 - LARGE 1-COMP SINK - UNDERMOUNT (VERIFY MODEL # PRIOR TO ORDERING AND INSTALL)
BRAND = KRAUS PAX KHU32 - 31.5" LONG SINK, PROVIDE XTRA HOLE FOR SOAP DISPENSER AT SINK
WASTE = ZURN Z8702 1-1/2" SEMI-CAST TRAP W/CLEANOUT
SUPPLIES =ZURN Z804LRQ-LK-8860-12-PC 1/4 TURN STOP, LOOSE KEY, W/SS FLEX HOSES
FAUCET = KRAUS BOLDEN model KPF-1610 PRE-RINSE PULL-DOWN FAUCET, ADA COMPLIANT, STAINLESS STEEL, PROVIDE EXTRA HOLE FOR SS SOAP DISPENSER AT SINK (KRAUS KSD-43)
OTHER = STAINLESS STEEL, 16 GAUGE, UNDERMOUNT, ZURN Z8741-SS STRAINER W/1-1/2" TAILPIECE, 1.8 GPM

S2 - SINGLE COMP SINK - UNDERMOUNT & DUAL MOUNT
BRAND = ELKAY MODEL ECTSRAD25226TBG, 6" DEEP FOR ADA COMPLIANCE
WASTE = ZURN Z8702 1-1/2" SEMI-CAST TRAP W/CLEANOUT
SUPPLIES =ZURN Z804LRQ-LK-8860-12-PC 1/4 TURN STOP, LOOSE KEY, W/SS FLEX HOSES
FAUCET = KOHLER SIMPLICE MODEL K-R647-CP, 1.5 GPM, PULL DOWN FAUCET, ADA COMPLIANT, STAINLESS STEEL
OTHER = 18 GA 302 STNLS STEEL, SELF-RIMMING, ZURN Z8741-SS STRAINER W/1-1/2" TAILPIECE, PROVIDE EXTRA HOLE FOR SS SOAP DISPENSER AT SINK (KRAUS KSD-43)

SCO - SURFACE CLEANOUT (2-WAY) [DENVER]
BRAND =ZURN Z1400-NL-BP HEAVY DUTY CAST IRON ADJUSTABLE TOP
OTHER = NEO-LOC, ADJ CI TOP BRONZE PLUG (-NL) NEO-LOC PUSH-ON GASKETED CONNECTION

SH1 - SHOWER - VERIFY INSTALL. OF TRIM/EQUIPMENT INSIDE SHOWER W/ OWNER/ARCH.
BRAND = GRIFform CUSTOM SHOWER PANS, SEE ARCH. FOR DIMENS., VERIFY COLOR W/ OWNER/ARCH.
WASTE = ZURN Z415-5B-CP NO-HUB OUTLET W/ROUND CHROME PLATED ADJUSTABLE STRAINER & ENTRY INFINITY DRAIN model S-AG 6560 (ALLOWS FOR ON-SITE MOD.), W/ POLISHED STEEL WEDGE WIRE 3MM GRATE, VERIFY FINISH OF INFINITY DRAIN W/ OWNER/ARCHITECT PRIOR TO ORDERING, FIELD VERIFY LENGTH OF TRENCH DRAIN AT ENTRY W/ OWNER/ARCHITECT
TRIM = SYMMONS TEMPTROL MODEL C-96-1-X-1.5 PRESSURE BALANCING MIXING VALVE W/ LEVER HANDLE, INTEGRAL SERVICE STOPS, ALL BRASS ADJUSTABLE SPRAY SHOWER HEAD WITH ARM AND FLANGE, MOUNT AT 7'-0" AFF, 1.5 GPM @ 80 PSI
OTHER = SLIP RESISTANT, DIM. PER ARCH. PLANS, LOCATE TRENCH DRAIN OUTSIDE SHOWER

SH2 - SOLID SURFACE SHOWER - VERIFY INSTALL. OF TRIM/EQUIPMENT INSIDE SHOWER W/ OWNER/ARCH.
BRAND = KOHLER K-1935-0 BALLAST SHOWER BASE (48" x 36") OR GRIFform CUSTOM SHOWER PANS, SEE ARCH. FOR DIMENS., VERIFY COLOR W/ OWNER/ARCH.
WASTE = ZURN Z415-5B-CP NO-HUB OUTLET W/ROUND CHROME PLATED ADJUSTABLE INFINITY DRAIN model S-AG 6560 (ALLOWS FOR ON-SITE MOD.), W/ POLISHED STEEL WEDGE WIRE 3MM GRATE, VERIFY FINISH OF INFINITY DRAIN W/ OWNER/ARCHITECT PRIOR TO ORDERING, FIELD VERIFY LENGTH OF TRENCH DRAIN AT ENTRY W/ OWNER/ARCHITECT
TRIM = SYMMONS TEMPTROL MODEL C-96-1-X-1.5 PRESSURE BALANCING MIXING VALVE W/ LEVER HANDLE, INTEGRAL SERVICE STOPS, ALL BRASS ADJUSTABLE SPRAY SHOWER HEAD WITH ARM AND FLANGE, MOUNT AT 7'-0" AFF
OTHER = 1.5 GPM @ 80 PSI, SLIP RESISTANT, DIMENSIONS PER ARCHITECTURAL PLANS

TD1 - TRENCH DRAIN (PROVIDE SURESEAL INLINE FLOOR DRAIN TRAP SEALER)
TYPE = 6" WIDE, 0% WATER ABSORBENT HIGH DENSITY POLYETHYLENE (HDPE)
BRAND =ZURN Z886-HPS (HEEL-PROOF STAINLESS STEEL SLOTTED GRATE) (VERIFY GRATE MATERIAL AND TYPE W/ ARCHITECT/OWNER PRIOR TO ORDERING, AS WELL AS MAXIMUM WEIGHT, AND IF THE GRATE IS TO BE CLASS E RATED)
WASTE = AS SHOWN ON PLANS
SUPPLIES =STAINLESS STEEL VEHICLE TRAFFIC RATED GRATE, PROVIDE END CAPS, EMBEDDED IN CONCRETE PER ALL MANUFACTURES RECOMMENDATIONS, PROVIDE SHOVEL

TD2 - TRENCH DRAIN (PROVIDE SURESEAL INLINE FLOOR DRAIN TRAP SEALER)
TYPE = PRESLOPED MODULAR TRENCH DRAIN W/FRAMED GRATE
BRAND = ZURN Z-882-8207 12" WIDE x 12" DEEP, PERMA - TRENCH - CI PRESLOPED TRENCH DRAIN W/SLOTTED GRATE, PROVIDE LINT TRAP IN TRENCH DRAIN
OTHER = CAST IRON LIGHT-DUTY GRATE & END CAPS. EMBEDDED IN CONCRETE PER ALL MANUFACTUERS RECOMMENDATIONS. ZURN Z-812 TRENCH SHOVEL.

TP1 - TRAP PRIMER (FOR DRAINS LARGER THAN 4" IN DIAMETER OR IN-WALL WASTE-BOX DRAINS)
BRAND = PRECISION PLUMBING PRODUCTS, INC., P1-500
INSTALLATION = MUST BE INSTALLED LEVEL WITH CLEAR PLASTIC COVER, ALLOW ACCESS FOR PERIODIC INSPECTION, CONFORMS TO ASSE 1018

TV1 - TEMPERING MIXING VALVE (PROVIDE AT ALL PUBLIC SINKS & LAVS PER CODE)
BRAND = BRADLEY S59-4000 TMV
OTHER = 1/2" MALE NPT CONNECTIONS, ASSE 1070 CERTIFIED, MAX. 110° F

UR1 - URINAL (ADA COMPLIANT)
TYPE = WASH OUT, WALL HUNG
BRAND = ZURN Z5738.235.00 (ZURN ONE SYSTEM)
SUPPLIES =ZURN FLUSH VALVE, BATTERY OPERATED W/ URINAL
TRIM = ZURN Z1222 FLOOR MOUNTED URINAL CARRIER
OTHER = WALL HANGERS, 0.125 GAL FLUSH, SILICONE WALL SEALANT.

US1 - 1-BOWL DECON. SINK (STAINLESS STEEL)
BRAND = ADVANCE TABCO SINK model 94-41-24-36RL, OR EQUAL BY OWNER/ARCHITECT, 24"x24"x14" DEEP WITH (1) 36" DRAIN BOARD ON RIGHT SIDE, (1) 36"ON LEFT SIDE, 16 GA SS, SS LEGS, BRACING FB, ADJ. BULLET FEET (OR EQUAL BY OWNER)
WASTE = 1-1/2" 17 GA C.P. P-TRAP W/ CLEAN OUT
SUPPLIES = ZURN Z804LRQ-LK-8860-12-PC 1/4 TURN STOP, LOOSE KEY, W/ SS FLEX HOSES
OTHER = ZURN MODEL Z841X1 PRE-RINSE ASSEMBLY FAUCET, PROVIDE TV1 FOR EYE WASH, PROVIDE EMERGENCY EYE WASH, GUARDIAN EQUIPMENT MODEL G1779 DECK MOUNTED SWING DOWN ACTIVATION,, VERIFY & COORDINATE WITH OWNER IF IT IS TO BE LOCATED ON SIDE OF THE DECON SINK OR IF IT IS TO BE LOCATED IN THE SINK, PROVIDE T & S BRASS MODEL B-0504-LKS FOOT PEDALS, CONTRACTOR TO PROVIDE GALVANIZED UNISTRUT SUPPORTS FOR MOUNTING FOOT PEDALS AT FRONT OF SINK, HOT & COLD WATER TO OPERATE WITH EITHER FOOT PEDALS OR FAUCET HANDLES PROVIDE T & S BRASS MODEL B-TEE-RGD 3/8" NPT RIGID TEE A

WB1 - WASHER BOX
BRAND =WATER-TITE MODEL W2706 HA W/2 CHROME QUARTER TURN ADAPTER BALL VALVES 1/2" SWEAT CONNECTION, HAMMER ARRESTERS AND DUAL 2" PUL/ABS DRAIN COUPLINGS FOR USE W/STUDOR MINI VENT

WB2 - WASHER BOX (SUPPLY LINE BOX, W/ ARRESTORS, ONLY)
BRAND =SIOUX CHIEF MODEL 696-2300 LESS DRAIN, W/ 2 CHROME QUARTER TURN ADAPTER BALL VALVES 1/2" SWEAT CONNECTION, HAMMER ARRESTERS, 3/4" OUTLET FOR HW & CW

WC1 - WATER CLOSET, FLOOR MOUNTED - ADA
TYPE = 1.1 GPF, ELONGATED FRONT, SIPHON JET, VITREOUS CHINA
BRAND = ZURN MODEL Z5665-BWL1
SUPPLIES =ZURN ZER6000AV-ONE-CPM AQUAVANTAGE SENSOR AV LOW CONSUMPTION EXPOSED WATER CLOSET VALVE - BATTERY POWERED
OTHER = ZURN MODEL Z5956SS-EL ELONGATED, PREMIUM WHITE, OPEN FRONT TOILET SEAT LESS COVER WITH SS CHECK HINGE. ZURN Z1203 HORIZONTAL WATER CLOSET CARRIER, MODEL Z1204 VERTICAL WATER CLOSET CARRIER (NO HUB), WALL SEALANT

WH1 - WALL HYDRANT
TYPE = AUTOMATIC DRAINING, FREEZELESS
BRAND =WOODFORD model B65 ANTI-SIPHON SINGLE CHECK WALL HYDRANT W/ LOCKABLE BOX, 3/4" COPPER INLET, EXPOSED TYPE, CONTRACTOR TO FIELD VERIFY WALL THICKNESS
OTHER = NIDEL 34HA VACUUM BREAKER/BACKFLOW PREVENTER & 3/4" MALE HOSE THREAD, (ALT - ZURN Z1321) [Z1320 SS DOOR/BOX ASSEMBLY]

FCO - FLOOR CLEANOUT
BRAND =ZURN ZN1400-NH-BP NO-HUB ADJUSTABLE FLOOR CLEANOUT NICKEL BRONZE TOP - F FLASHING FLANGE - CM CARPET MARKER
OTHER = GASKET SEAL, BRONZE PLUG, FLANGE, COLLAR, & CARPET CLAMP AS REQUIRED, (CM CARPET MARKER)

WCO - WALL CLEANOUT
BRAND =ZURN Z1441 CAULK FERRULE WALL CLEANOUT W/ROUND STAINLESS STEEL COVER AND SCREW
OTHER = LEAD SEAL PLUG, STAINLESS STEEL COVER & SCREW

LEGEND SPECIFICATION LIST

NOTE: NOT ALL VALVES ON THIS LIST ARE NECESSARILY USED ON THIS PROJECT.

SYMBOL	DESCRIPTION	SPECIFIED MANUFACTURER / MODEL	EQUALS BY	
	GATE VALVE	MILWAUKEE / 105 or 115	NIBCO	RED & WHITE
	GATE VALVE IN GROUND BOX	MILWAUKEE / 105 or 115	NIBCO	RED & WHITE
	GLOBE VALVE	MILWAUKEE / 590T or 1590T	NIBCO	STOCKHAM
	CHECK VALVE	MILWAUKEE / 509T, 1590T, F2974(M)(A), 548, or 1400 SERIES	NIBCO	STOCKHAM
	AUTO FLOW CONTROL VALVE	FLOWSET / YR	GRISWOLD	-
	PLUG VALVE	KEYSTONE / SERIES 500	DEZURIK	MILLIKEN
	BUTTERFLY VALVE	MILWAUKEE / CL 223 or CL 323	KEYSTONE	CENTERLINE
	STOP/DRAIN VALVE	WATTS / B-3000 or B-3001 for 1/2" - 3"	-	-
	BALL VALVE	MILWAUKEE / BA-100 or BA-150	NIBCO	APOLLO
	BALANCING VALVE	FLOWSET / ACCUSETTER	GERAND	-
	TEMP. CONTROL - 2-WAY	BY T.C. CONTRACTOR	-	-
	TEMP. CONTROL - 3-WAY	BY T.C. CONTRACTOR	-	-
	TEMPERING VALVE	LEONARD	LAWLER	-
	PRESSURE REDUCING VALVE	WATTS / ACV 115	-	-
	SOLENOID VALVE	ASCO / RED HAT	SKINNER	BURKET
	WAFER BALANCE VALVE	-	-	-
	VENTURI	FLOWSET / VW	GERAND	BARCO
	REDUCED PRESSURE BACKFLOW PREVENTOR	WATTS / 909QTS	-	-
	GAS COCK	MAXITROL / BV37 or BV64	-	-
	STRAINER	WATTS / SERIES 77S for 1/2" thru 2-1/2"	CONBRACO	KECKLEY
	STRAINER W/ BLOWOFF VALVE	WATTS / SERIES 77S with B-6081 VALVE	CONBRACO	KECKLEY
	PRESSURE/TEMP. RELIEF	WATTS / SERIES 40, 140, 240, or 340	-	-
	MANUAL AIR VENT	FLOWSET / AV	-	-
	P-T TAP	FLOWSET / SUPERSEAL	UNIVERSAL / 45PT-N	PETERSON / PETE's PLUG
	BOILER DRAIN VALVE	MILWAUKEE / BA 100 H	NIBCO	RED & WHITE
	THERMOMETER	TRERICE / BX91403 1/2	WEKSLER / AA5H	ASHCROFT / MA
	PRESSURE GAUGE	TRERICE / 600C	WEKSLER / EA14	ASHCROFT / MAG
	FIRE DAMPER	POTTROFF / VFD-10	-	-
	FIRE & SMOKE DAMPER	POTTROFF / FSD-142	-	-
	SMOKE DAMPER	POTTROFF / SD-142	-	-
	FLEXIBLE PIPE CONNECTION	METRAFLEX / METRASPHERE EPDM	MASON / MFNC EPDM	AMBER-BOOTH / 2600 EPDM
	AUTOMATIC AIR VENT	AMTROL 705	HOFFMAN	FLOWSET
	GAS PRESSURE REGULATOR	SCHLUMBERGER / VARIES	-	-
	AIR ADMITTANCE VALVE	STUDOR VENT	-	-
	BALL DRAIN W/ HOSE END CONNECTION	APOLLO / 78-103-1 1/2" N.P.T. BY HOSE	NIBCO	STOCKHAM

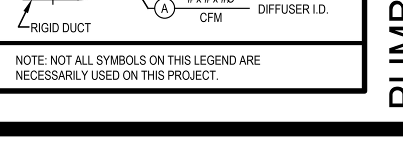
PLUMBING & MECHANICAL LEGEND

*NOTE: ALL DASHED PLUMBING LINES INDICATE BELOW FLOOR ELEVATION UNLESS OTHERWISE NOTED ON DRAWINGS.

SYMBOL	ABBREV.	DESCRIPTION
CWS	CWS	CONDENSER WATER SUPPLY
CWR	CWR	CONDENSER WATER RETURN
CHS	CHS	CHILLED WATER SUPPLY
CHR	CHR	CHILLED WATER RETURN
RS	RS	REFRIGERANT SUCTION
RL	RL	REFRIGERANT LIQUID
RH	RH	REFRIGERANT HOT GAS
HWS	HWS	HEATING WATER SUPPLY
HWR	HWR	HEATING WATER RETURN
HPS	HPS	HIGH PRESSURE STEAM
HPSR	HPSR	HIGH PRESSURE STEAM RETURN
LPS	LPS	LOW PRESSURE STEAM
LPSR	LPR	LOW PRESSURE STEAM RETURN
VAC	VAC	VACUUM
A	AIR	AIR
N	N	NITROGEN
F	FIRE	FIRE
	CW	COLD WATER
	HW	HOT WATER
	DHC	HOT WATER RECIRCULATE
W	W	WASTE PIPE
V	VENT	VENT PIPE
STM	ST	STORM PIPE
GW	GW	GREASE WASTE
SO	SO	SAND OIL WASTE
G	GAS	GAS PIPE
		PIPE UP
		PIPE DOWN
		PIPE TEE DOWN
		PIPE TEE UP
		GATE VALVE
		GLOBE VALVE
		CHECK VALVE
		BALL VALVE
		BUTTERFLY VALVE
		PLUG VALVE
		GAS PRESSURE REGULATOR GAS COCK AND UNION
		STOP & DRAIN VALVE
		AUTO FLOW CONTROL VALVE
		BALANCING VALVE
		TEMP. CONTROL - 2-WAY
		TEMP. CONTROL - 3-WAY
		3-WAY VALVE
		PRESSURE REDUCING VALVE
		SOLENOID VALVE
		PRESSURE GAUGE
FS		FLOW SENSOR

SYMBOL	ABBREV.	DESCRIPTION
M		MOTORIZED GATE VALVE
		WAFER BALANCE VALVE
		VENTURI
	RPBFP	REDUCED PRESSURE BACKFLOW PREVENTOR
		GAS COCK
		UNION
		PIPE REDUCER
		STRAINER
		STRAINER W/ BLOWOFF VALVE
	F.D.	FLOOR DRAIN
		EQUIPMENT ROOM DRAIN
	F.S.	FLOOR SINK - HALF GRATE
	F.S.	FLOOR SINK - 1/4 GRATE
		DRAIN ABOVE
	R.D.	ROOF DRAIN
	O.R.D.	ROOF DRAIN - OVERFLOW
		DOWNSPOUT NOZZLE
	CO	CLEANOUT - VERTICAL
	CO	CLEANOUT - HORIZONTAL
		PIPE CAP
	BRK	BREAK - MISC.
	VTR	VENT THRU ROOF
W H	W H	WALL HYDRANT
H B	H B	HOSE BIBB
	P#	PUMP
		PRESSURE/TEMP. RELIEF
		AIR VENT
		P-T TAP
		PIPE GUIDE (SLEEVE)
		PIPE EXPANSION JOINT
		PIPE ANCHOR
S		SMOKE DETECTOR
		BOILER DRAIN VALVE
		BALL DRAIN W/ HOSE END CONNECTION.
	(N)	NEW
	(E)	EXISTING
	(R)	RELOCATED
		VACUUM BREAKER
		THERMOMETER

SYMBOL	ABBREV.	DESCRIPTION
		ACCESS DOOR IN CEILING
20/16		DUCT SIZE INDICATING SHEET METAL DIMENSIONS. FIRST NUMBER WIDTH & SECOND IS DEPTH.
		DUCT ELBOW W/ TURNING VANE
		DUCT TEE W/ TURNING VANES
		MANUAL DAMPER W/ LOCKING QUADRANT.
M		MOTORIZED DAMPER
		FLEXIBLE DUCT CONNECTOR
		SPIN-IN FITTING W/ DAMPER 45° DUCT TAKE-OFF
U.C. SIZE		DOOR UNDERCUT
		FIRE DAMPER
		FIRE & SMOKE DAMPER
		SMOKE DAMPER
		EXISTING FIRE DAMPER
		RETURN GRILLE
		CONNECTION NEW TO EXISTING.
		FLEXIBLE PIPE CONNECTION
T		THERMOSTAT
S		REMOTE SENSOR
CD		CARBON DIOXIDE SENSOR
CM		CARBON MONOXIDE SENSOR
H		HUMIDISTAT
		EXISTING ITEM LINE WEIGHT
		DEMO ITEM LINE WEIGHT
		NEW ITEM LINE WEIGHTS



NOTE: NOT ALL SYMBOLS ON THIS LEGEND ARE NECESSARILY USED ON THIS PROJECT.

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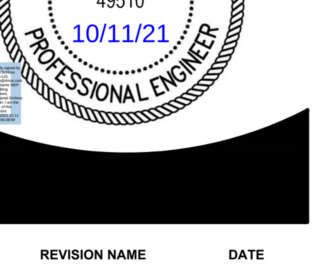
PERMIT SET | JOB NO. 2014

NO SCALE

CITY OF THORNTON
FIRE STATION #7



REVISION NAME		DATE
1	ADDENDUM #1	2021 1008

ISSUE DATE: 2021 0907

PUMBING SPECIFICATIONS

P1.0

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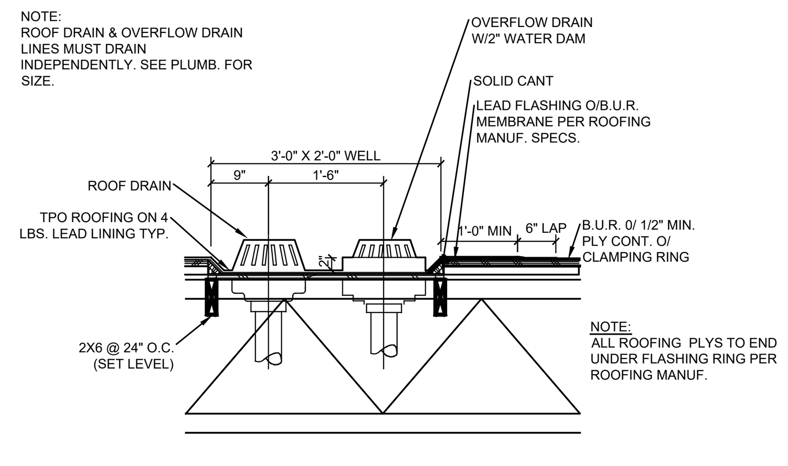
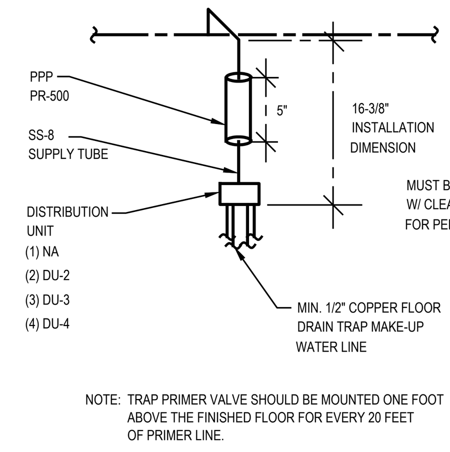
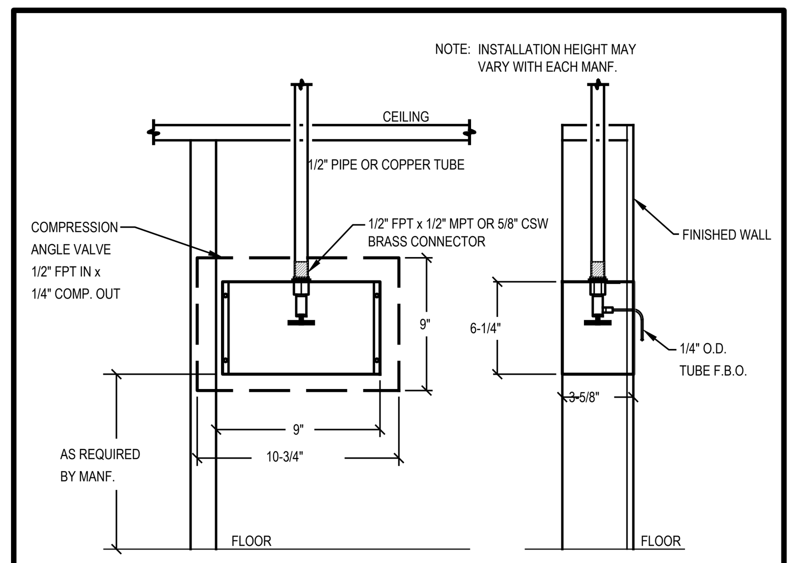


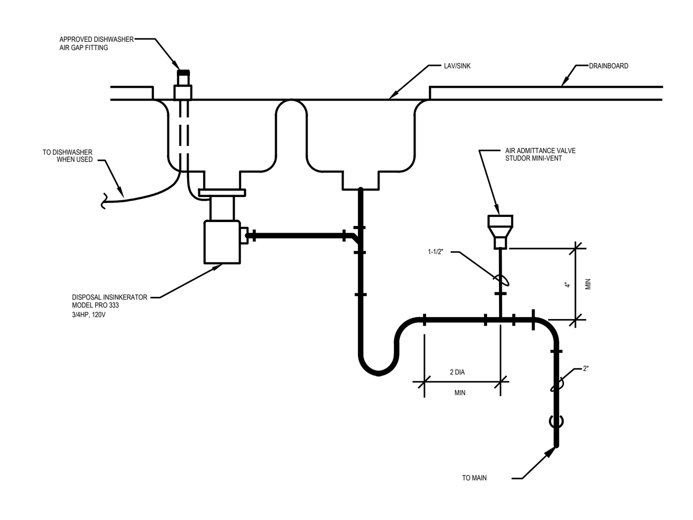
ROOF DRAIN & OVERFLOW DETAIL
NO SCALE



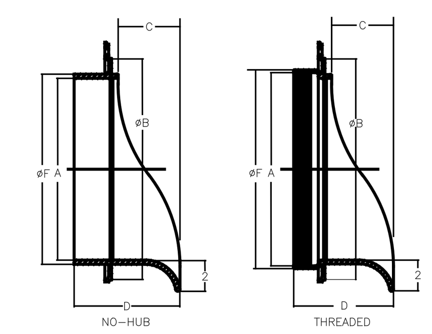
PPP TRAP PRIMER VALVE INSTALLATION DETAIL
NO SCALE



ICE MAKER WATER SUPPLY
NO SCALE



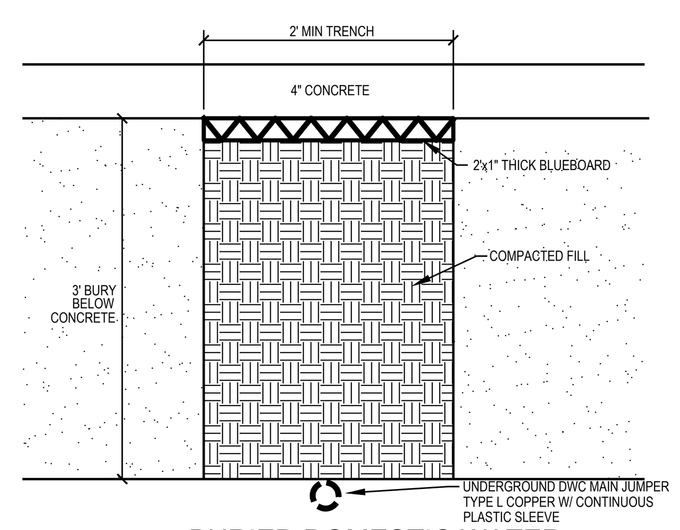
AIR ADMITTANCE VALVE DETAIL DUAL SINK
NO SCALE



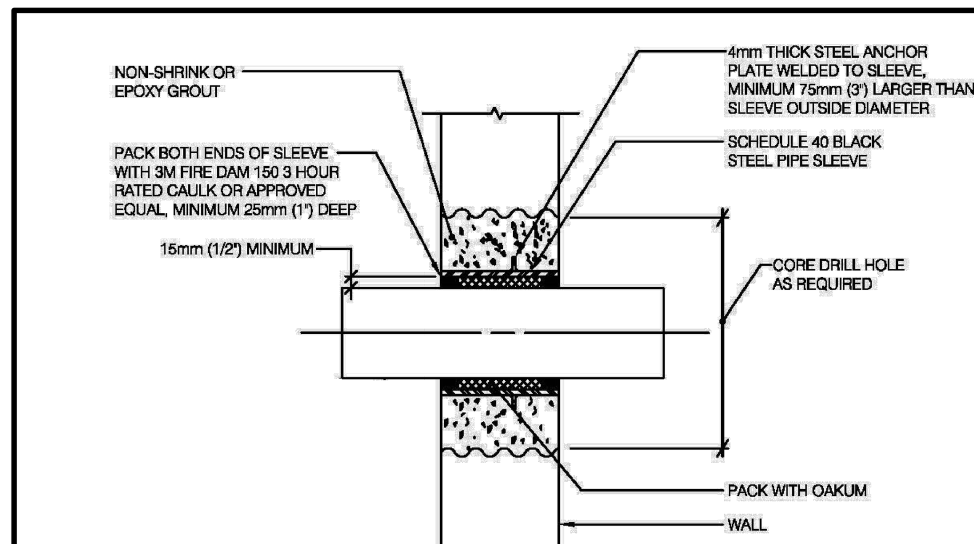
A PIPE SIZE	B	C	D IP	D NH	F IP	F NH	APPROX. WT. LBS.
2	4 1/2	3 1/2	5 1/2	5 3/8	3	2 3/8	5
3	5 1/2	3 1/2	5 1/2	5 3/8	4	3 3/8	6
4	6 5/8	3 1/2	5 1/2	5 1/2	5	4 3/8	1
5	7 5/8	3 1/2	5 1/2	5 3/4	6 1/8	5 5/16	12
6	8 5/8	3 1/2	5 1/2	5 3/4	7 1/8	6 5/16	13
8	10 5/8	3	5 1/2	6 1/4	9 1/8	8 3/8	14
10	12 5/8	3 1/2	6	6 7/16	11 1/8	10 9/16	15
12	14 5/8	4 1/16	6 9/16	7	13 1/8	12 9/16	18

DOWNSPOUT NOZZLE DETAIL
NO SCALE

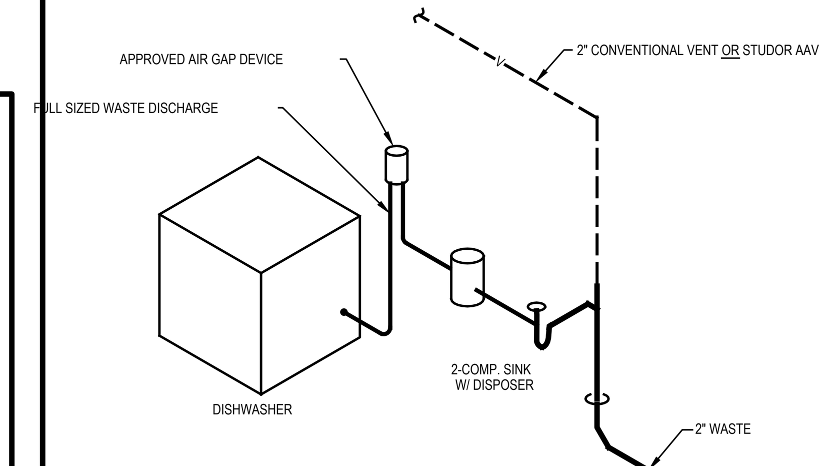
NOTE: PROVIDE BLACK SCHEDULE 40 PVC OR CAST IRON PIPING, IF APPROVED BY ALL CODES & LOCAL AHJ, FOR PIPING AND/OR FITTINGS OF STORM PIPING THAT MAY BE VISIBLE THROUGH THE DOWNSPOUT LAMBS TONGUE FROM THE OUTSIDE OF THE BUILDING. NO WHITE PIPING/FITTINGS TO BE VISIBLE WHEN LOOKING AT/INTO EXTERIOR DOWNSPOUT LAMBS TONGUE FOR STORM PIPING.



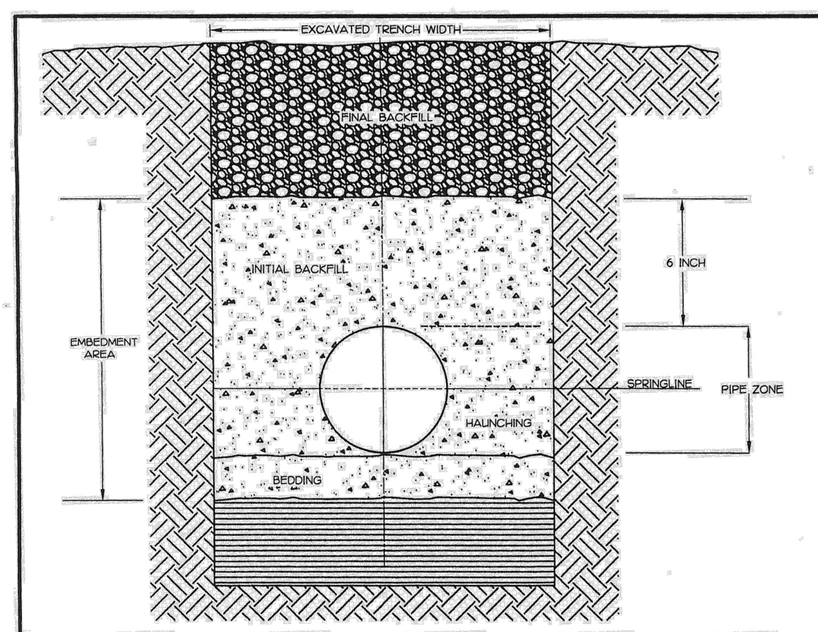
BURIED DOMESTIC WATER PIPING DETAIL
NO SCALE



PIPE THRU WALL DETAIL
NO SCALE



DISHWASHER & 2-COMP. SINK WASTE & VENT ISOMETRIC
NO SCALE



UNDERGROUND INSTALLATION OF PLASTIC PIPE

PLASTIC PIPE SHOULD ALWAYS BE BURIED IN STRICT ACCORDANCE WITH THE ASTM STANDARD RELEVANT TO THE TYPE OF PLASTIC PIPING SYSTEM BEING INSTALLED. THOSE STANDARDS ARE:

ASTM D2321 STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS.

ASTM D2774 STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PRESSURE PIPING.

NOTE: IN ADDITION TO THESE STANDARDS, PIPE SHOULD ALWAYS BE INSTALLED IN ACCORDANCE WITH ALL LOCAL CODE REQUIREMENTS.

RECOMMENDATIONS FOR UNDERGROUND INSTALLATION OF PLASTIC DRAINAGE PIPE:

1. THE MINIMUM WIDTH OF THE TRENCH SHOULD BE THE PIPE OD (OUTSIDE DIAMETER) PLUS 16 INCHES OR THE PIPE OUTSIDE DIAMETER TIMES 1.25 PLUS 12 INCHES. THIS WILL ALLOW ADEQUATE ROOM FOR JOINING THE PIPE, SNAKING THE PIPE IN THE TRENCH TO ALLOW FOR EXPANSION AND CONTRACTION WHERE APPROPRIATE AND SPACE FOR BACKFILLING AND COMPACTION OF BACKFILL. THE SPACE BETWEEN THE PIPE AND TRENCH WALL MUST BE WIDER THAN THE COMPACTION EQUIPMENT USED TO COMPACT THE BACKFILL.
2. PROVIDE A MINIMUM OF 4 INCHES OF FIRM, STABLE AND UNIFORM BEDDING MATERIAL IN THE TRENCH BOTTOM. IF ROCK OR UNYIELDING MATERIAL IS ENCOUNTERED, A MINIMUM OF 6 INCHES OF BEDDING SHALL BE USED. BLOCKING SHOULD NOT BE USED TO CHANGE PIPE GRADE OR TO INTERMITTENTLY SUPPORT PIPE OVER LOW SECTIONS IN THE TRENCH.
3. THE PIPE SHOULD BE SURROUNDED WITH AN AGGREGATE MATERIAL WHICH CAN BE EASILY WORKED AROUND THE SIDES OF THE PIPE. BACKFILLING SHOULD BE PERFORMED IN LAYERS OF 6 INCHES WITH EACH LAYER BEING SUFFICIENTLY COMPACTED TO 85% TO 95% COMPACTION.
4. A MECHANICAL TAMPER IS RECOMMENDED FOR COMPACTING SAND AND GRAVEL. THESE MATERIALS CONTAIN FINE-GRAINS, SUCH AS SILT AND CLAY. IF A TAMPER IS NOT AVAILABLE, COMPACTING SHOULD BE DONE BY HAND.
5. THE TRENCH SHOULD BE COMPLETELY FILLED. THE BACKFILL SHOULD BE PLACED AND SPREAD IN UNIFORM LAYERS TO PREVENT ANY UNFILLED SPACES OR VOIDS. LARGE ROCKS, STONES, FROZEN CLODS, OR OTHER LARGE DEBRIS SHOULD BE REMOVED. STONE BACKFILL SHALL PASS THROUGH AN 1-1/2" SIEVE. ROCK SIZE SHOULD BE ABOUT ONE-TENTH OF THE PIPE OUTSIDE DIAMETER. HEAVY TAMPERS OR ROLLING EQUIPMENT SHOULD ONLY BE USED TO CONSOLIDATE THE FINAL BACKFILL.
6. TO PREVENT DAMAGE TO THE PIPE AND DISTURBANCE TO PIPE EMBEDMENT, A MINIMUM DEPTH OF BACKFILL ABOVE THE PIPE SHOULD BE MAINTAINED. PIPE SHOULD ALWAYS BE INSTALLED BELOW THE FROST LEVEL. TYPICALLY, IT IS NOT ADVISABLE TO ALLOW VEHICULAR TRAFFIC OR HEAVY CONSTRUCTION EQUIPMENT TO TRAVERSE THE PIPE TRENCH.

UNDERGROUND INSTALLATION DETAIL OF PLASTIC PIPING SYSTEMS	Underground Installation

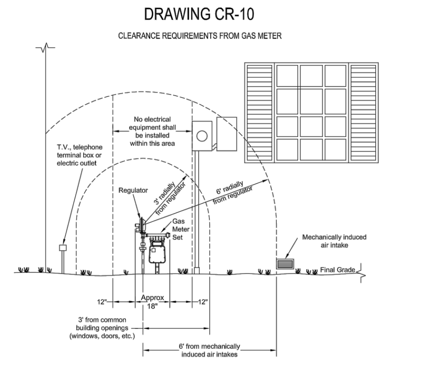
Service installation requirements

Natural gas and electric residential service

Natural gas meters and regulators should be at least three feet (measured radially) from any source of ignition, such as electric switches and a 6-foot distance from mechanical intake vents. You must also maintain the 3-foot distance from doors, windows, vents and (20 feet from a power intake), outside water spigots and garage doors. In areas where city water is not available, the natural gas service line must be a minimum of 15 feet from a water well. Xcel Energy sets meters about six inches above final grade to allow slight changes in grade and landscaping around the meter without interfering with meter mechanisms. Note: Meters cannot be set under a deck or steps. The electric meter must be installed according to all electrical codes and applicable regulations. For joint trenching, both the natural gas and electric meter are preferred to be on the same side of the house.

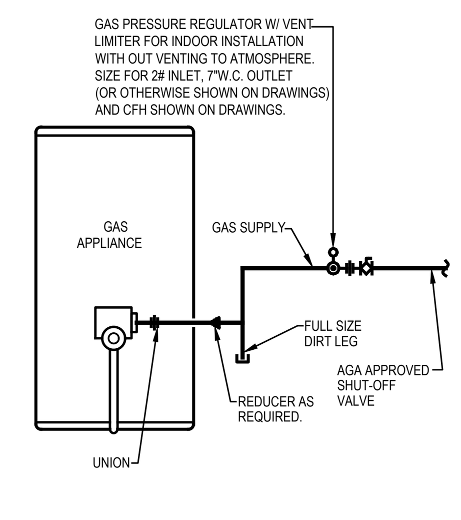
DRAWING CR-10

CLEARANCE REQUIREMENTS FROM GAS METER

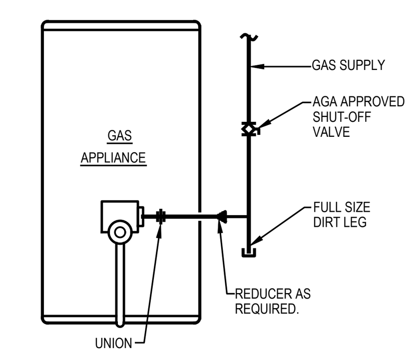


NOTES:
1. 3' minimum working clearance from non-electrical obstructions is preferred around gas meter set.
2. Disregard clearances when measuring around corners of structure.
3. See drawings SC-20 and SC-20A for snow shield requirements.

23



APPLIANCE GAS CONNECTION ASSEMBLY WITH GPRV
NO SCALE



APPLIANCE GAS CONNECTION ASSEMBLY
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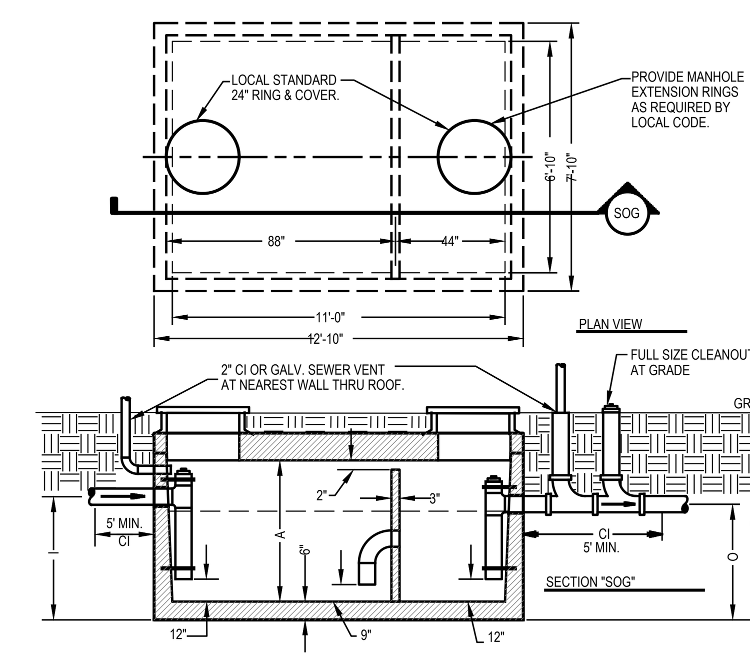
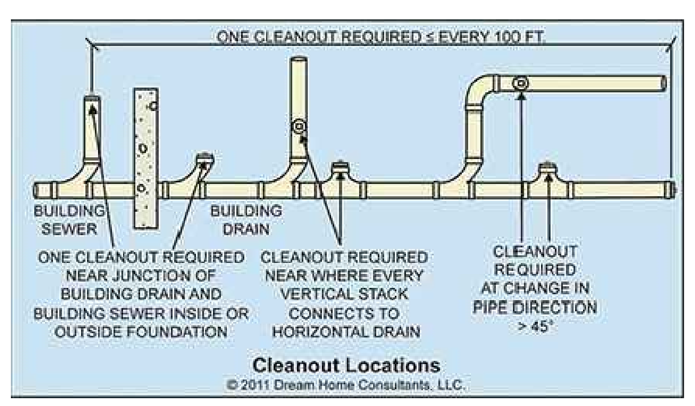
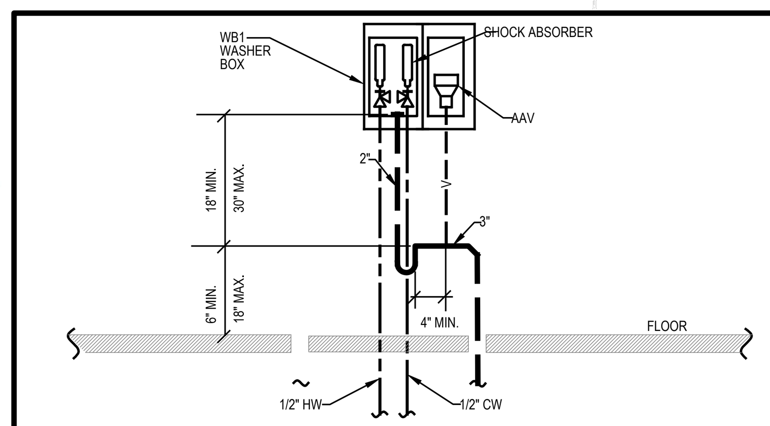


RATED CAPACITY	A	B	I	O
2000 GALLON	50"	62"	50"	48"

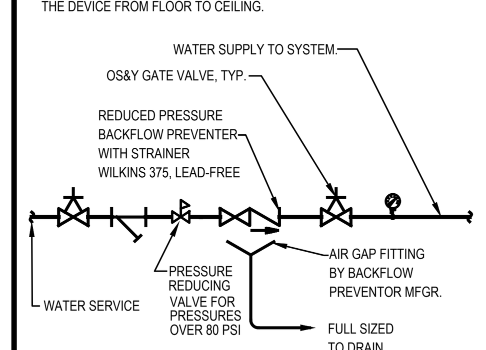
CLASS "A" COMMERCIAL S/O INTERCEPTOR
NO SCALE



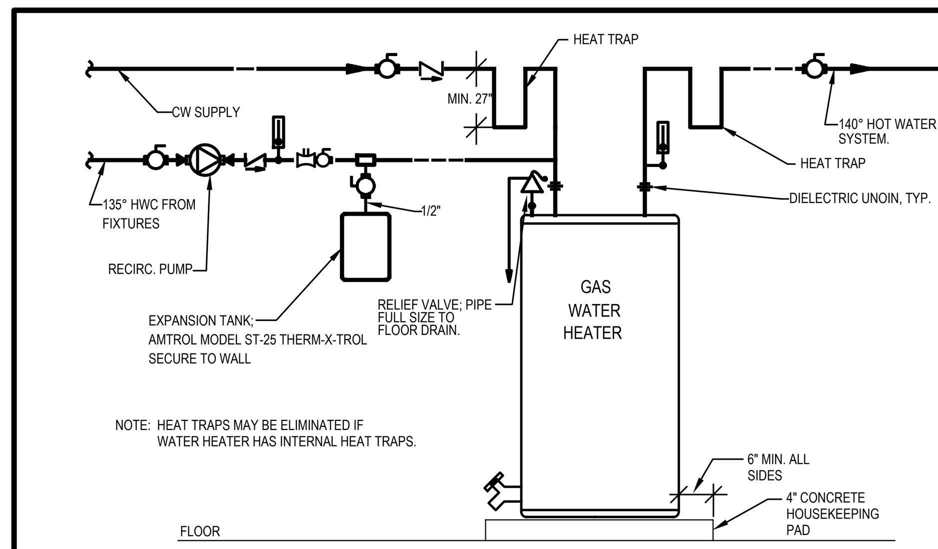


WASHER STANDPIPE DETAIL W/ SHOCK ARRESTERS & AAV
NO SCALE

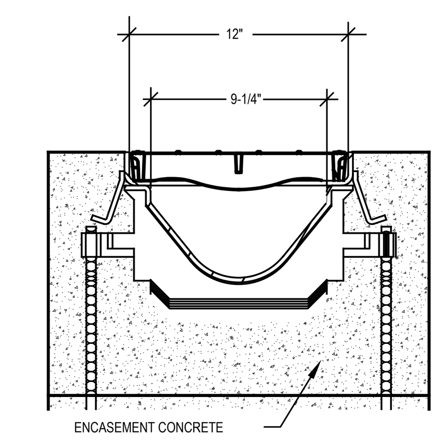
NOTES:
1. DETAIL IS FOR WATER SERVICES OF 2-1/2" OR LARGER.
2. RPBP SHALL BE PLACED A MIN.OF 24" A.F.F. TO A MAX. OF 48" A.F.F. THE DEVICE SHALL BE PLACED A MIN. OF 6" FROM THE WALL TO THE CENTER OF THE DEVICE WITH A MIN. OF 24" OF CLEAR SPACE IN FRONT OF THE DEVICE FROM FLOOR TO CEILING.



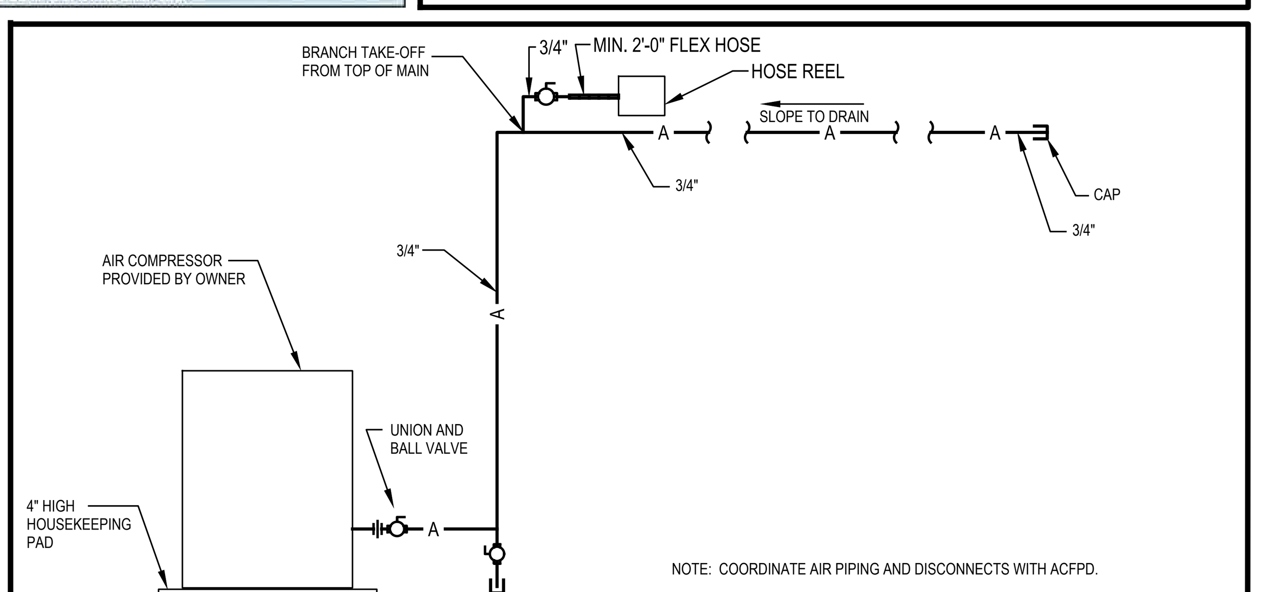
BACKFLOW PREVENTER DETAIL
NO SCALE



GAS DOMESTIC WATER HEATER PIPING ASSEMBLY
NO SCALE

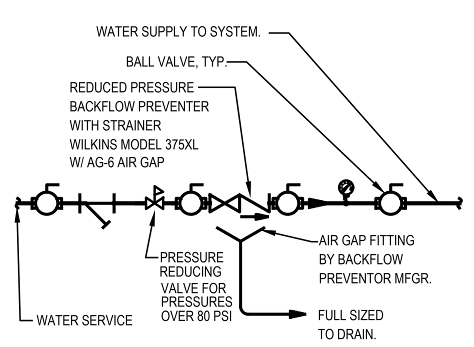


TRENCH DRAIN #2 SECTION
NO SCALE

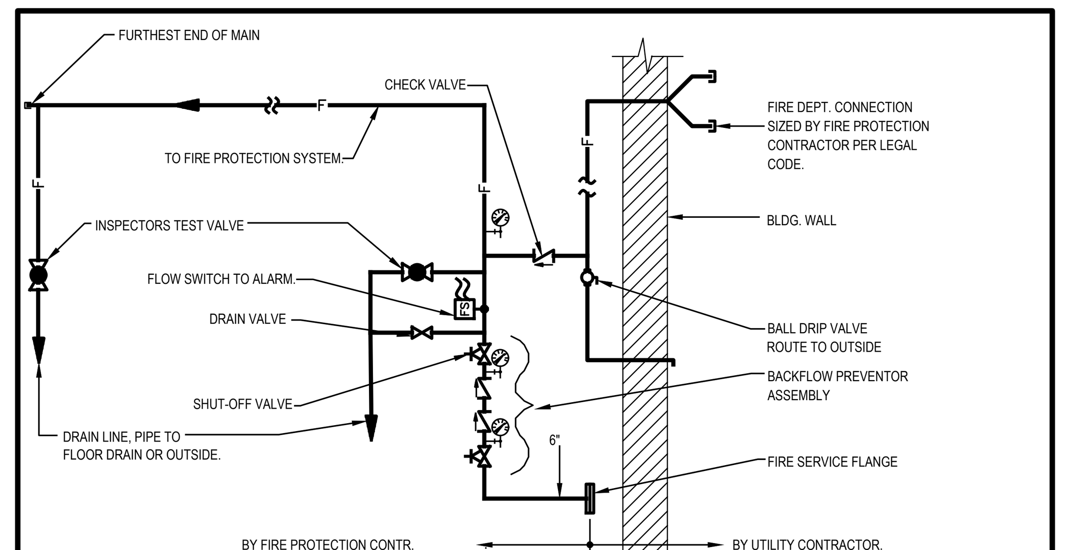


1 COMPRESSED AIR PIPING DIAGRAM
NO SCALE

NOTES:
1. DETAIL IS FOR WATER SERVICES OF 2" OR SMALLER.
2. RPBD SHALL BE PLACED A MIN.OF 24" A.F.F. TO A MAX. OF 48" A.F.F. THE DEVICE SHALL BE PLACED A MIN. OF 6" FROM THE WALL TO THE CENTER OF THE DEVICE WITH A MIN. OF 24" OF CLEAR SPACE IN FRONT SPACE IN FRONT OF THE DEVICE FROM FLOOR TO CEILING.

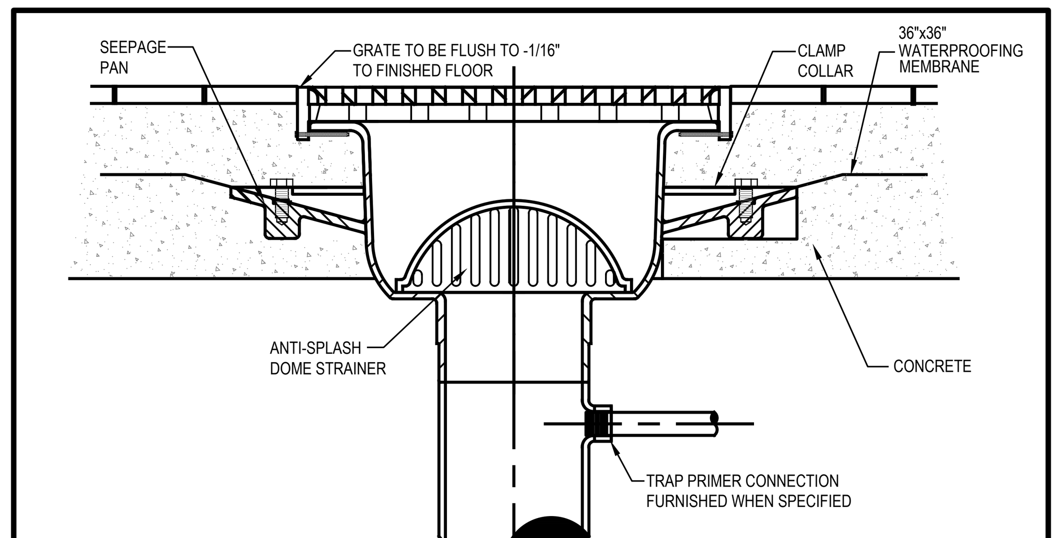


REDUCED PRESSURE BACKFLOW ASSEMBLY DETAIL
NO SCALE



ALL DETAILS TO BE REVIEWED & APPROVED BY FIRE PROTECTION DISTRICT PRIOR TO INSTALLATION

FIRE ENTRY DETAIL
NO SCALE



FLOOR SINK FLASHING DETAIL
NO SCALE

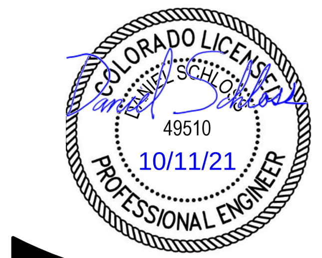
DYNAMIC MEP CONSULTING ENGINEERS
1480 HOYT ST. STE. 200
LAKEWOOD, CO 80215
303.421.3208

ALLRED&ASSOCIATES
ARCHITECTURE | PLANNING | INTERIOR DESIGN
580 BURBANK ST. SUITE 125, BROOMFIELD, CO 80020 PHONE: 303.465.4306 FAX: 303.465.4382 www.allredarch.com

PERMIT SET | JOB NO. 2014

NO SCALE

CITY OF THORNTON FIRE STATION #7



	REVISION NAME	DATE
1	ADDENDUM #1	2021 1008

ISSUE DATE: 2021 0907

PUMBING DETAILS #1

P1.1

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DYNAMIC MEP
CONSULTING ENGINEERS
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303.421.3208

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580 BURBANK ST. SUITE 125, BROOMFIELD, CO 80020 PHONE: 303.465-4306 FAX: 303.465-4382 www.allredarch.com

PERMIT SET | JOB NO. 2014

NO SCALE

GAS PIPING SCHEDULE

SERVICE	PIPE	FITTINGS	PROTECTION	COVER	REMARKS
FUEL GAS PIPING. (NATURAL GAS) (BURIED)*	TRACPIPE PSII CSST	MINIMUM BEND RADIUS & PER MFG RECOMMENDATIONS	APPROVED PROTECTIVE COATING EITHER FIELD OR FACTORY APPLIED.	AT LEAST 18" OF EARTH COVER	
	POLYETHYLENE (PE 2406) ASTM D 2513	POLYETHYLENE (PE 2406) ASTM D 2513, ASTM D 2683, AND/OR ASTM D 3261	PIPE SHALL HAVE THE WORD "GAS" MARKED ON IT AND A TRACER WIRE SHALL BE ATTACHED TO PIPE.**	AT LEAST 18" OF EARTH COVER.	1/2" PIPE SHALL BE SDR 9. PIPE > 1/2" SHALL BE SDR 11
FUEL GAS PIPING. (NATURAL GAS) (ABOVE GROUND)	SCH. 40 BLACK IRON	150# MALLEABLE IRON THREADED OR WELDED.	G.C. TO PAINT PIPING EXPOSED TO THE WEATHER	NOT APPLICABLE	
	GASTITE CSST SYSTEM	GASTITE CSST NPT TREADED BRASS FITTINGS	FACTORY APPLIED	NOT APPLICABLE	OR APPROVED EQUAL

* - GAS PIPING SHALL NOT BE INSTALLED UNDER ANY BLDG. OR SLAB, FROM OUTSIDE THE BUILDING TO INSIDE, AND SHALL ENTER BUILDING ABOVE GRADE. RISERS TO ABOVE GRADE SHALL BE METALLIC AND COATED WITH APPROVED COATING TO A POINT AT LEAST 6" ABOVE FINISHED GRADE.

** - TRACER WIRE SHALL BE #18 AWG COPPER (OR OTHER APPROVED MATERIALS) AND SHALL RUN FULL LENGTH OF BELOW GRADE PIPE AND TERMINATE ABOVE GRADE AT ONE END.

SHOCK ABSORBER SCHEDULE

TAG	MANUFACTURER	TYPE NO.	P.D.I SIZE	FIXTURE UNITS
SA-1	JOSAM	75001-S	A	1-11
SA-2	JOSAM	75002-S	B	12-32
SA-3	JOSAM	75003-S	C	33-60
SA-4	JOSAM	75004-S	D	61-113
SA-5	JOSAM	75005-S	E	114-154
SA-6	JOSAM	75006-S	F	155-330

FIXTURE CONNECTION SCHEDULE

FIXTURE	HW	CW	WASTE	VENT
WATER CLOSET - FLUSH VALVE	-	1"	4"	2"
URINAL - WASH DOWN	-	3/4"	2"	2"
LAVATORY	1/2"	1/2"	2"	2"
MOP SERVICE BASIN / LAUNDRY TUB	3/4"	3/4"	3"	2"
DRINKING FOUNTAIN	-	1/2"	2"	2"
KITCHEN SINK (WITH DISPOSER)	1/2"	1/2"	2"	2"
SHOWER	1/2"	1/2"	2"	2"
CLOTHES WASHER	1/2"	1/2"	2"	2"
DISHWASHER	1/2"	-	2"	2"

SIZES SHOWN ARE MINIMUM PIPE SIZES TO A SINGLE FIXTURE.

RECIRC. PUMP SCHEDULE

TAG	MANUFACTURER MODEL	LOCATION DUTY	SERIES TYPE	FLOW (GPM)	HEAD (FT)	AMPS	RPM	H.P.	ELECT (VOLT/PH)	REMARKS & FEATURES REQ'D
RCP1	TACO 008-BC6-IFC	MECHANICAL ROOM	INLINE	2	13	0.84	3250	1/25	115V/1PH/60HZ	1,2,3,4,5

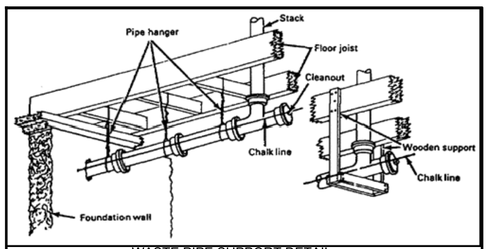
FEATURES REQUIRED:
1. ALL BRONZE CONSTRUCTION, OR STAINLESS STEEL, FOR DOMESTIC WATER USE.
2. PUMP CONTROLLED BY PIPE MOUNTED AQUASTAT.
3. SYSTEM TIMER TO MAINTAIN THE RETURN WATER BETWEEN 125 DEG F AND 135 DEG F (ADJUSTABLE).
4. INTEGRAL FLOW CHECK VALVE INCLUDED.
5. PROVIDE TIMECLOCK FOR PUMP TO RUN DURING OCCUPIED TIME (ADJUSTABLE).

APPROVED MFG:
TACO
BELL & GOSSETT
GRUNDFOSS
ARMSTRONG

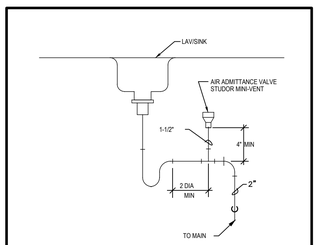
THORNTON FIRE STATION #7 - BUILDING PLUMBING FIXTURE COUNT

FIXTURE	QTY	WASTE	WASTE TOTAL	COLD WTR	HOT WTR	CW & HW TOTAL	CWT	HWT	WSFU TOTAL
4" TRENCH DRAIN	2	6	12						
SHOWER (PUBLIC)	3	2	6	3	3	4	9	9	12
KITCHEN SINKS (PRIVATE)	2	2	4	1	1	1.4	2	2	2.8
KITCHEN SINKS (PUBLIC)	1	2	2	3	3	4	3	3	4
CLOTHES WASHER (PUBLIC)	4	3	12	2.25	2.25	3	9	9	12
DISHWASHER (PRIVATE)	2	2	4		1.4	1.4	0	2.8	2.8
MOP SERVICE BASIN / LAUNDRY TUB	3	2	6	2.25	2.25	3	6.75	6.75	9
DRINKING FOUNTAIN	2	0.5	1	0.25		0.25	0.5	0	0.5
LAVATORY/HAND SINK (PUBLIC)	4	1	4	1.5	1.5	2	6	6	8
URINAL	1	2	2	5	0	2	5	0	2
WALL HYDRANT (5 FU 1st, 2.5 FU each add.)	8	0	0	22.5		22.5	22.5	0	22.5
WATER CLOSET (PUBLIC)	4	4	16	10		10	40	0	40
FIXTURE UNIT TOTALS			69				103.75	38.55	115.6
FIXTURES GPM							34	26	73
IRRIGATION GPM (NON-CONCURRENT WITH WSFU									20
TOTAL FLOW RATE								N/A	93
MINIMUM SANTARY WASTE & DCW DISTRIBUTION PIPE SIZE			4"					N/A	2-1/2"

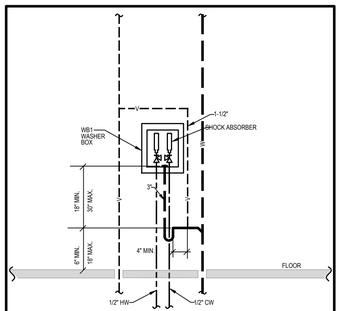
Notes:
1. DCW SIZED @ 8 FEET/SECOND PER IPC.
2. DHW SIZED @ 5 FEET/SECOND PER IPC.
3. **MINIMUM 2" DCW METER & SERVICE TAP. & MINIMUM 2-1/2" DCW DISTRIBUTION W/ A MINIMUM 2-1/2" DCW REDUCED PRESSURE BACKFLOW PREVENTER**



WASTE PIPE SUPPORT DETAIL
NO SCALE



AIR ADMITTANCE VALVE DETAIL SINGLE SINK
NO SCALE



WASHER STANDPIPE DETAIL WITH SHOCK ARRESTERS & CONVENTIONAL VENTING
NO SCALE

EXTERIOR CLEANOUT DETAILS
NO SCALE

FLOOR DRAIN FLASHING DETAIL
NO SCALE

CITY OF THORNTON
FIRE STATION #7

COLORADO LICENSED
Timothy Scott Allred
49510
10/11/21
PROFESSIONAL ENGINEER

	REVISION NAME	DATE
1	ADDENDUM #1	2021 1008

ISSUE DATE: 2021 0907

PUMBING DETAILS #2

P1.2

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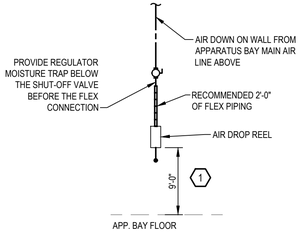
GENERAL NOTES:

1. PROVIDE SURESEAL INLINE FLOOR DRAIN TRAP SEALER FOR ALL FLOOR DRAINS, TRENCH DRAINS AND FLOOR SINKS.
2. PROVIDE TV1 FOR ALL SINKS AND LAVS PER CODE, EXCLUDING SERVICE & UTILITY SINKS.
3. FIELD VERIFY WITH OWNER/ARCHITECT/UTILITIES PROVIDER FOR LOCATIONS OF NEW ROUGH-IN CONNECTIONS FOR NEW SANITARY WASTE, WASTE VENT AND DOMESTIC WATER LINES.
4. SEE MECHANICAL DRAWINGS & COORDINATE W/ MECHANICAL CONTRACTOR THE LOCATION OF ALL MECHANICAL EQUIPMENT/DUCTING/PIPING AND PLUMBING EQUIPMENT/PIPING PRIOR TO INSTALLATION.
5. PER MANUFACTURER'S REPRESENTATIVE, THE REGISTER/OPEN SIDE OF AAV BOXES DO NOT NEED TO BE LOCATED IN THE SAME ROOM AS THE FIXTURE IT IS VENTING.
6. FIELD VERIFY FINAL LOCATIONS OF ALL AIR, WATER FILL AND COLD WATER DROPS WITH OWNER/ARCHITECT PRIOR TO ANY SYSTEM BEING INSTALLED. FIELD VERIFY LOCATIONS OF ALL REELS AND FIELD VERIFY WHICH DROPS REQUIRE REELS.
7. ALL PIPE SIZES SHOWN ON THESE DRAWINGS ARE SIZED PER MANUFACTURER, OR EQUAL, RECOMMENDED PIPE LINE SIZES. VERIFY ALL PIPE SIZES FOR ALL WATER AND AIR LINES PRIOR TO ORDERING AND INSTALLATION. LINE SIZES MAY VARY PER MANUFACTURER'S REQUIREMENTS AND INSTALLATION RECOMMENDATIONS. IF LINE SIZES DIFFER FROM SIZES SHOWN ON THESE DRAWINGS, THEN PROVIDE SPRING RETRACTABLE HOSE REELS OF SAME SIZE AS PIPE SIZE, BY REELCRAFT.
8. PROVIDE, AND VERIFY WITH SYSTEM MANUFACTURERS WHETHER, 2 FEET OF FLEX DUCT IS REQUIRED UPSTREAM OF THE REELS FOR EACH SYSTEM PRIOR TO INSTALLATION.
9. FIELD VERIFY ALL COFFEE MAKER LOCATIONS WITH OWNER/ARCHITECT PRIOR TO INSTALLATION.
10. PROVIDE DETACHABLE BACKFLOW PREVENTER (SPRINKLER SYSTEM).
11. ALL STORM & OVERFLOW DRAIN PIPING SIZED AND ROUTED FOR A MINIMUM OF 1/16" SLOPE/FOOT.
12. **NO PLUMBING LINES TO PASS IN FRONT OF ANY WINDOWS AND TO BE ROUTED AS HIGH AS POSSIBLE.**

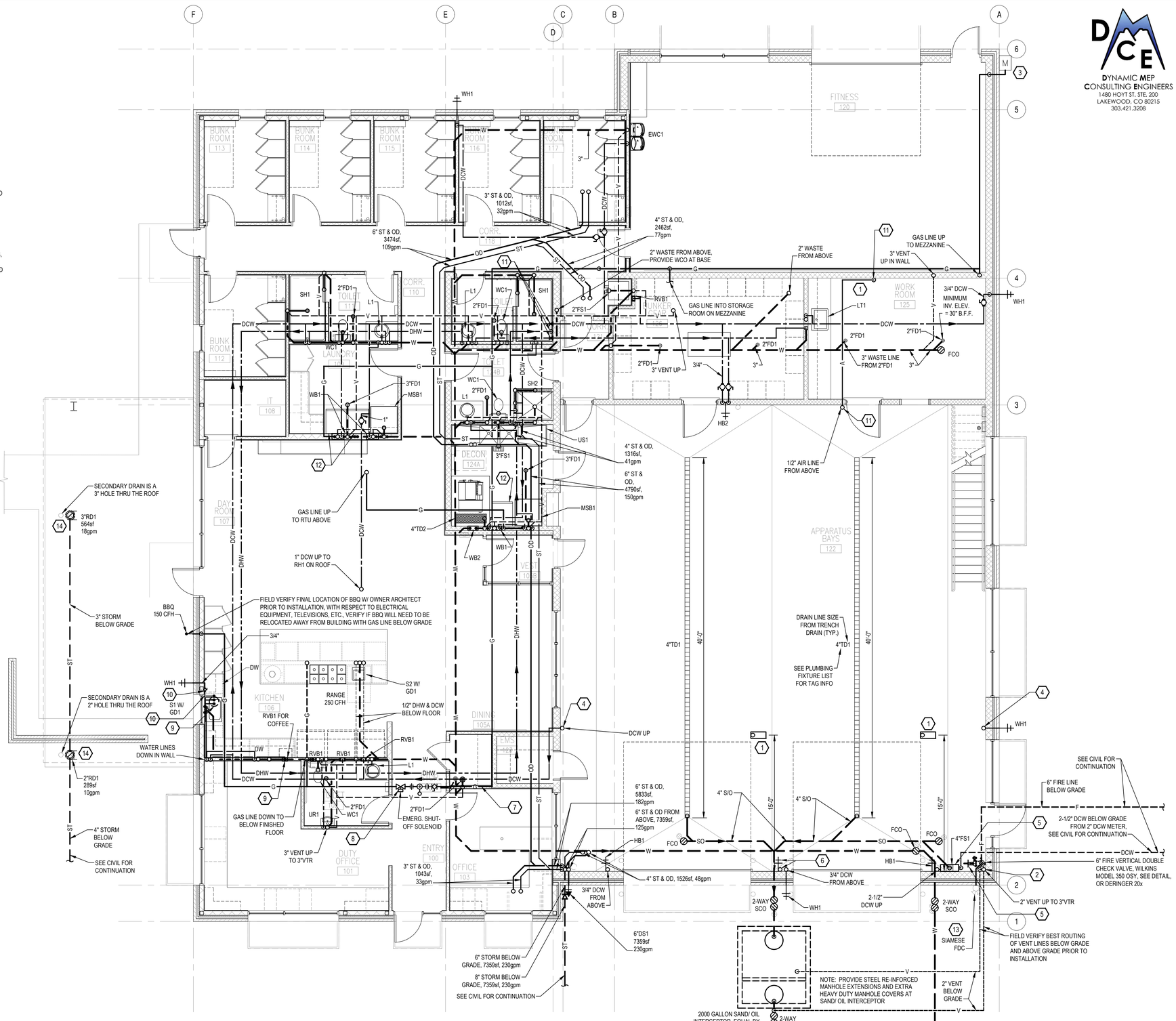
WORK NOTES:

1. PROVIDE 3/4" AIR DOWN ON WALL TO MINIMUM 2'-0" LONG FLEX HOSE EQUAL TO HOSE REEL I.D. PIPE SIZE (3/8"). SEE DETAIL, THIS SHEET. FIELD VERIFY LOCATION & HEIGHT OF HOSE REEL WITH OWNER/ARCHITECT PRIOR TO INSTALLATION.
2. COMBINE TWO (2) 2" VENTS FROM BELOW GRADE INTO ONE (1) 2" VENT A MINIMUM OF 18" ABOVE GRADE. PROVIDE CLEANOUT ON EACH LINE PRIOR TO COMBINING. FIELD VERIFY BEST LOCATION IN WALL WITH OWNER/ARCHITECT PRIOR TO INSTALLATION.
3. GAS METER SIZED WITH 14" W.C. PRESSURE, PER IFGC TABLE 402.4(3), LESS THAN 2 PSI, 3" W.C. PRESSURE DROP, 200 FEET LONGEST RUN, 2" GAS MAIN LINE, 1715 TOTAL CFH GAS LOAD. FIELD VERIFY BEST GAS ROUTING OF VERTICAL GAS PIPING IN WALL OR ON WALL FROM GAS METER TO ABOVE CEILING OF FITNESS ROOM WITH OWNER/ARCHITECT PRIOR TO INSTALLATION. PROVIDE CAGE AROUND GAS METER. COORDINATE WITH OWNER/ARCHITECT.
4. DCW MAIN UP ON WALL, FIELD VERIFY BEST LOCATION W/ OWNER/ARCHITECT PRIOR TO INSTALL.
5. PROVIDE 2-1/2" REDUCED PRESSURE BACKFLOW PREVENTER FOR DOMESTIC WATER SUPPLY, WILKINS MODEL 375 W/ WILKINS MODEL AG-7 AIR GAP. PROVIDE 1" DCW TAKE-OFF UPSTREAM OF 2-1/2" REDUCED PRESSURE BACKFLOW PREVENTER FOR IRRIGATION, WILKINS MODEL 375XL W/ WILKINS MODEL AG-5 AIR GAP. PROVIDE IRRIGATION RPBFP ABOVE 2-1/2" DOMESTIC RPBFP. PROVIDE SHUT-OFF VALVE DOWNSTREAM OF 1" IRRIGATION RPBFP & FIELD VERIFY IRRIGATION CONNECTION POINT TO IRRIGATION/LANDSCAPING WITH IRRIGATION/LANDSCAPING CONTRACTOR/DESIGNER.
6. 1-1/2" DCW UP ON WALL FROM ABOVE. PROVIDE 1-1/2" FILL LINE AT APPROXIMATELY THIS LOCATION. FIELD VERIFY BEST LOCATION & HEIGHT ABOVE FLOOR WITH OWNER/ARCHITECT PRIOR TO INSTALLATION. PROVIDE A 90° ELBOW FROM VERTICAL TO HORIZONTAL AND PROVIDE A 1-1/2" NH MALE THREAD CONNECTION WITH 1/4 TURN BALL VALVE (ON VERTICAL) WITH CAP ON END OF 1-1/2" LINE.
7. FIELD VERIFY BEST GAS ROUTING IN-FIELD WITH OWNER/ARCHITECT, FOR GAS SUPPLY TO COOKING EQUIPMENT, PRIOR TO INSTALLATION.
8. PROVIDE MANUAL SHUT-OFF FOR EMERGENCY GAS SUPPLY SOLENOID VALVE. SHUT-OFF WILL KILL THE ELECTRICAL AND GAS TO COOKING APPLIANCES. GAS IGNITER IS TO SHUT OFF COMPLETELY SO THAT IT DOES NOT CLICK WHEN THE GAS IS SHUT OFF. CONTACTOR TO DE-ENERGIZE POWER TO THE COOKING APPLIANCES. COORDINATE WITH COOKING EQUIPMENT MANUFACTURER, ELECTRICAL ENGINEER AND OWNER/ARCHITECT. FIELD VERIFY LOCATION OF MANUAL SHUT-OFF WITH OWNER/ ARCHITECT/ELECTRICAL ENGINEER PRIOR TO INSTALLATION.
9. PROVIDE COLD WATER FILTER UNDER SINK. FILTERED WATER TO SUPPLY EXTRA COLD WATER FAUCET ON SIDE OF SINK AS WELL AS RVB1 BEHIND COFFEE MAKER, TO COFFEE MAKER.
10. PROVIDE SHUT-OFF VALVE FOR WH1 WITHIN CABINET UNDER SINK.
11. PROVIDE 1/2" HARD-PIPED AIR LINE FROM APPARATUS BAY INTO WORK ROOM AND ROUTE AIR LINE TO LOCATION SHOWN. PROVIDE INGERSOLL RAND model C38341-600-VS - 1/2" PIGGYBACK FR, FILTER/REGULATOR ON WALL. FIELD VERIFY FINAL LOCATION OF FILTER/REGULATOR AND ROUTING OF AIR LINE PRIOR TO INSTALLATION AND ROUTING.
12. STACKED WASHER & DRYER. PROVIDE GAS LINE TO DRYER, 150 CFH. FIELD COORDINATE THAT THE GAS VALVE DOES NOT EXTEND PAST THE WALL. ALSO, PROVIDE 1/2" COLD WATER LINE TO DRYER FOR STEAM.
13. PROVIDE KNOX LOCKING CAPS WITH SWIVEL GUARDS ON THE FIRE DEPARTMENT SIAMESE CONNECTION.
14. ROOF DRAIN TO GO FROM ROOF, THROUGH CANOPY, THEN TRANSITION INTO A RECTANGULAR EXPOSED DOWNSPOUT, BY OTHER, TIGHT TO WALL, NOT OPEN FACE, TO UNDERGROUND. THE OVERFLOW DRAIN WILL BE A HOLE IN THE SOFFIT, SIZED PER PRIMARY DRAIN SIZE. VERIFY WITH ARCHITECT PRIOR TO ORDERING & INSTALLING ROOF/OVERFLOW DRAINS.



AIR DROP ON COLUMN

NO SCALE



PLUMBING PLAN

SCALE: 3/16" = 1'-0"

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CITY OF THORNTON
FIRE STATION #7

COLORADO LICENSED
JEFFREY SCHLOSSER
49510
10/11/21
PROFESSIONAL ENGINEER

	REVISION NAME	DATE
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PLUMBING PLAN

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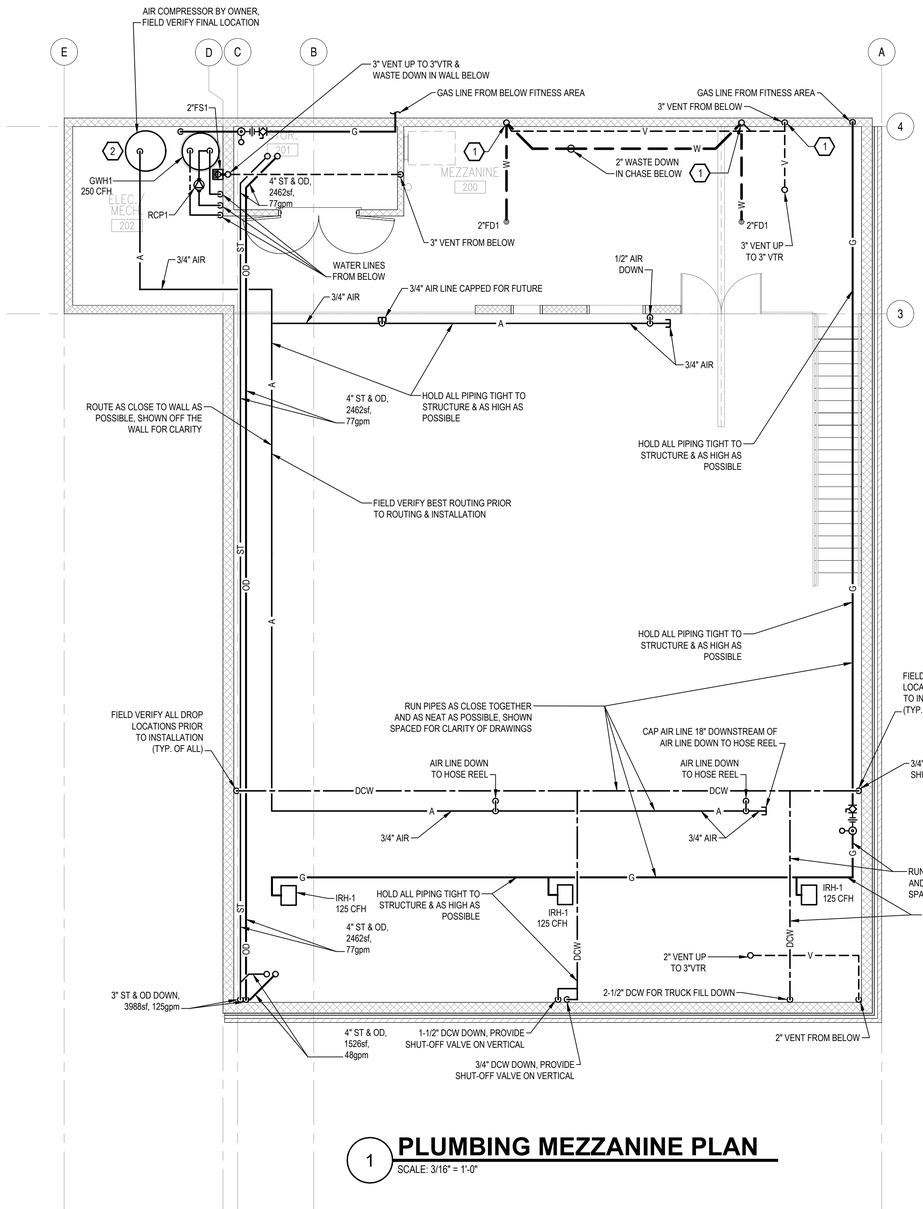

1 **PLUMBING MEZZANINE PLAN**
SCALE: 3/16" = 1'-0"

GENERAL NOTES:

1. PROVIDE SURESEAL INLINE FLOOR DRAIN TRAP SEALER FOR ALL FLOOR DRAINS, TRENCH DRAINS AND FLOOR SINKS.
2. SEE MECHANICAL DRAWINGS & COORDINATE W/ MECHANICAL CONTRACTOR THE LOCATION OF ALL MECHANICAL EQUIPMENT/DUCTING/PIPING AND PLUMBING EQUIPMENT/PIPING PRIOR TO INSTALLATION.
3. PER MANUFACTURER'S REPRESENTATIVE, THE REGISTER/OPEN SIDE OF AAV BOXES DO NOT NEED TO BE LOCATED IN THE SAME ROOM AS THE FIXTURE IT IS VENTING.
4. FIELD VERIFY FINAL LOCATIONS OF ALL AIR, TRUCK FILL AND COLD WATER DROPS WITH OWNER/ARCHITECT PRIOR TO ANY SYSTEM BEING INSTALLED. FIELD VERIFY LOCATIONS OF ALL REELS AND FIELD VERIFY WHICH DROPS REQUIRE REELS.
5. ALL PIPE SIZES SHOWN ON THESE DRAWINGS ARE SIZED PER MANUFACTURER, OR EQUAL, RECOMMENDED PIPE LINE SIZES. VERIFY ALL PIPE SIZES FOR ALL WATER AND AIR LINES PRIOR TO ORDERING AND INSTALLATION. LINE SIZES MAY VARY PER MANUFACTURER'S REQUIREMENTS AND INSTALLATION RECOMMENDATIONS. IF LINE SIZES DIFFER FROM SIZES SHOWN ON THESE DRAWINGS, THEN PROVIDE SPRING RETRACTABLE HOSE REELS OF SAME SIZE AS PIPE SIZE, BY REELCRAFT.
6. PROVIDE, AND VERIFY WITH SYSTEM MANUFACTURERS WHETHER, 2 FEET OF FLEX DUCT IS REQUIRED UPSTREAM OF THE REELS FOR EACH SYSTEM PRIOR TO INSTALLATION.
7. ALL STORM & OVERFLOW DRAIN PIPING SIZED AND ROUTED FOR 1/16" SLOPE/FOOT.
8. **NO PLUMBING LINES TO PASS IN FRONT OF ANY WINDOWS AND TO BE ROUTED AS HIGH AS POSSIBLE.**

WORK NOTES:

1. PROVIDE WASTE VENT LINES EITHER IN WALL OR ON WALL IF THERE IS NOT ENOUGH ROOM IN THE WALL TO PROVIDE THE VENT LINES FOR FIXTURES ON THIS LEVEL AND FROM BELOW.
2. AIR COMPRESSOR TO BE PROVIDED BY CONTRACTOR. INGERSOLL RAND 2475N5-V, 5 HP, 480V / 3PH, 80 GALLON VERTICAL. PROVIDE ARO model R37351-600 - 8934 AIR REGULATOR AT THE AIR COMPRESSOR FOR REGULATING THE AIR PSI PRESSURE TO THE ENTIRE SYSTEM. VERIFY WITH MANUFACTURER THAT THIS IS THE BEST REGULATOR FOR THE AIR COMPRESSOR PRIOR TO BIDDING, ORDERING & INSTALLATION.

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PUMBING MEZZANINE PLAN

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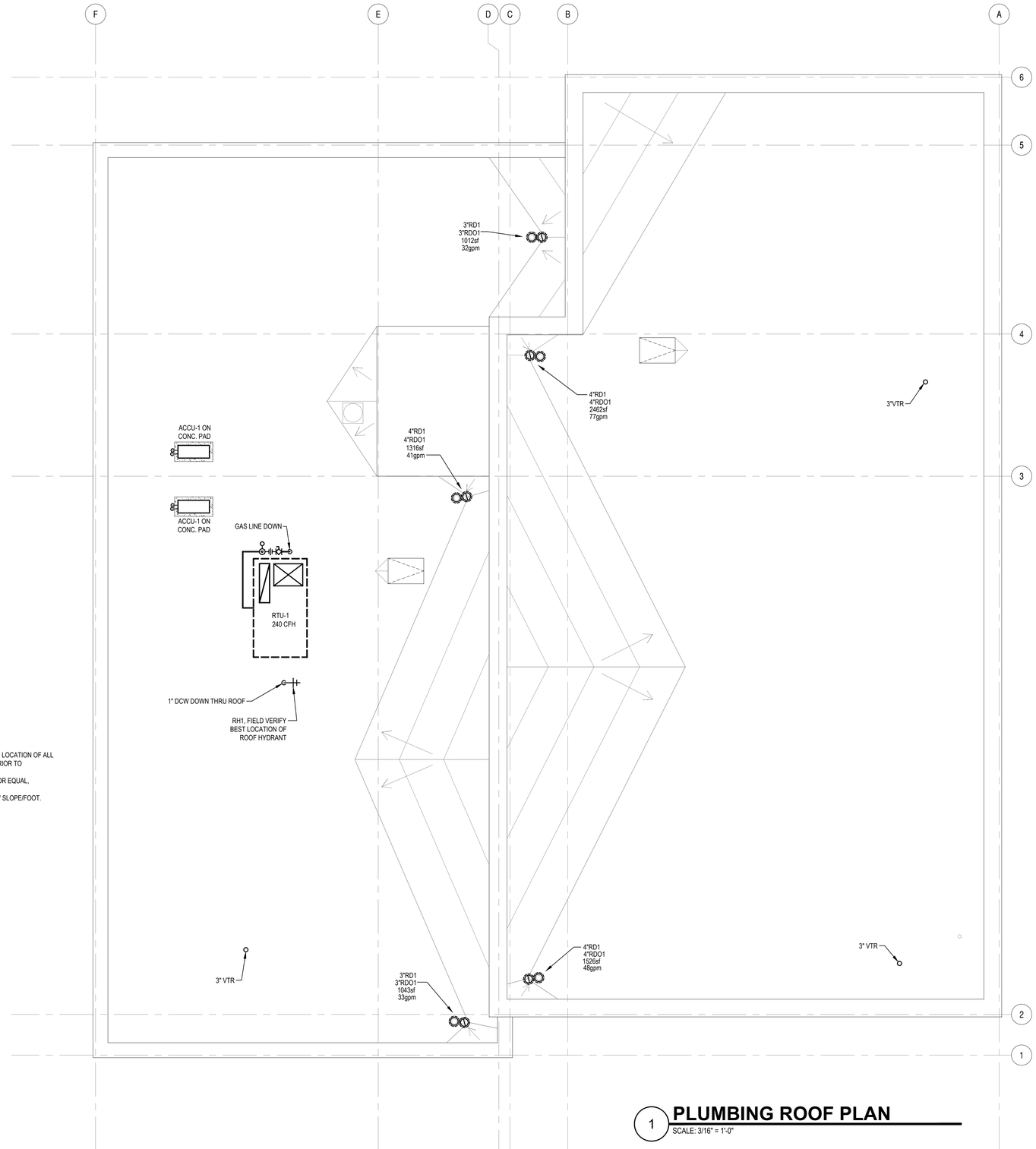

GENERAL NOTES:

1. SEE MECHANICAL DRAWINGS & COORDINATE W/ MECHANICAL CONTRACTOR THE LOCATION OF ALL MECHANICAL EQUIPMENT/DUCTING/PIPING AND PLUMBING EQUIPMENT/PIPING PRIOR TO INSTALLATION.
2. ALL PIPE SIZES SHOWN ON THESE DRAWINGS ARE SIZED PER MANUFACTURER, OR EQUAL, RECOMMENDED PIPE LINE SIZES.
3. ALL STORM & OVERFLOW DRAIN PIPING SIZED AND ROUTED FOR A MINIMUM 1/16" SLOPE/FOOT.

1 **PLUMBING ROOF PLAN**
SCALE: 3/16" = 1'-0"

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PUMBING
ROOF PLAN

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