

ADDENDUM No. 2

Date: December 16, 2015

City of Austin

Project Name: Spicewood Springs Pump Station Utility Improvements

C.I.P. No. 2006.014

This Addendum forms a part of Contract and clarifies, corrects or modifies original Bid Documents, dated November 16, 2015. Acknowledge receipt of this addendum in space provided on bid form. Failure to do so may subject bidder to disqualification.

A. Project Manual Revisions:

1. **Volume 2.**

Delete Section 13312 – Flow tube in its entirety and replace with the attached. Changed the following:

- Changed paragraph 1.05.C on Page 2 to read as follows:
"The Manufacturer/Supplier shall perform necessary in-house flow testing for the Venturi Flow Meter. The Owner and Engineer shall perform all field testing."
- Deleted in its entirety section 1.06.B.4 on Page 3.
- Deleted in its entirety section 2.01.B on Page 4.
- Deleted in its entirety section 2.01.D on Page 4.

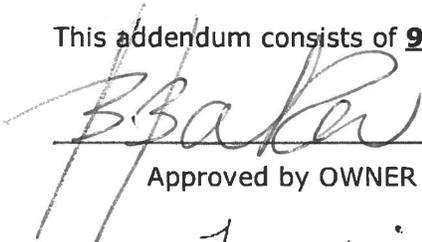
2. **Volume 2**

Add Section 16800, attached.

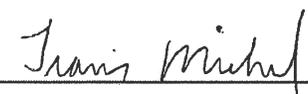
B. Drawing Revisions:

None.

This addendum consists of 9 page(s).



Approved by OWNER



Approved by ENGINEER/ARCHITECT



END

SPICEWOOD SPRINGS PUMP STATION UTILITY IMPROVEMENTS
SECTION 13312 – FLOW TUBE

PART 1: GENERAL

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required to install, field test, complete and ready for service 2 Venturi flow tubes meters as shown on the Drawings and specified herein.

1.02 RELATED WORK

- A. General requirements are included in Division 1.
- B. Surface preparation, shop painting and field painting are included in Division 9.
- C. Instrumentation is included in Division 13 and/or Division 17.
- D. Piping, valves and appurtenances are included in Division 15.
- E. Electrical work is included in Division 16.

1.03 SUBMITTALS

- A. Submit materials required to establish compliance with these Specifications in accordance with Section 01300. Submittals shall include at least the following:
 - 1. Complete shop drawings showing details of fabrication, materials of construction, and installation for all items furnished under this Section.
 - 2. Product data including manufacturer's catalog cuts, specifications and specific product data sheets for each piece of equipment proposed to be furnished. Product data sheets shall include as a minimum:
 - a. Product name.
 - b. Manufacturer's complete model number.
 - c. Location and tag number of device.
 - d. Certified flow vs. differential pressure relationship curve.
 - e. Certified flow vs. non-recoverable headloss relationship curve.
 - f. Physical size with certified pattern dimensions and weights.
 - g. Details of exterior and interior surface preparation and coating systems.
 - h. Environmental storage requirements.
 - 3. The data sheets shall be provided with an index and proper identification and cross-referencing corresponding to the equipment tag numbers herein defined.
 - 4. Installation details and written installation instructions including shipping, storage, protection and handling procedures.
- B. Quality Control Submittals. Submit the following quality control submittals for review and approval:
 - 1. Mill certificates for all materials.
 - 2. Certified hydro-static testing results.

- 3. Certified dry film thickness (DI FT) testing results.
- 4. Manufacturer's Certificates of Proper Installation.
- C. Submit equipment warranty per Section 01740.
- D. Submit operation and maintenance data and manuals in accordance with Section 01730.
- E. Submit installation instructions for equipment specified herein.

1.04 REFERENCE STANDARDS

Design, manufacture and assembly of elements of the equipment and/or materials herein specified shall be in accordance with, but not be limited to, the published standards of the following, as applicable. All references listed shall imply the most recent revision.

- A. American Society of Mechanical Engineers (ASME).
- B. American National Standards Institute (ANSI).
- C. NSF International Strategic Registrations, Ltd. (NSF).
 - 1. NSF Standard 61 - Drinking Water Components.
- D. American Institute of Steel Construction (AISC).
- E. American Society for Testing Materials (ASTM).
- F. American Water Works Association (AWWA).
- G. Steel Structures Painting Council (SSPC).
- H. National Association of Corrosion Engineers (NACE).

1.05 QUALITY ASSURANCE

- A. The equipment covered by these specifications is intended to be standard flow measuring and control equipment of proven ability as manufactured by reliable concerns having extensive experience in the production of same size and material equipment for a period of not less than five years.
- B. The Manufacturer/Supplier shall employ capable personnel for engineering, coordination, drafting, scheduling, testing, manufacturing, inspection, and warranty services. The mathematical and geometric basis of design of the units specified shall be consistent and shall be such that the discharge coefficient value is independent of line size and beta ratio.
- C. The Manufacturer/Supplier shall perform necessary in-house flow testing for the Venturi Flow Meter. The Owner and Engineer shall perform all field testing.
- D. Approved Manufacturers: All flow meters shall be from the same manufacturer and shall be the manufactured product of Primary Flow Signal (Cranston RI) or BIF (Solon, Ohio).

1.06 SYSTEM DESCRIPTION

- A. General.

1. The Venturi specified herein shall be used as primary flow elements to measure discharge rate of flow s at the Spicewood Springs Pump Station.
2. Venturi flow meters shall be of the cast iron flanged static tap variety with form as herein specified depending on application.

B. Design Requirements

1. Venturi flow meters shall be designed for the conditions of service hereinafter tabulated:

Design Condition

- | | |
|-------------------------------------------------|----|
| a. Total Number of Venturi Flow Meters | 2 |
| b. Pipe Diameter of Venturi Flow Meter (Inches) | 24 |

2. The design shall adequately provide for all loads incurred during shipment, handling, and installation.
3. Design conditions shall be verified by Flow meter manufacturer prior to ordering flow meter.

- C. Performance Requirements. Venturi flow meters accuracy shall be plus or minus 0.75 percent of actual flow based on documented laboratory calibration of identically patterned, previously fabricated Venturi flow meters.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Equipment and materials provided under this Section shall be delivered, stored and handled in compliance with Section 01600 and as hereinafter specified.
- B. After completion of fabrication and painting; all Venturi flow metering equipment, shall be packaged in protective crates and enclosed in heavy-duty polyethylene envelopes or secured sheeting to provide complete protection from damage, dust and moisture. Boxed weights shall be shown on shipping tags together with instructions for unloading, transporting, storing and handling at job site.

1.08 MANUFACTURER/SUPPLIER MANUALS AND SERVICES

- A. Operation and maintenance manuals shall be furnished to the Owner as specified in Section 01730. The manual shall be prepared specifically for this installation and shall include all catalog cuts, drawings, equipment lists, descriptions, etc. that are required to instruct operation and maintenance personnel unfamiliar with such equipment.
- B. Services of Manufacturer/Supplier.
 1. Provide the services of a factory certified service engineer specifically trained in the installation, start-up, testing, operation, and maintenance of the Venturi flow metering equipment as herein specified. Such services shall be provided by a representative who is a direct, full-time employee of the Manufacturer/Supplier.
 2. The Manufacturer/Supplier shall advise, consult, and instruct the Contractor on installation procedures and adjustments and inspect the equipment during installation (i.e. provide installation oversight).

3. Person-hour requirements tabulated below are exclusive of travel time and do not relieve the Manufacturer/Supplier of obligation to provide sufficient services to place equipment into satisfactory operation.

<u>Services Provided by Factory Certified Service Engineer</u>	<u>Minimum Number of Trips</u>	<u>Minimum Time On-Site Per Trip (Hours)</u>
a. Assist in the Installation of Venturi Flow Meters	2	4

4. The Contractor shall be responsible for coordinating required Manufacturer/Supplier services with the Contractor's construction schedule.

1.09 TOOLS AND SPARE PARTS

- A. The Contractor shall furnish all special tools required for normal operation and maintenance of the Venturi flow metering equipment.

1.10 WARRANTIES, PERFORMANCE GUARANTEES AND PERFORMANCE PENALTIES

- A. Upon completion of installation (in accordance with approved installation manual) and successful start-up by the Contractor and upon acceptance by Owner, Contractor shall provide Manufacturer/Supplier warranty in compliance with Section 01740.

PART 2: PRODUCTS

2.01 GENERAL - WATER SERVICE

- A. Flow meters/Venturi meters shall be of the sizes specified on the drawings and herein and shall be designed to produce a measurable differential pressure proportional to the square of the flow rate by accelerating the measured process fluid through a reduced cross sectional area.
- B. Flow meters/Venturi meters shall be of flanged ASTM A48, Class 30, cast iron construction and shall include Type 304 stainless steel throat liners and pressure tap bushings. Flanges shall be ANSI B 16.1 Class 125, unless otherwise noted on the Drawings.
- C. Venturi flow meters shall include two 3/4-inch high pressure static taps; two 3/4-inch low pressure static taps; one 3/4-inch vent tap; and one 3/4-inch drain tap.
- D. The butterfly valve shall meet the requirements of section 15100. Refer to section 15100 for approved butterfly valve manufactures.
- E. Capability for field adjustment of valve seat shall be provided in the discharge plenum of the valve. Butterfly valves without field adjustable seats will not be considered. The valve seat shall be easily replaceable in the field. Valves with cemented or epoxied in place seats will not be acceptable.
- F. Flow meter shall not have any hydraulic noise after calibration.
- G. Differential pressure tubing shall have a three valve manifold in order to calibrate flow meter.

2.02 NAMEPLATE AND MARKINGS

- A. Provide an embossed stainless steel nameplate rigidly affixed to each Venturi flow meter body identifying the following information at a minimum.
 - 1. Manufacturer.
 - 2. Model Number.
 - 3. Tag Number.
 - 4. Flow vs. differential pressure information.
- B. Each Venturi flow meter shall have an "arrow" cast into its body indicating direction of flow.

2.03 FACTORY TESTING AND INSPECTION

- A. Factory Testing. Each flow meter/Venturi meter shall be hydrostatically tested to twice the specified operating pressure and monitored for 15 minutes to verify the integrity of the casting. The hydrotest shall be conducted using blind flanges at each end. The certified results of the hydrotest shall be submitted to the Owner for review and approval prior to shipping any equipment.

2.04 SURFACE PREPARATION AND PAINTING

- A. Flow meter interior and exterior cast iron components shall be sandblasted clean in accordance with SSPC-SP-10, Near White, immediately prior to priming.
- B. Surfaces shall be dry and free of dust, oil, grease and other foreign material before priming.
- C. Cast iron components shall receive one shop coat of Series N140 11 WU, dry film thickness 4.5 to 5.0 mils, by Tnemec Co., Inc., or equal NSF 61 approved primer.
- D. Upon primer set, cast iron components shall receive two coats of Series 140-color Pota-Pox Plus, dry film thickness 6-8 mils per coat, by Tnemec Co., Inc. or equal NSF 61 approved finish coating system. Manufacturer/Supplier shall submit color sampler of finish coating system for Owner's selection prior to application.

PART 3: EXECUTION

3.01 INSTALLATION

- A. The flow meter/Venturi meters shall be installed by the Contractor in accordance with the Manufacturer/Supplier's instructions and recommendations.
- B. The Contractor shall coordinate with the Manufacturer/Supplier providing on-site installation supervision and testing oversight as specified herein.
- C. Upon completion of the Venturi flow meter installation, the Contractor shall furnish to the Owner, a Manufacturer/Supplier certification stating that the Venturi flow meters have been properly installed, tested and meet all requirements for satisfactory performance under the conditions specified herein. A separate certificate shall be furnished for each flow meter.

- D. In the event that the supplied Venturi flow metering equipment fails to meet specified requirements, the Manufacturer/Supplier shall pay for all corrective action and retesting costs attributable to manufacturing and/or installation oversight deficiencies as determined by the Owner. The installing contractor will pay for all corrective action and retesting costs attributable to installation problems as determined by the Owner.

END OF SECTION

PART 1 GENERAL

1.01 SCOPE

- A. Provide all equipment and labor required for calibration, setting and testing as described herein or otherwise required. All tests shall be witnessed by the OWNER or the OWNER's designated representative. Give notification of the tests at least two (2) days prior to the desired date to perform the tests. Repair or replace all defective material, equipment or workmanship disclosed as a result of these tests at no cost to OWNER.

1.02 SUBMITTALS

- A. Testing shall be performed in compliance with the successfully reviewed Test Plan. The Test Plan shall be submitted in accordance with Section 16000-1.03. Provide the OWNER with a typewritten results of all tests, including a description of the equipment tested, the date and time of day tested, weather conditions, and test values and results.

1.03 TEST EQUIPMENT

- A. Each test instrument shall have been certified by an established calibration laboratory within the six (6) months prior to its use in testing and calibration procedures. Calibration shall be traceable to the National Bureau of Standards.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 CABLE AND WIRE

- A. Inspect cables for physical damage and proper connection in accordance with wiring diagrams. Check cable color coding with the specifications and NEC.
- B. Perform insulation resistance test using a megohmmeter on each and every conductor with respect to ground and adjacent conductors. Applied potential shall be 500 to 1000 volts dc for 1 minute. Minimum insulation resistance values shall be not less than two (2) meg ohms.
- C. Perform continuity test to insure proper cable connection. Perform continuity test on all conductors (600 volt, and below, wiring system). Continuity test must be performed after wiring is pulled in the conduit system and/or underground electrical system (as applicable). Continuity test must be performed on each conductor between its source and final destination (point of termination to load/device/etc.). Utilize ohmmeter for this test. Ohmmeter must be set to lowest ohm setting, 10 ohms full scale deflection.
- D. Record and submit all Megger and continuity readings to the OWNER for review and record keeping purposes. Neatly type all readings and organize in a table form, organized on a site by site basis. Incremental megger readings shall be recorded and included in the table.

3.02 GROUND RESISTANCE TESTING

- A. Take ground resistance measurements in dry weather, not less than 48 hours after rainfall, with ground under test isolated from other grounds.
- B. Where grounding-mat/rods are required, measure the ground resistance of each individual ground rod. Then measure the combined resistance of the ground grid. Finally, measure the

combined resistance of the entire ground grid at the end of the run of each ground wire exiting the grounding grid. Submit in writing to the OWNER a record indicating the rod and/or rods location (as applicable), the resistance measured and the soil condition at the time. All tests must be witnessed by the OWNER or the OWNER's designated representative. Ground tests shall be performed by an independent professional testing company specializing in, and well equipped to perform, ground resistance testing.

3.03 RECEPTACLES

- A. Test all receptacles for proper connections and grounding. Use an approved plug-in tester equal to Woodhead 1750 or Hubbell 5200.

3.04 CONTROL CIRCUITS

- A. Check all circuits for continuity, proper connection, and proper operations.
- B. Set all time delay relays and timers for the desired operations. Record the settings, indicating the relay or timer, its location, and the setting used. Verify all settings with a stopwatch.
- C. Verify operation of all existing control components/devices to which interface is required with the new control components/devices, instruments and/or RTU equipment. Should existing components/devices prove to be inoperable, CONTRACTOR shall record the problem found and submit to the OWNER request for remedial action.

END OF SECTION

- 1) D. Widner
- 2) R. Copeland