

SECTION 22 0100 – ALTERNATES AND UNIT PRICES

PART 1 - GENERAL

- 1.1 DESCRIPTION:
A. The Contractor shall state an alternate price to be added to the Base Contract Sum if particular alternatives are accepted by the Owner.
B. The alternates shall be performed within the time frame of the base bid project.
C. The Owner reserves the right to accept or reject any alternate.
D. All work required for implementation of an alternate shall be provided. Material and systems shown under the base bid to be reserved or altered shall not be removed or altered if necessary for implementation of the alternate.
E. The Owner may at any time before final acceptance of a project choose to accept an alternate. The Contractor shall be required to negotiate a fair cost increase (if any is justified) and a fair time extension (if any is justified).

PART 2 – ALTERNATES AND UNIT PRICES

2.1 ALTERNATE NO. 1 (Countertop Lavatories):

- A. Alternate (ADD):
1. Remove twelve (12) existing countertop lavatories and faucets and replace with twelve (12) new countertop lavatories and faucets. Work shall include providing piping offsets, connecting to existing supply and drain connections or providing new p-traps and supply stops/piping as required providing a complete operational lavatory. After removing existing lavatory, clean caulk from existing countertop and prepare for installation of new lavatory. Caulk new lavatory after installation.
2. Lavatory: Countertop Drop In, enameled cast iron, Kohler "Tides", model K-2839-4, 20"x17", 3-hole with 4" centers, white finish.
3. Faucet: Delta, 22CI 51 single control lever handle, 4" center set without pop up hole and vandal resistant 0.50 gpm non-aerating spray outlet.
4. Drain: McGuire model 155A perforated strainer – 1-1/4" tailpiece. Provide 1-1/4"x1-1/2" p-trap if required.

2.2 ALTERNATE NO. 2 (Exam Room Sinks):

- A. Alternate (ADD):
1. Remove eleven (11) existing countertop single compartment stainless steel sinks and faucets and replace with eleven (11) new single compartment stainless steel sinks and faucets. Work shall include providing piping offsets, connecting to existing supply and drain connections or providing new p-traps and supply stops/piping as required providing a complete operational sink. After removing existing sink, clean caulk from existing countertop and prepare for installation of new sink. Caulk new sink after installation.
2. Single Compartment Sink: Countertop, 17" length x 22" width x 7-1/2" depth, Elkay, LR1722PD, 3 hole, 18 gauge, 304 stainless steel with perfect drain
3. Faucet: T&S Brass, B-2855-02, 8" centers, ceramic quarter turn 4" wrist blades with color coded indexes with 1.50 gpm vandal resistant laminar flow aerator, swivel/rigid gooseneck (12-9/16" tall spout x 8-13/16" reach).
4. Drain: Provide 1-1/2" tailpiece and p-trap as required.

2.3 UNIT PRICES:

- A. Provide a unit price to remove one existing countertop lavatory and install one complete Countertop Lavatory as described in Alternate No. 1 above.
B. Provide a unit price to remove one existing exam room sink and install one complete Exam Room Sink as described in Alternate No. 2 above.

SECTION 22 0500 - GENERAL PLUMBING REQUIREMENTS

1.1 SCOPE OF WORK:

- A. The Plumbing Work shall include, but not be limited to, the following:
1. Domestic water systems
2. Domestic water heating including combustion air and flues
3. Plumbing fixtures and trim
4. Gas piping systems
5. All work indicated on drawings and as required by manufacturer recommendations.
B. All work shall conform to International Building Code, International Fuel Gas Code, International Plumbing Code, National Fire Protection Association and all state and local ordinances.
C. Contractor shall be responsible to obtain all required permits and licenses and pay all required fees.

1.2 WORKMANSHIP:

- A. Workmen shall be thoroughly experienced and fully capable of installing the work. Work shall be in accordance with the best standard practice of the trade. Work that is not of good quality will require removal and reinstallation at no additional expense to Owner.
B. All material and equipment to be installed in accordance with manufacturer's printed recommendations using recommended accessories. Retain a copy on job site and submit others for approval when required.

1.3 GUARANTEES AND WARRANTIES:

- A. General:
1. Furnish to the Owner a written guarantee form signed by the Contractor and Owner agreeing to the start and end dates of all systems and equipment under warranty.
2. All defective materials or inferior workmanship shall be replaced or repaired as directed by the Owner's representative during the guarantee period.

B. Equipment Warranties:

- 1. Equipment shall be warranted by the equipment manufacturer. Where labor is included in the warranty, the manufacturer, at his option, may permit the contractor to provide the required repairs on the equipment.
2. The equipment manufacturer shall include a written guarantee with the closeout documentation.
C. Duration Period:
1. For work not otherwise specified, the duration shall be one year from substantial completion including all parts, labor, and other charges.
2. The Contractor is responsible for purchasing from the equipment manufacturers any additional warranties to ensure that the equipment is warranted by the manufacturer through the duration period specified.

1.4 EXISTING FACILITIES:

- A. The location of duct, pipe, fixtures, equipment and appurtenances for existing facilities are shown on plans to indicate the extent of work required. Exact condition shall be field verified.
B. Work shall be performed above existing ceilings except where removal of existing ceilings is specifically identified. Where working above existing ceilings, remove existing tile/grid and reinstall existing tile/grid as necessary. Any damaged tile/grid shall be replaced at the Contractor's expense.
1.5 CLEANING OF SYSTEMS AND EQUIPMENT:
A. All equipment and systems shall be cleaned of all extraneous materials to leave equipment and system finish in a new condition.
B. Where equipment and systems cannot be properly cleaned, take all measures necessary to replace or repair equipment and systems to bring back to a "like new" condition. All costs shall be borne by the Contractor.
C. All extraneous materials shall be removed on the site on a regular basis to provide access to all work as well as a safe working environment.

SECTION 22 0503 - DEMOLITION, PATCHING AND REPAIR

PART 1 - GENERAL

1.1 SCOPE OF WORK:

- A. General:
1. Furnish all labor, materials, tools and equipment and perform all operations in connection with the demolition of all plumbing equipment, piping, and appurtenances where shown on the drawings and specified hereinafter.
2. Furnish all labor, materials, tools and equipment and perform all operations in connection with the patching and repair of building structure, finishes and building assemblies as specified hereinafter.
3. All existing utilities, water, etc. shall be reconnected to new systems as required to maintain the same functions as existed prior to new work.
B. Descriptions:
1. Cut openings thru the existing building walls, floors, and finishes to accommodate the installation of Division 22 equipment, controls, piping, and appurtenances.
2. Remove and dispose of existing plumbing equipment, piping, and appurtenances.
3. Patch and repair all building finishes, structural components, or other appurtenances that are removed or damaged as a result of the performance of this contract. Patch and repair work shall include finishes, components, substructure and materials required for the installation of such work in accordance with standard practices.
4. All penetrations thru exterior walls and floors systems shall be sealed watertight.
5. Patched and repaired work shall be finished to match existing or adjacent construction and conditions.

1.2 PROTECTION:

- A. Provide barricades and take all other precautionary measures necessary to protect personnel and property.
B. The Contractor shall be responsible for any damages to adjacent areas to the construction area.
C. At no time shall required means of egress be blocked by equipment materials, permanent or temporary barriers.

1.3 COORDINATION:

- A. All demolition work shall be coordinated with the Owner. Work which will interrupt building utilities or cause the disruption of the normal environment in areas of the building not within the scope of this project will be performed at other than the Owner's normal working hours.

1.4 PIPE PENETRATIONS:

- A. All pipe penetrations shall be core drilled. All other penetrations shall be saw cut. Openings shall not be larger than required for proper installation of pipe.

1.5 MATERIAL REMOVAL:

- A. All material, equipment, supports, and appurtenances not required as the result of demolition to or renovation of the building systems shall be removed from the project site and disposed of properly unless retained by Owner.

SECTION 22 0507 - FIRESTOPPING AND SMOKESTOPPING

PART 1 - GENERAL

1.1 SCOPE OF WORK:

- A. General:
1. Furnish all labor, materials, tools and equipment and perform all operations in connection with the installation of firestopping systems required to seal off all voids or gaps at interfaces of Division 22 equipment, piping, conduits, sleeves, and other penetrations at walls, roofs, slabs, and similar assemblies.

B. Descriptions:

- 1. Firestop all existing openings in walls and similar assemblies remaining as a result of removing existing pipes, equipment, and appurtenances.
2. Firestop all new openings in walls and similar assemblies at pipe, equipment, and appurtenances.

1.2 QUALITY ASSURANCE:

A. Codes and Standards:

- 1. All work shall meet or exceed the standards and procedures (latest editions) of the following:
a. ASTM E814, Standard Method of Fire Tests of Through-Penetration Firestop Systems
b. UL 1479, Through-Penetration Firestop Systems
c. ASTM E-119
d. ASTM E-814

B. Manufacturer:

- 1. The following firestopping sealant manufacturers are acceptable:
a. Nelson
b. 3M
c. Hilti

1.3 THROUGH FIRESTOP PENETRATION:

A. General:

- 1. Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items penetrating the firestopping.
2. Provide components for each firestopping system that are needed to install fill material. Use only components specified by the firestopping manufacturer.
3. Provide a firestop system with an "F" Rating as determined by UL 1479 or ASTM E814 which is equal to the time rating of construction being penetrated.

B. Materials for Metallic Pipes and Conduits:

- 1. Sealants, caulking materials, or foams for use with non-combustible items including steel pipe, copper pipe, rigid steel conduit and electrical metallic tubing (EMT) shall be:
a. Hilti FS-ONE Intumescent Firestop Sealant
b. Hilti CP 604 Self-leveling Firestop Sealant
c. Hilti CP 620 Fire Foam
d. Hilti CP 606 Flexible Firestop Sealant
e. Hilti CP 601s Elastomeric Firestop Sealant

C. Materials for Non-Metallic Pipes and Insulated Pipe:

- 1. The Intumescent sealants, caulking materials for use with combustible items including insulated metal pipe and plastic pipe shall be:
a. Hilti FS-ONE Intumescent Firestop Sealant

D. Materials for Non-Metallic Combustible Pipes:

- 1. The firestop collar or wrap devices attached to assembly around combustible plastic pipe (closed and open piping systems), shall be:
a. Hilti CP 642 Firestop Collar
b. Hilti CP 643 Firestop Collar
c. Hilti CP 645 Wrap Strips

1.4 INSTALLATION:

- A. All installations shall be in accordance with the manufacturer's recommendations for the specific UL assembly which is to be firestopped.
B. Protect other surfaces and equipment from being damaged by the application or overspray of firestopping compound. Remove excess and spillage promptly.

1.5 PREPARATION:

- A. Clean and prepare substrates for materials in accordance with manufacturer's recommendations.
B. Openings larger than required for proper installation of pipe or duct shall be patched or repaired.

SECTION 22 0510 - DOCUMENTATION AND CLOSEOUT

PART 1 - GENERAL

1.1 SCOPE OF WORK:

- A. Furnish all labor, materials, tools and equipment and perform all operations in connection with the project documentation and closeout.
B. Provide Owner Training for operation of water heater.
C. Provide as-built/record drawings in PDF format.
D. Provide documentation of equipment start up, pipe testing and pipe cleansing report.

SECTION 22 0511 - SUBMITTALS

PART 1 - GENERAL

1.1 GENERAL:

- A. Provide submittal data for water heater, piping, air intake/flue material, fire stopping and pipe insulation.

SECTION 22 0592 - SYSTEM START-UP

PART 1 - GENERAL

1.1 SCOPE OF WORK:

A. General:

- 1. Furnish all labor, materials, tools and equipment and perform all operations in connection with the start-up of all building mechanical systems where shown on the drawings and specified hereinafter.

1.2 STARTING THE PIPING SYSTEMS:

- A. Prior to putting any piping system in service, it shall be tested and thoroughly cleaned according to the procedures as specified below. The Contractors are responsible to take all precautions necessary to prevent contamination of existing domestic water and also to prevent unauthorized use, when connecting new systems to existing water lines.

1.3 STERILIZATION OF POTABLE WATER SYSTEMS:

- A. All hot water pipe lines and all appurtenances, both existing and new, shall be sterilized before being placed into service.
B. Prior to chlorination, all systems shall be flushed with water at a system velocity of not less than 2.5 feet per second.
C. Sterilization shall be performed after all hydrostatic tests have been performed and before system is placed in service.
D. All potable water systems shall be chlorinated in accordance with procedures described in AWWA Standards for disinfecting water mains, AWWA C601. The entire line shall be chlorinated with a gas-water mixture, or calcium hypochlorite (70% available chlorine) and water. The chlorinating agent shall be applied at the beginning of the section adjacent to the feeder connection and shall be injected through a corporation stop, hydrant or other connection insuring treatment of the entire line. Water shall be fed slowly into the new line with chlorine applied in such amounts as to produce a dosage of 50 parts per million. Lines previously filled shall be treated to a concentrated dosage at intervals along the line.
E. A 24-hour residual of 10 parts per million shall be produced in all parts of the line. During the chlorination process all valves, hydrants and accessories shall be operated. After chlorination, the water shall be flushed from the line at its extremities until the replacement water tests are equal bacteriologically, to those of the permanent source of supply and shall conform otherwise in all respects to the requirements of the South Carolina Department of Health and Environmental Control. Two acceptable bacteriological tests shall be obtained 24 hours apart and reported by an independent laboratory. Test results must be on file with the Architect/Engineer prior to State Inspection.

- F. Furnish all HTH or liquid or gas chlorine required for sterilization and shall furnish all equipment and labor required for the work.

1.4 PIPING SYSTEM TESTS:

- A. Gas Piping:
B. Gas piping shall be tested in accordance with this specification, the current edition of the International Fuel Gas Code (IFGC), or the local authority have jurisdiction, whichever is greater. If the contractor does not have a copy of the section of the International Fuel Gas Code, Buford Goff & Associates will provide a copy upon request.
C. Piping shall be tested to 1 ½ times working pressure but not less than 5 PSIG.
D. Testing shall be performed before painting. If the piping is painted before testing, test pressure shall be 1 ½ times working pressure but not less than 90 PSIG.
E. Tests shall run for ½ hour for each 500 cu ft of pipe volume.
F. Pressure shall be measured with a manometer.
G. The test gas shall be air, nitrogen, carbon dioxide or an inert gas.
H. Connection between new and existing pipe shall be tested by an approved leak detection method.
I. Isolate appliances or plug lines as required by the IFGC.

1.5 SUBMITTALS:

- A. Submit copies of all tests including system tested; date of testing; duration of testing; persons present for testing; and test results.

SECTION 22 1100 - PLUMBING PIPING

PART 1 - GENERAL

1.1 SCOPE OF WORK:

A. General:

- 1. Furnish all labor, materials, tools and equipment and perform all operations in connection with the installation of pipe, pipe fittings, accessories and appurtenances where shown on the drawings and specified hereinafter.

1.2 PIPE SCHEDULE:

- A. Domestic Water Piping; Relief Valve Discharge Piping; Condensate Drainage Piping:
1. Fittings shall be Class 150 with permanent identification markings.
2. All domestic water piping up to 4 inches, above grade shall be seamless hard drawn, Type L, copper pipe, with wrought copper fittings.
B. Gas Piping:
1. Steel pipe shall be Schedule 40 black steel complying with ANSI B36.10 and ASTM A53 with threaded fittings.
2. Gas piping 2" and smaller shall be corrugated, stainless steel tubing:
a. Acceptable corrugated stainless steel tubing manufacturers: Tracpipe
b. Tubing: ASTM A 240/A 240M, corrugated, Series 300 stainless steel.
c. Coating: UV-resistant polyethylene with flame retardant.
1) Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
a) Flame-Spread Index: 25 or less
b) Smoke-Developed Index: 50 or less
d. Fittings: Copper-alloy mechanical fittings with ends made to fit and listed for use with corrugated stainless-steel tubing and capable of metal-to-metal seal without gaskets. Include brazing socket or threaded ends complying with ASME B1.20.1.

e. Striker Plates: Steel, designed to protect tubing from penetrations.

- f. Manifolds: Malleable iron or steel with factory-applied protective coating. Threaded connections shall comply with ASME B1.20.1 for pipe inlet and corrugated tubing outlets.

g. Operating-Pressure Rating: 5 psig

3. Gas piping schedule:

- a. Above grade located outside: steel.
b. Above grade located inside: steel or corrugated stainless steel tubing.

C. Combustion Air Intake and Flue:

- 1. Schedule 40 PVC (Solid Core).

1.3 INSULATION SCHEDULE:

A. Domestic Cold Water, Condensate Piping:

- 1. Up to 1-1/4" pipe - ½" thk.
2. 1½" pipe and larger - 1" thk.
3. Fiberglass insulation with all service jacketing.

B. Domestic Hot Water Piping:

- 1. Up to 1-1/4" pipe - 1" thk.
2. 1½" pipe and larger – 1-1/2" thk.
3. Fiberglass insulation with all service jacketing.

1.4 SUPPORTS:

- A. Clevis hanger
B. Provide shield at hangers for insulated piping.
C. Provide PVC coated hanger for support of PVC, CPVC or Polypropylene piping.
E. Hangers spaced in accordance with International Plumbing Code requirements and piping manufacturer's recommendations.

SECTION 22 3400 - FUEL FIRED DOMESTIC WATER HEATERS

PART 1 - GENERAL

1.1 SCOPE OF WORK:

- A. Furnish all labor, materials, tools and equipment and perform all operations in connection with the installation of water heaters and appurtenances where shown on the drawings and specified hereinafter.

1.2 The following water heater manufacturers are acceptable.

- A. Navien.
B. Rinnai.
C. Approved equal.

1.3 Condensing, wall mounted, direct vent suitable for combined common venting.

- 1.4 Unit shall include safety features such as flame sensor system, high limit sensors, overheat prevention device and fan motor rotation detector.

1.5 Water shall meet or exceed the energy efficiency requirements of ASHRAE 90.1-2013 and listed for low NOx.

- 1.6 Warranty shall provide an 8 year heat exchanger and 5 year parts warranty for commercial use.

Project Engineer:

DER

Drawn By:

LAM

Revisions:

Table with 2 columns: No., Date. Multiple empty rows for revisions.

This drawing and the design shown are the property of:

Buford Goff & Associates.

The reproduction, copying or other use of this drawing without their written consent is prohibited and any infringement will be subject to legal action.



D.H.E.C. FLORENCE COUNTY HEALTH DEPARTMENT WATER HEATER REPLACEMENT STATE PROJECT NO. : J04-N087-FW PLUMBING - SPECIFICATIONS

Buford Goff & Associates, Inc. Engineers & Planners. 1331 Elmwood Ave. Suite 200 Columbia, SC 29201 Phone: (803) 254 - 6302 Fax: (803) 771 - 6142 Web: www.bgainc.com

Sheet Number:

P0.2

Date: SEPTEMBER 16, 2016 Scale: As Noted BGA PROJECT NUMBER: 16085