2.12 PLUMBING FIXTURES:

A. PROVIDE PLUMBING FIXTURES COMPLETE WITH TRIM. ALL FIXTURES, TRIMMINGS AND STOPS SHALL BE GRADE "A" AND SHALL BE OF ONE MANUFACTURER. TRIM SHALL BE CHROME PLATED BRASS. PLASTIC TRIM WILL NOT BE ACCEPTABLE. REFER TO THE PLUMBING FIXTURE SCHEDULE ON THE DRAWINGS.

B. PLUMBING FIXTURES FOR USE BY HANDICAPPED PERSONS SHALL BE IN ACCORDANCE WITH THE AMERICANS WITH DISABILITIES ACT (ADA) AND/OR LOCAL ACCESSIBILITY CODES.

C. PLUMBING FIXTURES SHALL BE LOW WATER CONSUMPTION TYPE WITH A MAXIMUM OF 1.6 GAL/FLUSH FOR WATER CLOSETS, 0.5 GPM FOR LAVATORIES UNLESS SPECIFIED OTHERWISE.

D. MANUFACTURERS:
1. FIXTURES: AMERICAN STANDARD, SLOAN, ZURN, MANSFIELD OR KOHLER.
2. WATER CLOSET AND URINAL BASIS OF DESIGN: TOTO USA, ALL OTHERS SUBJECT TO APPROVAL BY THE OWNER.
3. LAVATORY/SINK FAUCETS: TOTO ECOPOWER, MOEN COMMERCIAL, CHICAGO FAUCETS, DELTA, SYMMONS, SPEAKMAN, AMERICAN STANDARD OR KOHLER.
4. SERVICE SINKS: KOHLER, AMERICAN STANDARD.
5. TRIM: JAMECO, BRASSCRAFT, MCGUIRE.
6. STAINLESS STEEL SINKS: JUST, ELKAY, ADVANCE TABCO, AMTEKO.
7. ADA INSULATION: TRUEBRO, PLUMBERX.

PART 3 - EXECUTION

3.01 GENERAL:

A. MAKE CONNECTIONS TO ALL FIXTURES, TRAPS AND SIMILAR ITEMS. PLACE INTO OPERATION ALL EQUIPMENT.

B. REFER TO THE ARCHITECTURAL DRAWINGS FOR THE EXACT LOCATION OF FIXTURES AND DRAINS. DETERMINE ROUGHING DIMENSIONS FROM THE MANUFACTURER OF THE EQUIPMENT FURNISHED.

3.02 INSTALLATION:

A. REMOVE STEMS AND WASHERS FROM SOLDER END VALVES AND OTHER ITEM SUBJECT TO DAMAGE BY HEAT DURING INSTALLATION AND REASSEMBLE VALVE AFTER SOLDERING.

B. PROVIDE DIELECTRIC UNION CONNECTORS AT ALL CONNECTIONS BETWEEN NON-FERROUS AND FERROUS METAL PIPING MATERIALS.

C. PIPE OPENINGS SHALL BE CLOSED WITH CAPS OR PLUGS DURING INSTALLATION. TIGHTLY COVER FIXTURES AND EQUIPMENT AND PROTECT AGAINST DIRT, WATER, CHEMICALS AND MECHANICAL INJURY. UPON COMPLETION OF THE WORK, THOROUGHLY CLEAN, ADJUST AND OPERATE THE FIXTURES, MATERIALS AND EQUIPMENT.

D. CUT PIPE ACCURATELY AND WORK INTO PLACE WITHOUT SPRINGING OR FORCING. RUN ABOVE GROUND PIPING PARALLEL WITH THE LINES OF THE BUILDING UNLESS OTHERWISE INDICATED. DO NOT BURY WATER PIPE IN OR UNDER FLOORS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS. MAKE CHANGES IN PIPE SIZES WITH REDUCING FITTINGS. USE OF BUSHINGS WILL NOT BE ACCEPTABLE, MAKE CHANGES IN DIRECTION WITH FITTINGS.

E. SECURELY ANCHOR WATER PIPING TO URINAL AND WATER CLOSET FLUSH VALVES WITHIN THE WALL STRUCTURE DURING THE PLUMBING ROUGH-IN PHASE TO PREVENT MOVEMENT. USE ONLY NON-FERROUS MATERIALS FOR ANCHOR STRAPS OR PIPE CLAMPS.

3.03 HANGERS:

A. SUPPORT HORIZONTAL EQUIPMENT SUCH AS IN-LINE PUMPS, INDEPENDENTLY OF THE PIPING SYSTEM.

B. HANG PIPE FROM SUBSTANTIAL BUILDING STRUCTURE. DO NOT HANG PIPE FROM OTHER PIPING, DUCTWORK, CEILINGS OR STEEL DECKING.

C. PROVIDE A HANGER WITHIN ONE FOOT OF EACH ELBOW.

D. SUPPORT VERTICAL PIPING AT EVERY FLOOR USING RISER CLAMPS. SECURE VERTICAL PIPING DROPS ALONG COLUMNS OR WALLS AT THE TOP AND BOTTOM OF THE DROP AND EVERY 10'-0" ON CENTER.

E. PROVIDE A HANGER WITHIN ONE FOOT OF EACH RISER IN ADDITION TO THE RISER CLAMP SUPPORT AT EVERY FLOOR.

F. ISOLATE COPPER TUBING FROM STEEL SUPPORTS, ANCHORS AND METAL STUDS TO PREVENT ELECTROLYSIS. ISOLATE PIPING WITH NEOPRENE PADS, SHEET LEAD STRIPS OR PLASTIC INSERTS. DUCT TAPE SHALL NOT BE USED TO ISOLATE PIPING.

G. SPACING OF HANGERS AND SUPPORTS FOR ABOVE-GROUND HORIZONTAL PIPING SHALL BE AS FOLLOWS:

NOMINAL PIPE SIZE	MAXIMUM SPACING OF SUPPORTS
1. COPPER TUBING	
1/2"	5'-0"
3/4"	5'-0"
1"	6'-0"
1-1/4"	7'-0"
1-1/2"	8'-[illegible]
2. CAST IRON PIPE	
2" AND LARGER	10'-[illegible]

3.04 INSULATION FOR PIPING:

A. INSULATE ALL VALVES, FLANGES AND FITTINGS. USE PRE-MOLDED MATERIAL WHERE AVAILABLE.

B. INSTALL INSULATION MATERIALS WITH SMOOTH AND EVEN SURFACES, WITH JACKETS DRAWN TIGHT AND CEMENTED DOWN SMOOTHLY AT LONGITUDINAL SEAMS AND END LAPS. DO NOT USE SCRAP PIECES OF INSULATION WHERE A FULL LENGTH OF INSULATION WILL FIT.

C. INSTALL INSULATION, JACKETS AND COATINGS CONTINUOUS THROUGH WALL AND FLOOR OPENINGS AND THROUGH PIPE SLEEVES.

D. INSULATE VALVES, FITTINGS, AND FLANGES WITH FIELD FABRICATED, MULTIPLE MITERED SEGMENTS OF MOLDED PIPE INSULATION OF THE SAME THICKNESS AND MATERIAL AS THE ADJOINING PIPE INSULATION. SECURE SEGMENTS WITH 20 GAUGE GALVANIZED STEEL WIRE AND APPLY A SMOOTHING COAT OF INSULATING CEMENT. USE WHITE FABRIC AND MASTIC ON ALL FITTINGS EXPOSED TO VIEW SUCH AS IN MECHANICAL ROOMS.

E. EXCEPT IN RETURN AIR PLENUMS OR WHERE EXPOSED TO VIEW, PIPE FITTINGS MAY BE INSULATED WITH PRECUT GLASS FIBER APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND FINISHED WITH WHITE ONE-PIECE PVC SHELL COVERS.

3.05 DRAINS:

A. SET FLOOR DRAINS WITH TOPS FLUSH WITH THE FINISHED FLOOR. ROUTE WATER LINE FROM TRAP PRIMER CONNECTION TO FLOOR DRAIN CONCEALED INSIDE WALLS, PARTITIONS AND THE FLOOR SYSTEM.

3.06 CLEANOUTS:

A. PROVIDE CLEANOUTS WHERE INDICATED AND WHERE REQUIRED BY THE APPLICABLE PLUMBING CODE.

B. CLEANOUTS SHALL BE THE SAME SIZE AS THE PIPE IN LINE SIZES 4 INCHES AND SMALLER. PIPE LINES LARGER THAN 4 INCHES SHALL HAVE 4 INCH CLEANOUTS.

C. CLEANOUTS INSTALLED OUTSIDE BUILDINGS SHALL BE THE SAME AS IN FLOORS, SHALL BE FLUSH WITH THE GRADE AND SHALL HAVE MINIMUM 6 INCH THICK, 12 INCH BY 12 INCH CONCRETE PAD POURED AROUND THE COVER. MAKE COVER FLUSH WITH TOP OF CONCRETE.

3.07 PLUMBING FIXTURES:

A. GROUT BETWEEN PLUMBING FIXTURES AND WALLS AND/OR FLOORS.

B. FOR CONNECTION OF FLOOR OUTLET WATER CLOSETS, USE BRASS FLOOR FLANGES. MAKE THE JOINTS BETWEEN CLOSET TRAP AND FLANGE TIGHT WITH GASKETS.

C. MAKE THE CONNECTION OF FIXTURE TRAPS FROM LAVATORIES, DRINKING FOUNTAINS, SERVICE SINKS, ETC. TO CAST IRON WITH D.W.V. TYPE COPPER.

D. SEAL, USING SEALANT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION TT-S-230, FOR THE JOINT BETWEEN URINALS AND WALL AND BETWEEN WATER CLOSETS AND FLOOR.

3.08 TESTS:

A. TEST THE PLUMBING SYSTEM AS REQUIRED BY THE APPLICABLE PLUMBING CODE.

B. TEST DOMESTIC HOT AND COLD WATER PIPING FOR A CONTINUOUS PERIOD OF NOT LESS THAN FOUR HOURS AT A HYDROSTATIC PRESSURE OF NOT LESS THAN 125 PSIG AND MAKE FREE FROM LEAKS. COMPLETELY REMAKE LEAKY JOINTS WITH PIPING DRY. RETEST SYSTEM AFTER LEAKS ARE CORRECTED.

C. PLUG ALL NECESSARY OPENINGS IN THE DRAINAGE AND VENT PIPING SYSTEMS AND FILL THE ENTIRE SYSTEM WITH WATER TO THE LEVEL OF THE HIGHEST VENT STACK ABOVE THE ROOF. HOLD THIS WATER FOR 30 MINUTES WITHOUT SHOWING A DROP IN WATER LEVEL GREATER THAN 4 INCHES. SUBJECT TO APPROVAL OF THE ARCHITECT, THE DRAINAGE SYSTEM MAY BE TESTED IN SECTIONS.

D. TEST NATURAL GAS PIPING AT 50 PSIG MINIMUM USING COMPRESSED AIR OR INERT GAS FOR A MINIMUM OF 6 HOURS WITHOUT A DISCERNIBLE LOSS OF PRESSURE WHEN ADJUSTED FOR TEMPERATURE CHANGES. SUBJECT ALL JOINTS TO A SOAP SUDS TEST DURING TESTING.

3.09 ADJUSTING:

A. PERFORM THE FOLLOWING ADJUSTMENTS BEFORE OPERATION:
1. CLOSE DRAIN VALVES, HYDRANTS, AND HOSE BIBBS.
2. OPEN SHUTOFF VALVES TO FULLY OPEN POSITION.
3. OPEN THROTTLING VALVES TO PROPER SETTING.
4. ADJUST BALANCING VALVES IN HOT-WATER-CIRCULATION RETURN PIPING TO PROVIDE ADEQUATE FLOW.
   a. MANUALLY ADJUST BALL-TYPE BALANCING VALVES IN HOT-WATER-CIRCULATION RETURN PIPING TO PROVIDE FLOW OF HOT WATER IN EACH BRANCH.
   b. ADJUST CALIBRATED BALANCING VALVES TO FLOWS INDICATED.
5. REMOVE PLUGS USED DURING TESTING OF PIPING AND PLUGS USED FOR TEMPORARY SEALING OF PIPING DURING INSTALLATION.
6. REMOVE AND CLEAN STRAINER SCREENS. CLOSE DRAIN VALVES AND REPLACE DRAIN PLUGS.
7. REMOVE FILTER CARTRIDGES FROM HOUSINGS AND VERIFY THAT CARTRIDGES ARE AS SPECIFIED FOR APPLICATION WHERE USED AND ARE CLEAN AND READY FOR USE.
8. CHECK PLUMBING SPECIALTIES AND VERIFY PROPER SETTINGS, ADJUSTMENTS, AND OPERATION.

3.10 STERILIZATION:

A. DISINFECT THE POTABLE WATER SYSTEM IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODE. AFTER DISINFECTION, SEND WATER SAMPLES TO THE LOCAL HEALTH DEPARTMENT FOR TESTING. OBTAIN APPROVAL OF THE LOCAL HEALTH DEPARTMENT BEFORE THE SYSTEM IS PLACED INTO SERVICE.

B. UNLESS THE LOCAL HEALTH DEPARTMENT REQUIRES OTHERWISE, DISINFECT POTABLE WATER PIPING UPON COMPLETION OF INSTALLATION BY A MIXTURE CONTAINING NOT LESS THAN 0.6 POUNDS OF HIGH TEST CALCIUM HYPOCHLORITE, OR 2 POUNDS OF CHLORINATED LIME TO EACH 1000 GALLONS OF WATER TO PROVIDE NOT LESS THAN 50 PPM OF AVAILABLE CHLORINE. INJECT THE MIXTURE INTO THE SYSTEM AND RETAIN FOR NOT LESS THAN 24 HOURS, AT WHICH TIME THE CHLORINE LEVEL SHALL BE AT 10 PPM OR GREATER. THEN DRAIN THE SYSTEM AND FLUSH WITH POTABLE WATER UNTIL ONLY A NORMAL CHLORINE RESIDUAL REMAINS (0.2 PPM).

C.

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2018 MRRF CAMPUS-WIDE ADA IMPROVEMENTS
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GEORGIA STATE UNIVERSITY
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