PLUMBING SPECIFICATIONS

PART 1 – GENERAL

1.01 DESCRIPTION
- A. THE WORK INCLUDES THE PROVIDING OF ALL LABOR, MATERIALS, AND SERVICES NECESSARY TO INSTALL THE INDICATED SYSTEMS. COMLPETE WITH HANGERS, SUPPORTS, EQUIPMENT AND CONNECTIONS REQUIRED TO ANY FIXTURE OR EQUIPMENT INDICATED OR SPECIFIED.
- B. THE WORK INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
  1. SANITARY WASTE AND VENT PIPING SYSTEMS.
  2. DOMESTIC WATER PIPING SYSTEMS.

1.02 – ALL WORK
- A. SHALL BE PERFORMED BY MECHANICS SKILLED IN THE PARTICULAR CLASS OF WORK AND ALL EQUIPMENT SHALL BE INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE WORK SHALL BE COORDINATED WITH OTHER TRADES AND RESPONSIBILITIES ESTABLISHED SO THAT THE WORK SHALL BE COMPLETED WITHOUT DELAYS OR INTERFERENCE WITH SCHEDULES.

1.03 – CUTTING AND PATCHING
- A. WHERE REQUIRED, THE PLUMBING CONTRACTOR SHALL DO TEH CUTING AND PATCHING USING WORKERS WHO ARE SKILLED IN THE TRADE INVOLVED. THE COMPLETED WORK SHALL PRESENT A FINISHED WORKMANLIKE APPEARANCE.

1.04 – PIPING AND DRAWINGS
- A. THE DRAWINGS ARE DIAGRAMMATIC AND NOT INTENDED TO SHOW IN DETAIL ALL FEATURES OF THE WORK. THE LOCATION OF ALL PIPING SHALL BE COORDINATED TO DETERMINE THAT IT CLEARS ALL OPENINGS AND STRUCTURAL MEMBERS, THAT PIPING INDICATED AS CONCEALED CAN BE PROPERLY CONCEALED IN WALLS OR PARTITIONS OF FINISHED ROOMS, AND THAT IT DOES NOT INTERFERE WITH LIGHTS OR EQUIPMENT HAVING FIXED LOCATIONS. CONCEAL ALL PIPING EXCEPT WHERE NOTED OTHERWISE.

1.05 – OPENINGS IN EXISTING CONCRETE CONSTRUCTION
- A. SHALL BE CORE DRILLED OR CUT WITH MASONRY SAW. PNEUMATIC TOOLS WILL NOT BE PERMITTED. THE INTEGRITY OF THE FIRE RATING OF WALLS, CEILINGS AND FLOORS SHALL MEET LIFE SAFETY AND LOCAL CODES.

1.06 – EXCAVATION AND BACKFILL
- A. IN ACCORDANCE WITH CIVIL REQUIREMENTS.

1.07 – TRAPS
- A. EACH FIXTURE, EQUIPMENT DRAIN OR FLOOR DRAIN SHALL BE SEPARATELY TRAPPED, UNLESS OTHERWISE INDICATED OR SPECIFIED.

1.08 – UNIONS
- A. INSTALL ON ONE SIDE OF EACH VALVE OR CONNECTION TO EQUIPMENT.

1.09 – SHOP DRAWINGS
- A. SEVEN (7) COPIES OF SHOP DRAWINGS OF EACH ITEM LISTED IN THE "EQUIPMENT SCHEDULES" OR ELSEWHERE ON THE DRAWINGS AND IN THE SPECIFICATIONS. (THESE SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT AND APPROVED BY THE ARCHITECT BEFORE THE PLUMBING CONTRACTOR MAY PURCHASE THE EQUIPMENT OR MATERIALS). TWO (2) SETS WILL BE RETAINED BY THE ARCHITECT.
- B. SHOP DRAWINGS SHALL BE SUBMITTED WITH ALL EQUIPMENT ITEMS COMPLETE AT ONE TIME. SHOP DRAWINGS SHALL BE PRESENTED IN BOOK FORM IN A HARDBACKED BINDER WITH HEAVY PAPER DIVIDERS FOR EACH PARAGRAPH OF THE SPECIFICATION DELINEATING AN ITEM OR ITEMS OF EQUIPMENT. DIVIDERS SHALL BE PROVIDED WITH SUBSTANTIAL STAGGERED INDEX TABS, WITH EACH TAB NUMBERED WITH TEH SPECIFICATION PARAGRAPH NUMBER FOR THE INCLUDED ITEM(S) OF EQUIPMENT. IN ADDITION, AN INDEX LISTING EACH TAB DIVISION WITH EQUIPMENT COVERED SHALL BE PROVIDED AT THE FRONT OF THE SUBMITTAL BOOK. ITEMS PRESENTED SINGLY FOR APPROVAL WILL NOT BE ACCEPTABLE.
- C. COORDINATE THE LOCATION OF FLOOR DRAINS, PIPING AND OTHER PERTINENT ITEMS WITH THE WORK OF OTHER TRADES. INSTALATION OF THESE ITEMS SHALL BE MADE AFTER RECEIPT OF AND IN ACCORDANCE WITH THE APPROVED SHOP DRAWINGS.

1.10 – GUARANTEE
- A. ALL EQUIPMENT, MATERIAL, ACCESSORIES AND INSTALLATION SHALL CARRY A GUARANTEE AGAINST DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE. EACH SYSTEM AS A WHOLE, AND IN ALL ITS PARTS, SHALL BE GUARANTEED TO FUNCTION CORRECTLY UP TO THE SPECIFIED CAPACITY. SHOULD A SYSTEM, OR ANY PART THEREOF, FAILS TO MEET THE PERFORMANCE RERQUIREMENTS, NECESSARY REPLACEMENTS, ALTERNATIONS OR REPAIRS SHALL BE MADE TO BRING PERFORMANCE UP TO SPECIFIED REQUIREMENTS. BUILDING CONSTRUCTION FINISHES DAMAGED OR MARRED SHALL BE RESTORED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE. ALL OF THE ABOVE DESCRIBED SHALL BE DONE WITHOUT COST TO THE OWNER.

PART 2 – PRODUCTS

2.01 – GENERAL
- A. ALL MATERIALS SHALL BE NEW AND FREE FROM ALL DEFECTS. THESE SPECIFICATIONS LIST ALL OF THE ACCEPTABLE MATERIALS FOR A GIVEN SERVICE, ONE OF WHICH SHALL BE USED UNLESS OTHERWISE SPECIFICALLY NOTED.
- B. THE QUALITY AND WEIGHT OF MATERIALS FURNISHED AND INSTALLED SHALL COMPLY WITH THE REQUIREMENTS OF THE APPROPRIATE STANDARDS OF THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM), LIFE SAFETY CODE AND THE LOCAL PLUMBING CODE.

2.02 – PIPE AND FITTINGS
- A. GENERAL: ALL PIPING SHALL BE RUN STRAIGHT, PLUMB AND PROPERLY GRADED IN DIRECTION INDICATED ON DRAWINGS. CUT PIPE SHALL BE SQUARELY CUT AND PROPERLY REAMED TO REMOVE ALL CUTTINGS AND BURRS BEFORE MAKING UP THE JOINTS. FITTINGS AND NIPPLES SHALL BE OF THE SAME MATERIALS AS THE PIPE.
- B. CPVC SCHEDULE 80 PIPE SHALL BE SUITABLE FOR USE AT MAXIMUM WORKING PRESSURE OF 150 PSI. ALL PIPE MUST MEET THE REQUIREMENTS OF ASTM D–1784, ASTM F–441, AND NSF STANDARD 41. SOCKET TYPE FITTINGS SHALL MEET ASTM F–439. THREADED FITTINGS SHALL MEET ASTM F–437 WITH THREADED BRASS INSERT BY IPT/HARRINGTON OR ACCEPTABLE ALTERNATIVE. SOLVENT WELD MATERIAL SHALL BE SOLVENT CEMENT MEETING THE REQUIREMENTS OF ASTM F–493.
- C. PLASTIC PIPE AND FITTINGS: PIPE SHALL BE SCHEDULE 40 PVC CONFORMING TO ASTM D–1785. FITTINGS SHALL BE PVC CONFORMING TO ASTM D–2466. SOLVENT CEMENT SHALL CONFORM TO ASTM D–2564.

2.03 – VALVES
- A. GENERAL: VALVE NUMBERS ARE SPECIFIED TO ESTABLISH TYPE AND QUALITY. EQUIVALENT VALVES WILL BE CONSIDERED FOR APPROVAL.
- B. DOMESTIC WATER PIPING:
  1. GATE VALVES: 2" AND SMALLER – CRANE # 428 OR #438 AS APPLICABLE; 2½" IPS AND LARGER – CRANE #465–1/2 OR #461 AS APPLICABLE.
  2. CHECK VALVES: 2" IPS OR SMALLER – CRANE #37; 2½" OR LARGER, CRANE #373.
  3. HOSE BIBBS: CHICAGO FAUCET #387 WITH WATTS # 8A BACKFLOW PREVENTER. KEY OPERATED HANDLES.
  4. BALL VALVES: FULL PORT BALL VALVES WITH STAINLESS STEEL STEM AND BALL WITH TEFLON SEAT AND RINGS.

2.04 – CLEANOUTS
- A. WHERE INDICATED AND AT THE BASE OF ALL RISERS. ADDITIONAL CLEANOUTS AT THE CONTRACTORS OPTION FOR TEH CONVENIENCE OF TESTING AND ERECTION. CLEANOUTS INSTALLED IN FLOORS WITH THE ADJOINING ARCHITECTURAL FINISHING MATERIAL. CLEANOUTS LOCATED OUTSIDE THE BUILDING SHALL BE TWO–WAY TYPE. JOSAM MODEL NUMBERS ARE INDICATED BELOW. COMPARABLE MODEL NUMBERS BY WADE, J.R. SMITH, OR ZURN WILL BE CONSIDERED FOR APPROVAL.
- B. CLEANOUT PLUGS: JOSAM 58540–20
- C. CLEANOUT IN WALLS: JOSAM 58790–22
- D. CLEANOUT IN CONCRETE AND TERRAZZO FLOOR FINISHES: JOSAM 58460A–2

2.05 – PIPE HANGERS
- A. HANGERS SHALL BE OF CLEVIS TYPE, MSS SP–58, TYPE 1.

2.06 – WATER HAMMER ARRESTORS
- A. IN CONFORMANCE WITH PLUMBING AND DRAINAGE INSTITUTE # PDI–WH–301

PLUMBING SPECIFICATIONS

2.07 PLUMBING FIXTURES
- A. GENERAL: ALL PLUMBING FIXTURES SHALL BE "FIRST QUALITY". ALL ENAMELED IRON FIXTURES SHALL HAVE ACID RESISTING WHITE ENAMEL. ALL FIXTURES AND FITTING PROPOSED SHALL BE FROM ONE MANUFACTURER AND OF SIMILIAR CHARACTER. ESCUTHEONS, HANDLES, ETC. ON THE DIFFERENT FIXTURES SHALL BE OF THE SAME DESIGN. ALL FIXTURES AND FITTINGS PROPOSED SHALL BE SUBMITTED FOR APPROVAL WITH CATALOG CUTS AND FULL DESCRIPTION. ALL EXPOSED METAL AND PIPING NOT OTHERWISE SPECIFIED SHALL BE POLISHED CHROMIUM ON BRASS OR BRONZE. ALL COLD WATER SUPPLY TO FIXTURES SHALL BE PROVIDED WITH STOPS OF THE LOOSE KEY TYPE.
- B. SEE DESIGN BASIS FOR FIXTURE SPECIFICATIONS. WHERE FIXTURE TYPES REFER TO THOSE MANUFACTURED BY AMERICAN STANDARD, UNLESS OTHERWISE NOTED, THESE NUMBERS ARE USED TO INDICATE TYPE AND QUALITY OF FIXTURES DESIRED. FIXTURES OF EQUAL QUALITY MANUFACTURED BY AMERICAN STANDARD, CRANE, ELJER, KOHLER, OR ZURN WILL BE CONSIDERED FOR APPROVAL. HANGER SUPPORTS AND CARRIERS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

2.08 – THERMAL INSULATION
- A. GENERAL: NO INSULATION SHALL BE INSTALLED UNTIL THE PIPING SYSTEMS HAVE BEEN CHECKED AND FOUND FREE OF ALL LEAKS. SURFACES SHALL BE CLEAN AND DRY BEFORE ATTEMPTING TO APPLY INSULATION. INSULATION SHALL BE INSTALLED BY A PROFESSIONAL INSULATION CONTRACTOR WITH ADEQUATE EXPERIENCE AND ABILITY TO PERFORM THE WORK. THE CONTRACTOR SHALL VERIFY THAT ALL MATERIALS COMPLY WITH THE SPECIFICATIONS.
- B. DOMESTIC WATER PIPING:
  1. MATERIAL: SHALL BE INSULATED WITH 1" THICK JOHNS–MANVILLE FLAME SAFE AF–T FIBERGLASS PIPE INSULATION.
  2. APPLICATION: PRIOR TO INSTALLING THE INSULATION, THE PRESSURE RELEASE PAPER SHALL BE REMOVED FROM THE JACKET LAPS. PIPE INSULATION SHALL BE SECURED IN PLACE BY APPLYING PRESSURE TO THE PRESSURE SENSITIVE CLOSURE SYSTEM. ELBOWS SHALL BE INSULATED WITH JOHNS–MANVILLE UNIFIT PVC FITTING COVERS. VALVES AND OTHER IRREGULAR SHAPED FITTINGS SHALL BE INSULATED WITH PIPE INSULATION SEGMENTS AND FINISHED WITH A SKIM COAT OF AIR DRYING JOHNS–MANVILLE 375 CEMENT AND WHITE GLASS FABRIC DIPPED IN FOSTER'S 30–60 COATING OR EQUAL.

PART 3 – EXECUTION

3.01 – SOIL, WAST, AND VENT PIPING
- A. BURIED PIPING: SOIL AND WASTE PIPE AND FITTINGS BELOW THE FLOOR SLAB AND TO THE BUILDING FIVE FOOT LINE SHALL BE OF SCHEDULE 40 PVC PLASTIC AND SHALL BE PROVIDED WITH A LOCATOR WIRE #12 GAGE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
- B. ABOVE GRADE: SOIL, WASTE AND VENT PIPING AND FITTINGS SHALL BE SCHEDULE 40 PVC.

3.02 – DOMESTIC WATER PIPING
- A. ALL PIPE AND FITTINGS SHALL BE SCHEDULE 80 CPVC.

3.03 – CLEANING AND PROTECTION OF PIPE
- A. BEFORE BEING PLACED IN POSITION, PIPE AND FITTINGS SHALL BE CLEANED CAREFULLY. ALL PIPE SHALL BE MAINTAINED IN A CLEAN CONDITION.

3.04 – PIPE IN TRENCHES
- A. SEWER AND WATER PIPING SHALL BE PLACE IN SEPARATE TRENCHES.
- B. WATER PIPING SHALL BE BURIED AT A DEPTH OF 0'–6" BELOW THE FROST LINE OR A MINIMUM OF 1'–0", WHICHEVER IS GREATER.

3.05 – INSTALLATION OF SCREW–JOINT PIPING (IF USED)
- A. ALL PIPING SHALL BE CUT ACCURATELY TO MEASUREMENTS ESTABLISHED BY THE CONTRACTOR AND SHALL BE WORKED INTO PLACE WITHOUT SPRINGING OR FORCING. PROPER PROVISION SHALL BE MADE FOR THE EXPANSION AND CONTRACTION OF ALL PIPE LINES. PIPE AND FITTINGS SHALL BE FREE FROM FINS AND BURRS. SCREW JOINTS IN WATER PIPING SHALL BE MADE WITH A LUBRICANT APPLIED ON THE MALE THREADS ONLY. THREADS SHALL BE FULL CUT AND NOT MORE THAN THREE THREADS ON THE PIPE SHALL REMAIN EXPOSED. ALL FERROUS PIPE THREADS, AFTER BEING INSTALLED AND TESTED, SHALL BE GIVEN ONE COAT OF RED LEAD AND OIL PAINT. UNIONS AND UNION TYPE CONNECTIONS AND SHUT–OFF VALVES SHALL BE PROVIDED FOR ALL FIXTURES AND EQUIPMENT READY FOR DISCONNECTION. ON FERROUS PIPE 3" DIAMETER OR SMALLER, UNIONS SHALL BE 150 PSI STEAM WORKING PRESSURE MALLEABLE IRON GROUND JOINT TYPE. PIPE HUNG FROM CEILINGS SHALL BE SUPPORTED BY HEAVY, ADJUSTABLE HANGERS CONFORMING TO MSS SP–59. ALL HANGERS AND COLLARS SHALL BE OF SIZES SUITABLE FOR THE WEIGHT OF THE PIPE. ALL CHANGES IN SIZES OF PIPE SHALL BE MADE WITH REDUCING FITTINGS.

3.06 – WATER HAMMER ARRESTORS
- A. WATER HAMMER ARRESTORS SHALL BE PROVIDED INSTEAD OF SITE FABRICATED AIR CHAMBERS, AND SHALL BE SIZED AS REQUIRED AND INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

3.07 – SANITARY SYSTEMS
- A. SANITARY SYSTEMS SHALL BE PROVIDED WHERE APPLICABLE WITH Y FITTINGS AND ⅛ OR ⅙ BENDS OR COMBINATION Y AND ⅛ BENDS. ALL FIXTURES NOT SPECIFIED TO BE PROVIDED WITH TRAPS AS INTEGRAL PARTS OF THEIR OUTFITS AND ALL DRAINS SHALL HAVE SEPARATE TRAPS WITH CLEANOUTS. WASTE LINES SHALL NOT BE LESS THAN 2 INCHES IN DIAMETER. ALL FIXTURES SHALL BE INDIVIDUALLY VENTED, OR SHALL BE CONNECTED TO A VENTED SOIL OR WASTE LINE. UNLESS INDICATED OTHERWISE, SANITARY PIPING SHALL FORM CIRCUIT OR LOOP VENTS WITH NO DEAD ENDS OR INVERTED SIPHONS. CIRCUIT OR LOOP VENT LINES SHALL BE CONNECTED AT A HEIGHT OF NOT LESS THAN 1'–0" ABOVE THE FIXTURES SERVED. HORIZONTAL VENTS SHALL SLOPE DOWN TO WASTE OR SOIL BRANCH OR STACK. HORIZONTAL SOIL AND WASTE PIPING, GENERALLY, SHALL BE GRADED ⅛ INCH PER FOOT. VERTICAL STACKS SHALL BE EXTENDED FULL SIZE AS VENTS TO NOT LESS THAN 1'–0" ABOVE THE ROOF AND SHALL BE PLACED IN A POSITION BEFORE THE ROOFING IS APPLIED. WHERE PRACTICABLE, TWO OR MORE VENT LINES MAY BE CONNECTED AND EXTENDED AS ONE PIPE THROUGH THE ROOF. CLEANOUTS SHALL BE INSTALLED AT TEH FOOR OF EACH SOIL OR WASTE LINE, AT CHANGES IN DIRECTION IN THE LINES, AND WHERE INDICATED; HOWEVER, WITHIN THE BUILDINGS, THE DISTANCE BETWEEN CLEANOUTS IN HORIZONTAL RUNS SHALL IN NO CASE EXCEED 50'–0". CLEANOUTS SHALL BE PIPE SIZE EXCEPT NO CLEANOUT SHALL EXCEED 6 INCHES IN DIAMETER. VENT FLASHING AT THE ROOF SHALL EXTEND NOT LESS THAN 0'–8" FROM THE VENT PIPE IN ALL DIRECTIONS. LEAD FLASHING SHALL BE TURNED DOWN INTO THE PIPES OR HUBS.

3.08 – WATER SYSTEMS
- A. WATER SYSTEMS SHALL BE INSTALLED WITH A FALL TOWARDS THE SHUT–OFF VALVE OR THE LOWEST FIXTURE. BRANCHES FROM COLD WATER LINES SHALL BE PROVIDED TO FIXTURES AND OUTLETS AS INDICATED.

3.09 – WATER VALVES
- A. WATER VALVES SHALL BE INSTALLED IN ACCESSIBLE PLACES AND SHALL BE LOCATED AS FOLLOWS:
  1. VALVE WITH HOSE CONNECTION ON THE BUILDING SIDE OF THE MAIN SHUT–OFF VALVE
  2. SHUT–OFF VALVE ON EACH SUPPLY TO EACH FIXTURE NOT PROVIDED WITH COMPRESSION STOP
  3. VALVES SHALL BE PROVIDED ON ALL BRANCHES SERVING MORE THAN ONE FIXTURE

3.10 – INSTALLATION OF FIXTURES
- A. CONNECTIONS BETWEEN WATER CLOSETS AND THE FLANGES ON SOIL PIPE SHALL BE MADE GAS TIGHT WITH ONE PIECE SPECIAL MOLDED GASKET. ALL BULK MATERIAL, INCLUDING PUTTY AND PLASTICS SHALL NOT BE USED. FLOOR DRAINS SHALL BE SECURED TO THE WATERPROOFING OR FLASHING IN A WATER TIGHT MANNER. EXACT ROUGH–IN LOCATIONS FOR FIXTURES AND FLOOR DRAINS SHALL BE DETERMINED FROM THE ARCHITECTURAL DRAWINGS.

3.11 – SUPPORTS AND FASTENINGS
- A. PLUMBING FIXTURES, TRIMMINGS, ACCESSORIES AND APPURTENANCES SHALL BE SECURED TO CONCRETE BY ¼" BRASS EXPANSION BOLTS NOT LESS THAN 4" LONG, AND TO GYPSUM WITH STEEL PLATES ⅜" THICK, 6" WIDE AND NOT LESS THAN 24" LONG AT THE BACK OF THE THROUGH BOLTS. EXPANSION BOLTS SHALL BE A LENGTH SUFFICIENT TO EXTEND AT LEAST 3" INTO SOLID CONCRETE. THROUGH BOLTS SHALL BE PROVIDED WITH PLATES OR WASHERS AT THE BACK AND SET SO THAT HEADS, NUTS AND WASHERS WILL BE CONCEALED BY THE WALL MATERIAL. EXPOSED HEADS OF BOLTS AND NUTS SHALL BE NICKEL–CHROMIUM PLATED HEZAGONS WITH ROUNDED TOPS. WHERE NECESSARY, NICKEL–CHROMIUM PLATED WASHERS SHALL BE PROVIDED.

PLUMBING SPECIFICATIONS

3.12 – PIPE SLEEVES
- A. PIPE SLEEVES SHALL BE PROVIDED WHERE PIPES PASS THROUGH MASONRY OR CONCRETE WALLS, FLOORS, ROOFS, AND PARTITIONS. SLEEVES SHALL BE PLACED DURING CONSTRUCTION OF THE BUILDING AND AT NO TIME SHALL JACK HAMMERS BE USED. SLEEVES IN OUTSIDE WALLS BELOW AND ABOVE GRADE, OR IN FLOOR SLABS, SHALL BE ZINC–COATED SHEET STEEL. SPCE BETWEEN PIPE, TUBING OR INSULATION AND THE SLEEVE SHALL NOT BE LESS THAN ¼". SLEEVES SHALL BE HELD SECURELY IN PROPER POSITION AND LOCATION BEFORE AND DURING CONSTRUCTION. ALL SLEEVES SHALL BE OF SUFFICIENT LENGTH TO PASS THROUGH ENTIRE THICKNESS OF WALLS, PARTITIONS OR SLABS. SLEEVES IN FLOOR SLABS SHALL EXTEND 2" ABOVE FINISHED FLOOR. SPACE BETWEEN THE PIPE AND THE SLEEVE CONSTRUCTION SHALL BE PROVIDED WITH FLANGE AND CLAMPING RING. SLEEVES ARE NOT REQUIRED IN FLOOR SLABS LOCATED ON GRADE EXCEPT THAT COPPER PIPE SHALL NOT COME INTO CONCRETE.

3.13 – STERILIZATION
- A. PRIOR TO STARTING WORK, VERIFY SYSTEM IS COMPLETE, FLUSHED AND CLEAN.
- B. ENSURE pH OF WATER TO BE TREATED IS BETWEEN 7.4 AND 7.6 BY ADDING ALKALI (CAUSTIC SODA OR SODA ASH) OR ACID (HYDROCHLORIC).
- C. INJECT DISINFECTANT, FREE CHLORINE IN LIQUIFIED, POWDER, TABLET OR GAS FORM, THROUGHOUT THE SYSTEM TO OBTAIN 50 TO 80 MG/L RESIDUAL.
- D. BLEED WATER FROM OUTLETS TO ENSURE DISTRIBUTION AND TEST FOR DISINFECTANT RESIDUAL AT MINIMUM OF 15% OF OUTLETS.
- E. MAINTAIN DISINFECTANT IN SYSTEM FOR 24 HOURS.
- F. IF FINAL DISINFECTANT RESIDUAL TESTS LESS THAN 25MG/L, REPEAT TREATMENT.
- G. FLUSH DISINFECTANT FROM SYSTEM UNTIL RESIDUAL EQUAL TO THAT OF INCOMING WATER OR 1.0 MG/L.
- H. TAKE SAMPLES NO SOONER THAN 24 HOURS AFTER FLUSHING, FROM 10% OF OUTLETS AND FROM WATER ENTRY, AND ANALYZE IN ACCORDANCE WITH AWWA C651.
- I. A TESTING FIRM COMPANY SPECIALIZING IN TESTING POTABLE WATER SYSTEMS SHALL BE APPROVED BY THE STATE.
- J. A CERTIFICATE SHALL BE SUBMITTED TO OWNER THAT CLEANLINESS OF WATER DISTRIBUTION MEETS OR EXCEEDS STATE HRS REQUIREMENTS.

3.14 – ANCHORING, GUIDING AND SUPPORTING OF PIPING
- A. ALL PIPING SHALL BE ANCHORED AND SUPPORTED IN A MANNER SUCH THAT EXPANSION AND CONTRACTING WILL TAKE PLACE IN THE DIRECTION DESIRED AND VIBRATION AND UNDUE STRAINS ON EQUIPMENT WILL BE PREVENTED BY USE OF VIBRATION DAMPENERS. HANGERS USED FOR THE SUPPORT OF PIPING, 2" NOMINAL PIPE SIZE AND LARGER SHALL BE FABRIACATED TO PERMIT ADEQUATE ADJUSTMENT AFTER ERECTION WHILE STILL SUPPORTING THE LOAD. WALL BRACKETS SHALL BE USED WHERE PIPES ARE ADJACENT TO WALL OR OTHER VERTICAL SURFACES THAT MAY BE USED FOR SUPPORTS. SUPPORTS SHALL BE PROVIDED WITH A TYPE 40 PIPE COVERING PROTECTION SADDLE AT EACH SUPPORT IN ACCORDANCE WITH TABLE 4 OF SP–69. PIPE SUPPORTS SHALL BE SPACED TO PROVIDE ADEQUATE SUPPORT FOR THE PIPES, THE MEDIUM IN THE PIPE, INSULATION, VALVES AND FITTINGS; SPACING OF SUPPORTS SHALL BESUCH AS TO PREVENT THE FORMING OF POCKETS. THE MAXIMUM HORIZONTAL SPACING FOR METAL PIPING BETWEEN PIPE SUPPORTS SHALL CONFORM TO TABLE 3 OF MSS SP–69, EXCEPT THAT CAST IRON SOIL PIPE SHALL HAVE A MAXIMUM SPACING BETWEEN HANGERS OF 5'–0". VERTICAL PIPING SHALL BE SUPPORTED BY BOLTED STEEL CLAMPS OR TYPE CONFORMING TO MSS SP–69. PIPE HANGERS SHALLBE ISOLATED FROM UNINSULATED METAL PIPE WITH NEOPRENE PADS SUCH THAT ORGAN MUSIC WILL NOT PERMIT OR CAUSE THE PIPE TO VIBRATE WITHIN THE SUPPORT.

3.15 – INSTRUCTION MANUALS
- A. FURNISH FOUR (4) COMPLETE COPIES OF INSTRUCTIONS EXPLAINING OPERATION AND MAINTENANCE AND REPLACEMENT PARTS LISTS FOR THE FAUCET TRIM, FLUSH VALVES, AND FIXTURES.

3.16 – SAFETY CODE
- A. ALL PIPING IN ACCORDANCE WITH ANSI A13.1981.

3.17 – AS–BUILT DRAWINGS
- A. PROVIDE A COMPLETE SET OF REPRODUCIBLE "AS–BUILT" DRAWINGS AT JOB COMPLETION. UPON REQUEST, ARCHITECT WILL PROVIDE THE CONTRACTOR WITH REPRODUCIBLE COPIES OF THE CONTRACT DRAWINGS FOR THE USE IN MAKING THESE "AS–BUILT" DRAWINGS.

3.18 – FIELD TESTS
- A. WATER SUPPLY PIPING SHALL BE SUBJECTED TO A HYDROSTATIC PRESSURE TEST OF 100 PSI MINIMUM. PRESSURE SHALL BE MAINTAINED ON THE LINES FOR PERIOD OF TIME SUFFICIENT TO EXAMINE THE ENTIRE SYSTEM BUT NO LESS THAN ONE (1) HOUR.
- B. SANITARY PIPING: BEFORE THE INSTALLATION OF ANY FIXTURES, THE VENTS OF THE SYSTEM SHALL BE CAPPED AND ALL LINES FILLED WITH WATER TO THE ROOF AND ALLOWED TO STAND UNTIL A THOROUGH INSPECTION HAS BEEN MADE. AFTER THE FIXTURES ARE SET, A SMOKE OR EQUIVALENT TEST SHALL BE MADE USING A SUITABLE APPARATUS.

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PLUMBING SPECIFICATIONS

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P1.2
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