

SECTION 15400
PLUMBING SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. SECTION INCLUDES
 1. DOMESTIC WATER PIPING
 2. SANITARY WASTE AND VENT PIPING
 3. INSULATION FOR PLUMBING SYSTEMS
 4. PLUMBING FIXTURES AND EQUIPMENT
 5. NATURAL GAS PIPING
- B. THESE DOCUMENTS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO INDICATE EXACT CONDITIONS. THE DESIGN INDICATES SIZE, GENERAL LOCATIONS AND ROUTING, PERFORMANCE REQUIREMENTS AND OVERALL QUALITY OF CONSTRUCTION. THE DRAWINGS SHALL NOT BE SCALED BY THE CONTRACTOR. THIS CONTRACT INCLUDES ALL MATERIALS, EQUIPMENT AND LABOR NECESSARY TO PROVIDE COMPLETE, FULLY FUNCTIONAL MECHANICAL SYSTEMS AS INDICATED IN THE CONSTRUCTION DOCUMENTS.
- C. THE BUILDING ARCHITECTURAL DESIGN INDICATED IN THESE DOCUMENTS ARE APPROXIMATE AND FOR REFERENCE ONLY. THE CONTRACTOR SHALL ADJUST LOCATION AND ROUTING OF EQUIPMENT AND SYSTEMS AS REQUIRED TO ACHIEVE THE DESIGN INTENT.
- D. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS PRIOR TO BID SUBMISSION AND SHALL ADJUST PRICING AS REQUIRED. NO ALLOWANCE WILL BE MADE FOR LACK OF KNOWLEDGE OF THE PROJECT REQUIREMENTS OR OF ACTUAL FIELD CONDITIONS.
- E. THE CONTRACTOR SHALL ENSURE THAT CONSTRUCTION DOES NOT CONTAMINATE, HARM OR CAUSE DAMAGE TO ADJACENT TENANTS OR PROPERTY. PROVIDE DUST BARRIERS, TEMPORARY FILTERS (OVER ALL TRANSFER OPENINGS AND EQUIPMENT RA INLETS SERVING THIS SCOPE), ETC. AS REQUIRED FOR DURATION OF PROJECT.
- F. COORDINATE INTERRUPTION OF ALL SERVICES (ELECTRICITY, WATER, SEWER, HVAC SERVICES, ETC.) WITH THE OWNER. COORDINATE ALL ACTIVITY OUTSIDE THE CONSTRUCTION AREA WITH THE OWNER.

1.02 GENERAL

- A. ALL CONSTRUCTION SHALL BE WITH NEW, FIRST QUALITY COMPONENTS EXCEPT WHERE SPECIFICALLY NOTED AS EXISTING. ANY EQUIPMENT OR DEVICES TO BE RE-USED SHALL BE THOROUGHLY CLEANED AND SERVICED TO GOOD WORKING CONDITION.
- B. ALL NEW EQUIPMENT SHALL BEAR THE LABEL OF THE SPECIFIED LISTING AGENCY.
- C. ALL CONSTRUCTION WITHIN HVAC PLENUMS SHALL HAVE A MAXIMUM FLAME SPREAD/SMOKE DEVELOPED RATING OF 25/50 AS REQUIRED BY CODE AND NFPA.
- D. PIPING SYSTEM CONSTRUCTION SHALL COMPLY WITH APPLICABLE STANDARDS REFERENCED BY CODE FOR PIPING MATERIAL AND SERVICE.

1.03 QUALITY ASSURANCE

- A. PROVIDE PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN MANUFACTURE OF SIMILAR PRODUCTS FOR NOT LESS THAN 5 YEARS.
- B. ALL PRODUCTS REQUIRING ELECTRICAL CONNECTIONS SHALL BE UL LISTED AND LABELED FOR THE INSTALLED APPLICATION.
- C. SUBJECT TO COMPLIANCE WITH THE SPECIFICATIONS AND PLUMBING FIXTURE SCHEDULE, THE PRODUCTS OF THE FOLLOWING MANUFACTURERS SHALL BE DEEMED ACCEPTABLE:
 3. CHINA FIXTURES: AMERICAN STANDARD, CRANE, ELJER, KOHLER
 4. WATER HEATERS: A.O. SMITH, RINNAI OR EQUAL
 5. WATER CLOSET SEATS: BEMIS, CHURCH, OLSONITE
 6. FAUCETS: KOHLER, MOEN, SPEAKMAN, SYMMONS, T&S, ZURN
 7. FLOOR DRAINS: JR SMITH, JOSAM, ZURN
 8. SPECIALTIES: ENGINEERING BRASS, JOSAM, JR SMITH, MCGUIRE, OATEY, PRECISION PLUMBING, WATTS, ZURN
 9. INSULATION: 3M, ARMSTRONG, CERTANTIED, DOW, JOHNS MANVILLE, KNAUF, NELSON, OWENS CORNING, TRUEBRO

1.04 CODES AND REGULATIONS

- A. ALL MECHANICAL SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE CODES AND LAWS (WITH ALL AMENDMENTS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION), THESE SPECIFICATIONS, DIVISION 1 SPECIFICATIONS, AND OWNER CRITERIA (CONTRACTOR SHALL COORDINATE WITH OWNER). WHERE CONFLICTING REQUIREMENTS OCCUR, THE MORE STRINGENT SHALL GOVERN.
- B. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, LICENSES, INSPECTIONS, ETC. AND PAY ALL INCIDENTAL FEES, AS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION TO PERFORM ALL ACTIVITIES RELATED TO THIS WORK AND TO OBTAIN A PERMANENT CERTIFICATE OF OCCUPANCY.

1.05 WARRANTY

- A. PROVIDE MINIMUM ONE (1) YEAR PARTS AND LABOR WARRANTY FOR ALL NEW EQUIPMENT, MATERIALS AND WORKMANSHIP FROM THE DATE OF BENEFICIAL OCCUPANCY. PROVIDE ADDITIONAL FIVE (5) YEAR PARTS-ONLY WARRANTY FOR WATER HEATER HEAT EXCHANGER.

PART 2 PRODUCTS

2.01 DOMESTIC WATER SUPPLY SYSTEMS

- A. SEE PLUMBING GENERAL NOTES, SHEET P-001.

2.02 WASTE AND VENT (DWV) SYSTEMS

- A. SEE PLUMBING GENERAL NOTES, SHEET P-001.

2.03 NATURAL GAS PIPING SYSTEMS

- A. SEE PLUMBING GENERAL NOTES, SHEET P-001.

2.04 FIXTURES AND EQUIPMENT

- A. SEE PLUMBING FIXTURE SCHEDULE, SHEET P-001.

2.05 INSULATION

- A. INSULATION SYSTEMS, WHERE REQUIRED, SHALL BE CONTINUOUS THROUGH WALL/FLOOR PENETRATIONS, SUPPORTS, VALVES, FITTINGS AND ACCESSORIES. PROVIDE PRE-MOLDED INSULATION ASSEMBLIES FOR PIPING, VALVES AND ACCESSORIES. ALL PIPING PRESSURE TESTING SHALL BE PERFORMED BEFORE INSULATION IS APPLIED. ALL INSULATION SHALL BE 100% ASBESTOS FREE.
- B. SUPPORTS FOR INSULATED PIPING SHALL BE OUTSIDE INSULATION.
- C. PROVIDE CONTINUOUS VAPOR BARRIER FOR DOMESTIC COLD WATER PIPING SYSTEMS. SEAL PER MANUFACTURER'S RECOMMENDATIONS AT ALL JOINTS, SEAMS AND PENETRATIONS BY MECHANICAL SYSTEM APPURTENANCES.
- D. INSULATION SYSTEMS: INSULATION SHALL BE MANUFACTURED AND INSTALLED PER NAIMA STANDARDS AND MANUFACTURER'S RECOMMENDATIONS FOR INTENDED SERVICE.

8. ELASTOMERIC: PREFORMED CLOSED CELL FLEXIBLE ELASTOMERIC FOAM PIPE INSULATION, K=0.28 BTU/HR-SF-F-IN, 0.08 PERM-INCH, 0-220F SERVICE; 25/50 RATED UP TO 1" THICKNESS; MOLDED TO PIPE OD; JOINTS AND SEAMS SEALED WITH MANUFACTURER'S SEALANT TO PROVIDE CONTINUOUS VAPOR BARRIER; ARMACELL "AP ARMAFLEX" OR APPROVED EQUIVALENT.

9. ADA LAVATORY GUARDS: CLOSED CELL VINYL (K=1.2 BTU/HR-SF-F-IN); MOLDED SPECIFICALLY TO COVER SINK P-TRAPS, TRAP ARM, STOP VALVES, AND HW & CW RISERS FOR ADA COMPLIANCE; NON-ABSORBENT, ANTIMICROBIAL FINISH; INTERNALLY RIBBED; REUSABLE FLUSH SNAP CLIPS; WHITE FINISH; TRUEBRO "LAV-GUARD" OR APPROVED EQUIVALENT.

PART 3 EXECUTION

3.01 DELIVERY AND STORAGE

- A. NEW EQUIPMENT, FIXTURES AND DEVICES SHALL BE DELIVERED IN MANUFACTURER'S SHIPPING BOXES AND SHALL BE STORED IN CLEAN, DRY ENVIRONMENT ON WOODEN PALLETS AND COVERED WITH 6 MIL PLASTIC WRAP UNTIL READY FOR INSTALLATION.
- B. PIPING AND EQUIPMENT CONNECTIONS SHALL BE PROTECTED FROM WATER, DIRT, DEBRIS, SCALE, CORROSION AND DAMAGE DURING CONSTRUCTION. CAP ALL OPEN ENDS UNTIL READY FOR FINAL CONNECTION AND USE.

3.02 EXCAVATION AND BACKFILL

- A. PROVIDE ALL EXCAVATION AND BACKFILL REQUIRED FOR ALL PLUMBING WORK PROVIDED UNDER THIS CONTRACT.

3.03 INSTALLATION

- A. INSTALL CONSTRUCTION PER CODE, MANUFACTURER'S RECOMMENDATIONS, REFERENCED STANDARDS, AND THESE DOCUMENTS. SHOULD CONFLICTING REQUIREMENTS ARISE, THE MORE STRINGENT SHALL GOVERN.
- B. CONTRACTOR SHALL REPAIR ANY DAMAGE TO BUILDING STRUCTURE OR FINISHES RESULTING FROM HIS WORK. REPAIR SHALL MATCH SURROUNDING CONSTRUCTION.
- C. PROVIDE REQUIRED ACCESS TO ALL COMPONENTS AS REQUIRED FOR OPERATION, MAINTENANCE AND INSPECTION OF SYSTEM.
- D. GAS PIPING SHALL BE INSTALLED PER NFPA 54 AND SUPPLEMENTAL REQUIREMENTS OF THE AHJ. GAS PIPING ROUTED WITHIN INACCESSIBLE ASSEMBLIES (ABOVE HARD CEILINGS, WITHIN WALLS, ETC.) SHALL BE INSTALLED WITHIN GAS TIGHT CAST IRON PIPE ENCLOSURE WITH MIN 1" ANULAR SPACE, EXTEND 2" BEYOND BOTH ENDS OF THE INACCESSIBLE SPACE WITH BOTH ENDS SEALED AND VENTED (1" VENTS) TO ATMOSPHERE.
- E. ALL PIPING SYSTEMS SHALL PASS PRESSURE TESTS PRIOR TO COVERING WITH PERMANENT CONSTRUCTION OR MAKING FINAL CONNECTIONS TO FIXTURES AND EQUIPMENT. CONTRACTOR SHALL PROVIDE CERTIFICATION FOR EACH TEST. PRESSURIZED PIPING SYSTEMS SHALL BE TESTED AS FOLLOWS, OR AS OTHERWISE REQUIRED BY AHJ IF MORE STRINGENT.
 1. DOMESTIC WATER: 200 PSIG FOR 24 HOURS.
 2. SANITARY WASTE AND VENT: 10 FT WC FOR 24 HOURS.
 3. NATURAL GAS: 5 PSIG FOR 24 HOURS.
- F. CLEAN AND SANITIZE ALL DOMESTIC COLD AND HOT WATER PIPING SYSTEMS AS REQUIRED BY CODE BEFORE POTABLE USE. FLUSH WITH A CLEANING AND DEGREASING AGENT AND RINSE WITH CLEAN WATER, THEN FLUSH WITH AN APPROVED SANITIZING AGENT AND RINSE AGAIN WITH CLEAN WATER. SERVICE SHALL BE PERFORMED BY LICENSED AGENTS ONLY.
- G. COORDINATE ALL PIPING TO AVOID CONFLICTS WITH ADJACENT CONSTRUCTION. ROUTE OVERHEAD PIPING AS HIGH AS POSSIBLE. MAINTAIN MINIMUM REQUIRED SLOPE FOR ALL SLOPED PIPING.
- H. PROVIDE CLEANOUTS AT ALL CHANGES IN DIRECTION AND AT MINIMUM INTERVALS AS REQUIRED BY CODE IN DRAINAGE PIPING.
- I. PROVIDE 1/4 TURN ANGLE STOP BALL VALVES AT ALL PLUMBING FIXTURES. STOP VALVES SHALL HAVE CHROME PLATED BRASS BODY, STEM, HANDLE, AND ESCUTCHEON PLATE. FLEXIBLE CONNECTIONS TO PLUMBING FIXTURES SHALL BE SOFT COPPER TUBING ONLY, BRAIDED STEEL FLEXIBLE CONNECTORS AND PLASTIC TUBING IS NOT ACCEPTABLE.
- J. PROVIDE BALL VALVES FOR SHUT-OFF DUTY. BALL VALVE SHALL HAVE BRONZE BODY, BRASS BALL, AND TEFLON SEAT AND PACKING.
- K. PROVIDE PRESSURE REDUCING VALVES WHERE REQUIRED TO LIMIT DOMESTIC WATER SUPPLY PRESSURE TO 75 PSIG AT ALL FIXTURES AND EQUIPMENT CONNECTIONS.
- L. PROVIDE BACKFLOW PREVENTION APPROVED BY THE LAHJ AT MAIN BUILDING ENTRANCE AND AT ALL CONNECTIONS TO MECHANICAL SYSTEMS AND EQUIPMENT.
- M. PROVIDE DIELECTRIC UNIONS AT ALL CONNECTIONS BETWEEN DISSIMILAR METALS.
- N. PROVIDE TRAP PRIMERS, PRECISION PLUMBING PR-500 OR EQUIVALENT, AS REQUIRED BY CODE FOR ALL FLOOR DRAINS, FLOOR SINKS AND TUB DRAINS.

3.04 COORDINATION

- A. THE BASIS-OF-DESIGN PRODUCTS ARE USED TO DETERMINE DIMENSIONS, INSTALLATION AND ACCESS CLEARANCES, SUPPORTS, ELECTRICAL SERVICE, CONNECTION ARRANGEMENTS, ETC. WHERE ALTERNATE PRODUCTS ARE PROVIDED, IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE ALL REQUIREMENTS AND RESOLVE ANY CONFLICTS AT NO ADDITIONAL COST TO THE OWNER.
- B. MECHANICAL CONSTRUCTION SHALL BE COORDINATED WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO AVOID CONFLICTS. CONFLICTS WHICH ARISE DUE TO LACK OF COORDINATION SHALL BE RESOLVED BY THE CONTRACTOR AT NO ADDITIONAL COST.
- C. COORDINATE WITH ALL ARCHITECTURAL ELEMENTS, INCLUDING (BUT NOT LIMITED TO) CEILING ASSEMBLIES, LIGHTING, PROJECTORS AND SCREENS, OVERHEAD PAGING SYSTEM, MOVEABLE PARTITION ASSEMBLIES, RATED AND NON-RATED PARTITIONS, ETC. - REFER TO ARCHITECTURAL DOCUMENTS.
- D. ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE DIVISION 16000 CONTRACTOR, INCLUDING (BUT NOT LIMITED TO): SERVICE (VOLTS, PHASE, CYCLE), MINIMUM CIRCUIT AMPS, MAXIMUM OVER CURRENT PROTECTION, STARTERS (WHERE NOT PROVIDED WITH PACKAGED EQUIPMENT), DISCONNECTS, ETC. UNLESS SPECIFICALLY NOTED OTHERWISE, ALL ELECTRICAL DISCONNECTS SHALL BE FURNISHED BY THE EQUIPMENT PROVIDER.
- E. OPENINGS REQUIRED IN BUILDING STRUCTURE, SLABS, FLOORS, EXTERIOR WALLS AND ROOFS SHALL BE COORDINATED WITH THE ARCHITECT, OWNER AND STRUCTURAL ENGINEER. ALL CUTTING AND PATCHING REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR.
- F. EQUIPMENT WEIGHTS AND PROPOSED SUPPORTING METHODS SHALL BE COORDINATED WITH THE STRUCTURAL ENGINEER FOR ALL EQUIPMENT AND ASSEMBLIES WHICH ARE SUPPORTED BY THE BUILDING STRUCTURE.
- G. UTILITY AND METERING REQUIREMENTS (ELECTRICITY, WATER, SEWER, FIRE PROTECTION WATER, GAS, ETC.) SHALL BE COORDINATED WITH THE APPROPRIATE AGENCIES.

3.05 HANGERS AND SUPPORTS

- A. SUPPORT ALL PIPING AS REQUIRED BY CODE AND IN ACCORDANCE WITH MSS SP-69, PER SPECIFIC REQUIREMENTS FOR PIPING MATERIALS, SERVICE TEMPERATURE, AND INSULATION.
- B. SUPPORTS SHALL BE ANCHORED TO SUBSTANTIAL BUILDING STRUCTURE ONLY. DO NOT SUPPORT FROM OTHER PIPING, DUCTWORK, CEILING SYSTEM, CONDUIT, ETC. SUPPORT SYSTEMS (HANGERS, FRAMES, ANCHORS, ETC.) SHALL BE RATED FOR MINIMUM 200% OF THE TOTAL SUPPORTED WEIGHT (EQUIPMENT, PIPING, DUCTWORK, INSULATION, WORKING FLUIDS, ETC.) FOR THE SPECIFIC INSTALLATION CONDITIONS.
- C. PIPING SHALL BE SUSPENDED WITH CLEVIS, ROLLER, OR ADJUSTABLE J TYPE HANGERS (FLOOR-MOUNTED PIPING SHALL BE SUPPORTED BY STEEL PIPE STANCHION WITH U-TYPE SADDLE OR ROLLER, SIZED FOR PIPE ASSEMBLY OUTER DIAMETER). SUPPORT GROUPED PIPING ON STEEL STRUTS WITH TWO HANGER RODS ANCHORED TO STRUCTURE.
- D. PROVIDE CAPABILITY FOR PIPING SYSTEM EXPANSION AND CONTRACTION WITHOUT IMPARTING UNACCEPTABLE STRESS TO PIPING SYSTEM, EQUIPMENT CONNECTIONS AND BUILDING STRUCTURE. ANCHOR PIPING TO SUBSTANTIAL BUILDING STRUCTURE AND PROVIDE EXPANSION BENDS/LOOPS BETWEEN ANCHORS.
- E. PIPING SHALL BE SUPPORTED AT MINIMUM SPACING PER CODE AND NFPA, AT ALL CHANGES IN DIRECTION, AND AT ALL CONCENTRATED LOADS (VALVES, INLINE PUMPS, ETC.). PROVIDE ADDITIONAL SUPPORTS FOR INSULATED PIPING AS RECOMMENDED BY INSULATION MANUFACTURER.
- F. VERTICAL PIPING SHALL BE SUPPORTED AT ALL FLOOR PENETRATIONS WITH RISER CLAMPS AND WALL SUPPORT BRACKETS WHERE REQUIRED TO MAINTAIN MINIMUM SUPPORT SPACING.

3.06 WALL, FLOOR AND ROOF PENETRATIONS

- A. PROVIDE SLEEVES FOR ALL WALL AND FLOOR PENETRATIONS. PROVIDE UL LISTED FIRESTOP SYSTEM AT ALL PENETRATIONS OF FIRE RATED ASSEMBLIES. PROVIDE ESCUTCHEONS FOR ALL VISIBLE WALL AND CEILING PENETRATIONS.
- B. ALL EXTERIOR WALL AND ROOF PENETRATIONS SHALL BE FLASHED AND SEALED WEATHERTIGHT.

3.07 PIPING IDENTIFICATION

- A. PIPING: LABEL ALL PIPING SYSTEM WITH PERMANENT LABELS. NEW PIPING SYSTEMS SHALL BE LABELED PER ANSI A13.1. LABELS SHALL BE METAL OR PLASTIC, STRAPPED TO THE OUTSIDE OF THE INSULATION SYSTEM, EASILY READABLE FROM FLOOR LEVEL, COLOR CODED PER ANSI A13.1, AND SIZED PER CODE. PROVIDE LABELS AT MAXIMUM 20 FT CENTERS, ALL BRANCH TAKE-OFF'S, EQUIPMENT CONNECTIONS, AND ON BOTH SIDES OF WALL/FLOOR PENETRATIONS.

3.08 PIPING INSULATION

- A. PLUMBING PIPING SHALL BE INSULATED PER THE FOLLOWING SCHEDULE:

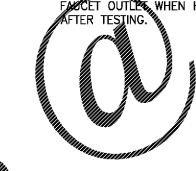
SERVICE	PIPE DIA.	TYPE	THICKNESS
DOM CW	ALL	ELASTOMERIC	1/2"
DOM HW (W/O RECIRC.)	ALL	ELASTOMERIC	3/4"
DOM HW (W/RECIRC.)	ALL	ELASTOMERIC	1"
ADA LAVATORIES	ALL	ADA LAVATORY GUARDS	-

* APPLIES TO HOT WATER PIPING WHICH IS PART OF A CONTINUOUS RECIRCULATION LOOP (INCLUDING SUPPLY AND RETURN/RECIRCULATION LINES).

3.09 EQUIPMENT START-UP AND COMMISSIONING

- A. PROVIDE EQUIPMENT START-UP AND COMMISSIONING. EQUIPMENT START-UP SHALL BE PERFORMED BY EQUIPMENT MANUFACTURER'S AUTHORIZED AGENTS ONLY. FOLLOW PROCEDURES OUTLINED BY EQUIPMENT MANUFACTURER'S PUBLISHED INSTALLATION LITERATURE.
- B. PROVIDE COMPLETED START-UP CHECKLISTS AND COMMISSIONING REPORTS, SIGNED BY AGENT, IN THE ORIGINALS.
- C. PROVIDE OWNER TRAINING FOR ALL SYSTEMS, EQUIPMENT AND CONTROLS TO BE PROVIDED UNDER CONTRACT.
- D. TEST EACH THERMOSTATIC MIXING VALVE FOR PROPER OPERATION AND ADJUST IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS TO DELIVER 105F AT FACILITY OUTLET WHEN HW SUPPLY TO VALVE IS 120F. CLEAN INLET FILTERS AFTER TESTING.

Order Plans



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DATE		REVISION							
general contractor	engineering consultant								
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BLACKWATER CONSTRUCTION 1827 Powers Ferry Road Building 80, Suite 100 Atlanta, Georgia 30329 Fax: (770) 952-9528									
PLUMBING SPECIFICATIONS WILD WOLF - COMMERCIAL DEVELOPMENT BOYD MORRIS ROAD & GA HWY 293 SPUR BARTOW COUNTY, GEORGIA 30120									
DRAWN BY	WJL								
CHECKED BY	WJL								
DATE	06/16/20								
P-9.1									

