

SECTION 221000 – FACILITY PLUMBING SYSTEMS

1.00 GENERAL DIVISION 01 AND SECTION 022050 REQUIREMENTS APPLY TO THIS SECTION.

1.01 SUMMARY

- A. SECTION INCLUDES: PLUMBING.
- B. PROVIDE LABOR, MATERIAL AND SERVICES REQUIRED FOR THE INSTALLATION OF COMPLETE AND SATISFACTORILY OPERABLE PLUMBING SYSTEM, INCLUDING EXTENSIONS OF, MODIFICATIONS AND CONNECTIONS TO EXISTING WORK. WORK IS SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN. THE WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
  - 1. COMPLETE SOIL, WASTE, RAIN WATER LEADERS AND VENT PIPING SYSTEMS, INCLUDING GREASE INTERCEPTOR AND CONNECTION TO SITE UTILITIES.
  - 2. COMPLETE COLD AND HOT WATER PIPING SYSTEMS,INCLUDING WATER HEATERS AND PIPING AND EQUIPMENT THERMAL INSULATION.
  - 3. PLUMBING FIXTURES, ALL NECESSARY TRIM AND ACCESSORIES.
  - 4. EXCAVATION AND BACKFILL NECESSARY FOR WORK AND RESTORATION OF DAMAGED SURFACES AS REQUIRED.
  - 5. DEMOLITION AND REMOVAL OF EXISTING MATERIALS AND EQUIPMENT RENDERED USELESS BY NEW WORK.
  - 6. CUTTING, PATCHING, SLEEVES, CHASES, HANGERS, TESTING, AND OTHER ITEMS REQUIRED FOR COMPLETE PLUMBING SYSTEMS.
  - 7. ROUGH IN AND FINAL CONNECTION KITCHEN EQUIPMENT.

1.02 EXAMINATION OF SITE

- A. CONTRACTOR SHALL EXAMINE THE CONSTRUCTION SITE AND EXISTING CONDITIONS AND TO COMPARE FIELD CONDITION WITH THE DRAWINGS AND SPECIFICATIONS.
- B. VERIFY CONDITIONS: VERIFY MEASUREMENTS AND ELEVATIONS IN FIELD AS REQUIRED FOR WORK FABRICATED AND ELEVATIONS IN FIELD AS REQUIRED FOR WORK FABRICATED TO FIT JOB CONDITIONS. BEFORE STARTING WORK, GIVE WRITTEN NOTIFICATION OF ANY EXISTING DEFICIENCIES DETRIMENTAL TO PROPER AND TIMELY INSTALLATION OF WORK.

2.00 PRODUCTS

2.01 MATERIALS

- A. THE TERM "PIPING" AS USED HEREIN SHALL MEAN ALL PIPE, FITTINGS, NIPPLES, VALVES, UNIONS, ETC., AS MAY BE REQUIRED FOR A CONTINUOUS SYSTEM OF PIPING, AND SHALL BE SO CONSIDERED IN THIS SPECIFICATION.
- B. SOIL, WASTE, RAIN WATER LEADERS AND VENT PIPING:  
RAINWATER, SOIL, WASTE AND VENT PIPING BELOW SLAB OR GRADE TO 5'-0" OUTSIDE OF BLDG. LINE SHALL BE SCHEDULE 40 PVC AND FITTINGS. THE GREASE SEWER PIPE SHALL BE HEAVY DUTY SCHEDULE 40 PVC AND PAINTED WITH A RED STRIPE. SOIL VENT LINE SHALL BE SCHEDULE 40 PVC PIPE AND FITTINGS. ALL SEWER LINES SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES AND AS APPROVED BY THE LOCAL AUTHORITIES.
- C. DOMESTIC WATER PIPING:
  - 1. BURIED PIPING SHALL BE TYPE "L" HARD COPPER TUBING, WROUGHT COPPER FITTINGS, LEAD FREE SOLDER JOINTS WITH 95 TIN ANTIMONY. ABOVE GROUND PIPING SHALL BE TYPE "K" COPPER, SILVER SOLDER OR BRAZED JOINTS. 300 PSI TEST
- D. CONDENSATE AND MISCELLANEOUS DRAINS: COPPER TUBING TYPE "M" WITH DWV COPPER SOLDER JOINT DRAINAGE FITTINGS, LEAD FREE EQUIVALENT TO 50-50 SOLDER.
- E. NATURAL GAS (ABOVE GRADE): SCHEDULE 40 BLACK STEEL WITH 150-LB MALLEABLE IRON BLACK SREWED FITTINGS. WHERE EXPOSED TO WEATHER MATERIALS SHALL BE GALVANIZED.
- F. ACID WASTE: WASTE FROM SODA DISPENSING STATIONS, AND SIMILAR ACID WASTE PIPING: SCHEDULE 80 PVC WITH (SOLVENT JOINTS) (ELECTRICALLY FUSED JOINTS SIMILAR TO ORION OR GSR "EUSEAL").

2.02 VALVES

- A. MANUFACTURERS SHALL BE NIBCO, RED, WHITE OR EQUAL. EXCEPT WHERE INDICATED OTHERWISE, ALL VALVES SHALL BE A PRODUCT OF ONE MANUFACTURER.
  - 1. GATE (SIZE 2-1/2 INCH AND SMALLER): BRONZE, CLASS 125, SCREWED BONNET, NON-RISING STEM, WEDGE DISC, 125 SWP, 200 WOG, SREWED ENDS.
  - 2. GLOBE: BRONZE, CLASS 150, UNION BONNET, DISC FOR 250 DEGREE F HOT WATER SERVICE, 150 SWP, 200 WOG, SCREWED ENDS.
  - 3. CHECK (SIZES 2-1/2 INCH AND SMALLER): BRONZE CLASS 125, SCREWED CAP, SWING, Y-PATTERNS, SCREWED CAP, BRONZE DISC, 125 SWP, 200 WOG, SCREWED ENDS.
  - 4. GAS COOKS: DEZURIK OR EQUAL, BRONZE OR SEMI-STEEL BODY, LEVEL HANDLE, LUBRICATED 125 WOG, UL LISTED SCREWED ENDS. SIZES 3-INCH AND LARGER SHALL HAVE FLANGED ENDS.
  - 5. PRESSURE AND TEMPERATURE RELIEF VALVES: ASME, AGA OR UL CODE, LEVER HANDLE, WATTS OR EQUAL.
  - 6. PRESSURE REDUCING VALVES: C.M. BAILEY WATTS, BRONZE BODY WITH STRAINER, SCREWED ENDS SIZES 2-1/2 INCH AND SMALLER.
  - 7. BACKFLOW PREVENTER: REDUCE PRESSURE TYPE, WATTS, FEBCO OR EQUAL.

2.03 PIPING SPECIALTIES

- A. DIELECTRIC UNIONS: EPDQ, CALIPCO OR EQUAL, AT ALL CONNECTIONS BETWEEN FERROUS AND NON-FERROUS PIPE MATERIALS.
- B. UNIONS: GRINNELL OR EQUAL, BRONZE TO IRON SEAT, BLACK OR GALVANIZED TO MATCH PIPING. ANACONDA OR EQUAL FOR COPPER PIPING.
- C. HOSE BIBBS: WOODFORD, CHICAGO OR EQUAL, WITH VACUUM BREAKER, POLISHED CHROME PLATE FINISH. OTHER TYPES AS REQUIRED AND APPROVED.
- D. SHOCK ABSORBERS: ZURN, J.R. SMITH OR EQUAL, SHOKTROL Z1700. SIZED PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE ACCESS DOORS AT EACH SHOCK ABSORBER.
- E. ESCUTCHEONS: CHROME PLATED CAST BRASS OR STAMPED STAINLESS STEEL PLATES, SPLIT TYPE, WITH CHROME PLATED SET SCREW. PROVIDE AT ALL EXPOSED LOCATIONS WHERE PIPE PENETRATES FLOOR, WALL OR CEILING.
- F. FLOOR CLEANOUTS: ZURN, J.R. SMITH OR EQUAL, SERIES Z1400-HD. OTHER TYPES FOR CARPET, LINOLEUM AND TILE FLOOR SHALL BE AS APPROVED. PROVIDE CAST IRON COVER WITH NICKEL BRONZE FRAME AND TOP FOR HEAVY TRAFFIC AREAS. SET DRAINS AND CLEAN-OUT FLUSH WITH FINISH FLOOR.
- G. WALL CLEANOUTS: ZURN, J.R. SMITH OR EQUAL, SERIES 1460-8.
- H. TRAP PRIMERS: ZURN, J.R. SMITH, JOSAM, OR EQUAL, SUITABLE FOR DEAD END SERVICE, ALL BRONZE WITH VACUUM BREAKER WITH GASKETED BRONZE COVER, UNION CONNECTION. AT EACH TRAP PRIMER PROVIDE GATE VALVE AND ACCESS DOOR.
- I. PIPE ISOLATORS: STONEMAN "TRISOLATOR" OR EQUAL. PROVIDE ON ALL BARE BRANCH PIPE RUNS AT POINT OF ATTACHMENT.
- J. PLUMBING VENT FLASHING: FURNISH 2 PIECE, 4 LBS LEAD FLASHING WITH A 4" FLANGE, MANUFACTURED PER SMACNA MANUAL, PLATE 66, FIG.B. LEAD SHALL EXTEND A MINIMUM OF 8" ABOVE ROOF DECK. LEAD CAP SHALL TURN DOWN OVER LEAD FLASHING.
- K. WALL SLEEVES: R-K INDUSTRIES NO. 100 (WALL) AND NO. 10 (DECK), OR EQUAL.
- L. PROVIDE ONE PIECE, 4 LEAD SHEET FOR DRAIN SUMPS. LEAD SHALL BE SIZED TO EXTEND UNINTERRUPTED UP CANTS OR TAPERED EDGE STRIPS, AND TO TERMINATE JUST BELOW DECK LINE. LEAD SHALL MEET FED. SPEC. QQ-1-201, GRADE B.
- M. PROVIDE 4 LBS LEAD FLASHING WITH MINIMUM 4" FLANGE AT PIPES AND CONDUITS. PROVIDE STAINLESS STEEL DRAW BAND AT TOP OF LEAD. SEAL WITH URETHANE SEALER.
- N. DRAINS SHALL BE COATED CAST IRON WITH CAST IRON CLAMPING RING AND STRAINER.
- O. ROOF DRAINS AND OVER FLOW DRAINS: ROOF AND OVERFLOW DOMES SHALL BE COATED CAST IRON OR BRONZE.

2.04 PLUMBING FIXTURES

- A. PROVIDE TRIMS FOR FIXTURES AND APPLIANCES FURNISHED UNDER OTHER SECTIONS AND THIS SECTION OF THE WORK.
- B. TRIM:
  - 1. ALL EXPOSED TRIM, INCLUDING TUBING, TRAPS AND WASTE PIECES, SHALL BE POLISHED CHROME.
  - 2. PROVIDE SEPARATE CONTROL STOPS FOR EACH FIXTURE, POLISHED CHROME PLATED.
  - 3. "P" TRAPS SHALL BE ADJUSTABLE 1-1/4 INCH INLET, 1-1/2" OUTLET FOR LAVATORIES AND 1-1/2 INCH BY 1-1/2 INCH FOR SINKS AS NOTED.

2.05 EQUIPMENT

- A. "RINNAI" GAS FIRED, TANKLESS HOT WATER HEATER, INDOOR UNIT WITH WALL MOUNT BRACKET, PRESSURE RELIEF VALVE AND ADAPTER, ISOLATION VALVE KIT, EXTERNAL PUMP CABLE, CONTROLLER CABLE, VENT SCREENS, 8 YEAR HEATER EXCHANGE WARRANTY, 5 YEAR PARTS AND COMPONENTS WARRANTY, AND 1 YEAR LABOR WARRANTY.
  - (1 YEAR PARTS AND LABOR THROUGH GENERAL CONTRACTOR)
  - 1. THE WATER HEATERS SHALL BE INSTALLED WITH THE COMMERCIAL CONTROLLER AND ALL CABLING AND PARTS REQUIRED FOR A FULLY FUNCTIONAL SYSTEM.

3.00 EXECUTION

3.01 SOIL, WASTE, RAIN WATER LEADERS AND VENT PIPING

- A. PIPING SHALL BE RUN IN PRACTICAL ALIGNMENT AND BE SUPPORTED AT INTERVALS AS SPECIFIED. MINIMUM SLOPES SHALL BE NOT LESS THAN 1/4" FALL PER FOOT, EXCEPT WHERE OTHERWISE SHOWN OR NOTED ON DRAWINGS. NO STRUCTURAL MEMBER SHALL BE WEAKENED OR IMPAIRED BEYOND A SAFE LIMIT BY CUTTING, NOTCHING, UNLESS PROVISION IS MADE FOR CARRYING STRUCTURAL LOAD.
- B. CLEAN OUT SHALL BE INSTALLED WHERE INDICATED AND WHERE REQUIRED PER CODE, OF SAME SIZE AS PIPE. PROVIDE CLEANOUTS AT ENDS OF EACH RUN/IN CHANGE OF DIRECTION FOR RUNS LONGER THAN 5-FEET MEASURED ALONG PIPE UNLESS OTHERWISE NOTED.

3.02 WATER PIPING

- A. NO VALVE SHALL BE INSTALLED WITH STEM BELOW HORIZONTAL. VALVE SHALL BE LINE SIZE, UNLESS OTHERWISE INDICATED.
- B. REDUCING FITTINGS SHALL BE USED IN MAKE REDUCTION IN SIZE OF PIPE. BUSHINGS WILL NOT BE ALLOWED.

3.03 PIPE JOINTS AND CONNECTIONS

- A. JOINTS IN NO-HUB CAST IRON PIPE SHALL BE MADE WITH "CLAMP-ALL" OR "HUSKY" NEOPRENE GASKETS AND 24 GAUGE TYPE 304 STAINLESS STEEL BAND AND SCREW JOINTING ASSEMBLIES. JOIN BELL AND SPIGOT PIPE WITH OAKUM OR SEALITE CAULKING YARN AND CAULK WITH MOLTEN LEAD.

3.04 INSULATION

- A. APPLY INSULATION AFTER ALL TESTS HAVE BEEN SATISFACTORILY COMPLETED.
- B. INSULATE ALL DOMESTIC HOT WATER PIPING, TEMPERED WATER, HOT WATER RETURN AND ALL CONCEALED DOMESTIC COLD WATER PIPING AND RAIN WATER LEADERS WITH 1" THICK PRE-MOLDED GLASS FIBER INSULATION WITH FACTORY APPLIED FIRE RETARDANT VAPOR BARRIER JACKET AND SELF SEALING LAP. INSULATING VALVES SHALL BE BE PER CURRENT ENERGY CODE IN EFFECT.
- C. PIPING INSTALLED OUTDOOR EXPOSED TO WEATHER (HOT WATER, HOT WATER RETURN AND COLD WATER) SHALL BE COVERED WITH 16 MIL SMOOTH ALUMINUM JACKET, INCLUDING ELBOWS, FITTINGS, VALVES AND CIRCULATING PUMP.

3.05 HANDICAP PLUMBING FIXTURES INSTALLATION

- A. PLUMBING FIXTURES INSTALLATION HEIGHT AND TYPE SHALL COMPLY WITH STATE PLUMBING CODE AND ADA REGULATIONS. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO GREATER THAN 5 LBS.
  - 1. WATER CLOSETS: THE HEIGHT OF ACCESSIBLE WATER CLOSETS SHALL BE A MINIMUM OF 17 INCHES AND A MAXIMUM OF 19 INCHES MEASURED TO THE TOP OF THE TOILET SEAT. CONTROLS SHALL BE OPERABLE WITH ONE HAND, AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. CONTROLS FOR THE FLUSH VALVES SHALL BE MOUNTED ON THE WIDE SIDE OF TOILET AREAS, NO MORE THAN 44 INCHES ABOVE THE FLOOR.
  - 2. URINALS:
    - a. URINALS RIM PROJECTING A MINIMUM OF 14 INCHES FROM THE WALL AND AT A MAXIMUM OF 17 INCHES ABOVE THE FLOOR.
    - b. FLUSH CONTROLS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST AND SHALL BE MOUNTED NO MORE THAN 44 INCHES ABOVE THE FLOOR.
  - 3. LAVATORIES:
    - a. LAVATORIES SHALL BE MOUNTED WITH A CLEARANCE OF AT LEAST 29 INCHES FROM THE FLOOR TO THE BOTTOM OF THE APRON WITH KNEE CLEARANCE UNDER THE FRONT LIP EXTENDING A MINIMUM OF 30 INCHES IN WIDTH WITH 8 INCHES MINIMUM DEPTH AT THE TOP. TOE CLEARANCE SHALL BE THE SAME WIDTH AND SHALL BE A MINIMUM OF 9 INCHES HIGH FROM THE FLOOR AND A MINIMUM OF 17 INCHES DEEP FROM THE FRONT OF THE LAVATORIES. THERE SHALL BE 48"x30" PLAN DIMENSIONS CLEAR IN FRONT OF LAVATORY DRAIN.
    - b. HOT WATER AND DRAIN PIPES UNDER LAVATORIES SHALL BE INSULATED WITH HANDI LAV GUARD INSULATION KIT MANUFACTURED BY TRUEBRO INC. OR EQUAL. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES.
    - c. FAUCET CONTROLS AND OPERATING MECHANISMS SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST.

3.06 CLEANING AND PRESERVATION

- A. PLUMBING PIPING, FIXTURES, AND EQUIPMENT SHALL BE THOROUGHLY CLEANED OF SCALE, RUST, LABELS, PRIOR TO ENCLOSING AND PLACING IN OPERATION.
- B. LEAVE ALL EXPOSED METAL AND INSULATION SURFACES CLEAN AND READY TO RECEIVE PAINT.

3.07 TESTS

- A. GENERAL:
  - 1. ACCOMPLISH TESTING OF PIPING IN SECTIONS SO AS NOT TO LEAVE ANY PIPE OR JOINT UNTESTED.
- B. PERFORM TESTS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:  
SYSTEM TESTED GAGE PRESSURE TEST WITH AT START AFTER 4 HOURS  
DOMESTIC WATER 150 LBS. 145 LBS WATER (HOT AND COLD).  
SOIL, WASTE, VENT AND RAIN WATER LEADERS\* 150 LBS. 145 LBS WATER  
  
\* FILL WATER TO TOP OF HIGHEST VENT, ALLOW TO STAND TWO HOURS OR AND RAIN WATER LEADERS LONGER AS DIRECTED BY THE ARCHITECT TO PROVE TIGHT. TESTING MAY BE DONE IN SECTIONS. EACH SECTION TESTED SHALL INCLUDE AT LEAST 10 FEET OF THE UPPER PORTION OF THE NEXT PRECEDING SECTION.  
GAS PIPING 20 LBS. OIL FREE COMP. AIR

3.08 STERILIZATION/CHLORINATION OF DOMESTIC WATER SYSTEM

- A. UPON COMPLETION OF THE WORK, THE ENTIRE NEW DOMESTIC HOT AND COLD WATER PIPING SYSTEMS DOWNSTREAM OF NEW SHUT-OFF VALVES SHALL BE FLUSHED AND STERILIZED BEFORE USE PER CODE.

3.09 COMPLETION

- A. AT COMPLETION OF WORK AND JUST BEFORE OCCUPANCY, PLUMBING FIXTURES, FAUCETS, AND EXPOSED CONNECTIONS, AND INTERIOR OF TRAPS, SHALL BE CLEANED.
- B. REPAIR OR REPLACE ANY DAMAGED FIXTURES, REGULATE FIXTURE SUPPLIES TO GIVE PROPER SUPPLY OF WATER, AND LEAVE IN FIRST CLASS CONDITION.
- C. WHEN WORK IS COMPLETED, REMOVE SURPLUS EQUIPMENT, MATERIALS, AND RUBBISH RESULTING FROM THIS WORK, AND LEAVE BUILDING IN SATISFACTORY CONDITION ACCEPTABLE TO THE ARCHITECT.

3.10 GUARANTEE

- A. GUARANTEE MATERIALS, APPARATUS, EQUIPMENT, AND WORKMANSHIP FURNISHED TO BE FREE FROM DEFECTS, AND REPLACE WITHOUT COMPENSATION WITHIN TWO YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

END OF SECTION

SECTION 221113 – FACILITY WATER DISTRIBUTION PIPING

1.00 GENERAL DIVISION 1 REQUIREMENTS APPLY TO THIS SECTION.

1.01 SUMMARY

- A. SECTION INCLUDES: PROVIDE ALL WATER SERVICE, INCLUDING:
  - 1. YARD PIPING.
  - 2. WATER METER (UNLESS PROVIDED BY WATER SUPPLIER).

1.02 REFERENCES

- A. AWWA: AMERICAN WATER WORKS ASSOCIATION.
- B. INTERNATIONAL PLUMBING CODE.

1.03 PROJECT RECORD DOCUMENTS

- A. SUBMIT DOCUMENTS UNDER PROMISIONS OF SECTION 01720.
- B. RECORD LOCATION OF PIPE RUNS AND CONNECTIONS.
- C. IDENTIFY AND DESCRIBE UNEXPECTED VARIATIONS TO SUBSOIL CONDITIONS OR DISCOVERY OF UNCHARTED UTILITIES.

1.04 REGULATORY REQUIREMENTS

- A. CONFORM TO APPLICABLE STATE AND LOCAL CODE FOR MATERIALS AND INSTALLATION OF THE WORK OF THIS SECTION.

1.05 FIELD MEASUREMENTS

- A. MAKE ALL NECESSARY MEASUREMENT IN THE FIELD TO ENSURE PRECISE FIT OF ITEMS IN ACCORDANCE WITH DRAWINGS AND SPECIFICATIONS.

1.06 COORDINATION

- A. COORDINATE WORK UNDER PROVISIONS OF SECTION 01039.
- B. COORDINATE THE WORK WITH TERMINATION OF WATER CONNECTION OUTSIDE BUILDING, CONNECTION TO WATER METER AND STREET SERVICE, AND TRENCHING.

2.00 PRODUCTS

2.01 PIPE MATERIALS

- A. GENERAL: PROVIDE ELLS, TEES, REDUCING TEES, WYES, COUPLINGS, AND OTHER REQUIRED PIPING ACCESSORIES OF SAME TYPE AND CLASS OF MATERIAL AS CONDUIT, OR OF MATERIAL HAVING EQUAL OR SUPERIOR PHYSICAL AND CHEMICAL PROPERTIES AS ACCEPTABLE TO OWNER'S REPRESENTATIVE.

- B. CAST IRON PRESSURE PIPE: AWWA C106, WITH FITTINGS COMPLYING WITH AWWA C110 AND; RUBBER GASKETS COMPLYING WITH AWWA C111; CAST IRON FITTINGS, ASTM A126.
- C. DUCTILE IRON PIPE: AWWA C106, WITH FITTINGS COMPLYING WITH AWWA C110 AND; RUBBER GASKETS COMPLYING WITH AWWA C111; CAST IRON FITTINGS, ASTM A126.
- D. COPPER TUBE: ASTM B88, SOFT ANNEALED TEMPER; CAST COPPER ALLOY FLARED JOINT FITTINGS, ANSI B16.26.

2.02 CONTROL VALVES

- A. GENERAL: PROVIDE VALVES AND FLOW CONTROL DEVICES AS INDICATED AND REQUIRED BY LOCAL PLUMBING CODES, WHICHEVER IS MORE STRINGENT.

2.03 WATER METERS

- A. GENERAL: THE WATER METERS AND STREET SERVICE LINES WILL BE INSTALLED BY THE LOCAL UTILITY COMPANY, UNLESS UTILITY CONTRACTORS ARE APPROVED TO DO THE WORK. PROVIDE ROUGHING IN AND BYPASS FOR METER IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS.

2.04 ACCESSORIES

- A. GENERAL: PROVIDE ANCHORAGES FOR TEES, PLUGS, CAPS, AND BENDS. AFTER INSTALLATION, APPLY A FULL COAT OF ASPHALT OR OTHER ACCEPTABLE CORROSION RETARDING MATERIAL TO SURFACES OF RODS AND CLAMPS.
  - 1. THRUST BLOCKS: 2500 PSI CONNECT.
  - 2. VALVE BOXES: AS REQUIRED BY CODE.

3.00 EXECUTION

3.01 EXAMINATION

- A. PRIOR TO INSTALLATION, CAREFULLY INSPECT THE INSTALLED WORK OF OTHER TRADES AND VERIFY THAT SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.
- B. VERIFY THAT SYSTEM WILL BE INSTALLED IN STRICT ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS AND ALL PERTINENT CODES AND REGULATIONS, REFERENCED STANDARDS, AND MANUFACTURER'S RECOMMENDATIONS.
- C. IN THE EVENT OF DISCREPANCY, IMMEDIATELY NOTIFY THE PROJECT MANAGER. DO NOT PROCEED WITH INSTALLATION IN AREAS OF DISCREPANCY UNTIL SUCH DISCREPANCIES ARE FULLY RESOLVED.

3.02 PREPARATION

- A. HAND TRIM EXCAVATIONS TO REQUIRED ELEVATIONS. CORRECT OVER EXCAVATIONS WITH FINE COURSE AGGREGATE / LEAN CONCRETE.
- B. REMOVE LARGE STONES OR OTHER HARD MATTER WHICH COULD DAMAGE PIPE OR IMPEDE CONSISTENT BACKFILLING OR COMPACTION.

3.03 INSTALLATION

- A. ALL PIPE AND EQUIPMENT SHALL BE HANDLED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND PERTINENT CODES AND REGULATIONS.
- B. WATER SERVICE PIPING: EXTEND WATER SERVICE PIPING OF SIZE AND IN LOCATION INDICATED TO WATER SERVICE ENTRANCE AT BUILDING. PROVIDE SLEEVE IN FOUNDATION WALL FOR WATER SERVICE ENTRY. MAKE ENTRY WATERTIGHT. PROVIDE BALL VALVE AT WATER SERVICE ENTRY INSIDE BUILDING; STRAINER, PRESSURE GAUGE, TEST TEE WITH VALVE.

3.04 FIELD QUALITY CONTROL

- A. FIELD INSPECTION AND TESTING WILL BE PERFORMED UNDER PROVISIONS OF SECTION 01400.
- B. PRIOR TO BACKFILLING, PIPELINES SHALL BE FLUSHED, CLEARED OF DEBRIS, AND TESTED FREE FROM DEFECTS.
- C. WATER LINE TESTING:
  - 1. BLEED AIR FROM THE LINES.
  - 2. FILL LINES WITH WATER AT LEAST 24 HOURS PRIOR TO TESTING.
  - 3. AFTER VALVES HAVE BEEN INSTALLED, TEST LINES FOR LEAKS AT 150 PSI PRESSURE WITH ALL COUPLINGS AND FITTINGS EXPOSED AND WITH ALL PIPE SECTIONS CENTER LOADED.
  - 4. TESTS SHALL CONFORM TO MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.
  - 5. AFTER LEAKS AND DEFECTS AND DAMAGE HAVE BEEN CORRECTED AND REPAIRED, RETEST LINE UNTIL APPROVED BY OWNER'S PROJECT MANAGER.
- D. IF TESTS INDICATE WORK DOES NOT MEET SPECIFIC REQUIREMENTS, REMOVE WORK, REPLACE AND RETEST AT NO COST TO OWNER.

3.05 PROTECTION

- A. PROTECT FINISHED INSTALLATION UNDER PROVISIONS OF SECTION 01500.
- B. PROTECT PIPE AND AGGREGATE COVER FROM DAMAGE OR DISPLACEMENT UNTIL BACKFILLING OPERATION IS IN PROGRESS.

Revisions

REVISION DATE

PROJECT DATE  
01/07/2022

Drawn By

JCL

Checked By

SDS

Sheet No.

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