SAN ANTONIO WATER SYSTEM
2013 REHABILITATION WORK ORDER CONSTRUCTION CONTRACT 4
SAWS Job No. 13-4508
SAWS Solicitation No. B-13-051-DD

ADDENDUM NO. 2
August 15, 2013

To Bidder of Record:

This addendum, applicable to work referenced above, is an amendment to the bidding documents and as such will be a part of and included in the Contract Documents. Acknowledge receipt of this addendum by entering the addendum number and issue date in the space provided in submitted copies of the proposal.

Item 1: **Invitation to Bidders – Change to Bid Opening Time and Date**

REMOVE the following sentence at the beginning of the fifth paragraph in the Invitation to Bidders:

"Sealed bids will be received by the Contract Administration Division, 2800 U.S. Hwy 281 North, Customer Center Building, Suite 171, San Antonio, Texas 78212, until **10:00 a.m. (CT), August 16, 2013.**

And REPLACE with the following sentence:

"Sealed bids will be received by the Contract Administration Division, 2800 U.S. Hwy 281 North, Customer Center Building, Suite 171, San Antonio, Texas 78212, until **2:00 p.m. (CT), August 21, 2013."**

Item 2: **Technical Specifications**

Specification Item 910 – Manhole Rehabilitation:
Section 910.5 (Materials and Components) and Section 910.8 (Testing) of this specification have been revised.

REMOVE Specification Item 910 - Manhole Rehabilitation, in its ENTIRETY and REPLACE with the attached revised Specification Item 910 – Manhole Rehabilitation.

The remainder of the bid documents remains unchanged. This Addendum, including this page, is two (2) pages in its entirety.

Each bidder is requested to acknowledge receipt of this Addendum No. 2 by his/her signature affixed hereto and to file same as an attachment to his/her bid.

Jeffrey E. Reck, P.E.
LNV, Inc.
TBPE Firm No. F-366

8-15-2013

The Undersigned acknowledges receipt of this Addendum No. 2 and the bid submitted herewith is in accordance with the information and stipulation set forth.

Date **Signature of Bidder**

END OF ADDENDUM

ITEM 910
MANHOLE REHABILITATION SPECIFICATION

910.1 Description

This item shall govern rehabilitation of manholes complete and in place and the materials used therein, including cleaning, interior surface restoration, priming the prepared surface and coating (including bench and invert of the manhole). It shall also include all required by-pass pumping necessary to complete the work.

910.2 Certification

Manufacturer shall certify that Applicator has been trained and approved in the handling, mixing and application of the products to be used. Equipment to be used for applying the products by the Applicator shall be certified and approved by the Manufacturer. At least five (5) recent references of Applicator indicating successful application of proposed liner on project of similar size and scope shall be submitted by Contractor. *Only manhole rehabilitation products approved by the SAWS Standards Committee shall be used. All contractors doing this work must have a minimum of 15,000 vertical feet installed within the State of Texas.*

The Contractor shall submit descriptive information including technical data sheets and ASTM test results on each product proposed indicating that the product conforms to and it is suitable for its intended use per these specifications. *All required submittals must be satisfactory to SAWS.*

910.3 Surface Preparation

Proper surface preparation procedures must be followed to ensure adequate bond strength to any surface to be coated. Applicator shall inspect all surfaces specified to receive a liner prior to surface preparation. Applicator shall notify Owner of any noticeable disparity in the surfaces which may interfere with the proper preparation or application of the repair mortar and/or liner(s). Concrete that is not sound or has been damaged by chemical exposure shall be removed to a sound, concrete surface. All contaminants including: all oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants shall be removed. Surface preparation methods(s) should be based upon the conditions of the substrate and the requirements of the liner to be applied.

Surface to receive liner shall be cleaned and abraded to produce a sound concrete surface with adequate profile and porosity to provide a strong bond between the protective coating and substrate. High pressure cleaning with a minimum of 4,000 psi, and 4 gallons per minute using a rotating pencil nozzle, shall be used to clean and free all foreign material within the manhole. Detergent water and cleaning or muratic acid shall be used when grease and oil are present. All materials resulting from the cleaning of the manhole shall be removed prior to application of coating.

Active water infiltration shall be stopped by using a cementitious water plug or hydroactive grout such as Strong-Seal Strong-Plug, Quadex Hydra-Plug or approved equal, which is compatible

with the specified coating. Prepared surfaces should be tested after cleaning but prior to application of the coating, if a specific pH or moisture content of the concrete is required according to manufacturer's recommendations.

910.4 Product Handling

Protective-coating materials are to be handled according to their material safety data sheets. Materials are to be kept dry, protected from weather and stored under cover.

Repair/under-coat materials must be accepted and approved by the protective coating manufacturer for compatibility with the specified liner and shall be used to fill voids, structurally reinforce and/or rebuild surfaces, etc. as determined necessary by the engineer and liner applicator.

910.5 Materials and Components

(1) Concrete: Concrete shall conform to City of San Antonio (CoSA) Standard Specifications for Construction, Item 300- Concrete (concrete class "A").

(2) Mortar shall be composed of one part Portland Cement, one part masonry cement (or ¼ part hydrated lime) and masonry sand equal to 2-1/2 to 3 times the sum of the volumes of the cements and lime used.

(3) Unless otherwise specified, all grouting shall be done with non-shrinking grout. Non-shrinking Grout: Non-shrinking grout shall be furnished factory premixed so only water is added at the job site. Grout shall be mixed in a mechanical mixer. No more water shall be used than is necessary to produce a flowable grout. All proportioning and mixing of the components shall be in accordance with manufacturer's recommendations.

(4) Reinforcement: Reinforcing steel shall conform to the requirements of COSA Item 301-Reinforcing Steel.

(5) Brick: Replacement brick for ring adjustment courses shall be of first quality, sound, kiln fired, new unbroken brick.

(6) For rehabilitation of existing manholes, apply a combination of cementitious coating and epoxy coating, with the cementitious coating first, followed by the epoxy coating. Kerneos SewperCoat 2000 HR regular, with the required one inch thick application, is the only product yet approved which satisfies the requirement of applying the combination of both the cementitious coating and epoxy coating. Approved materials are as follows:

Cementitious coating: With required one inch thick application.

- Permacast CR-5000
- Strong - Seal MS-2C
- Standard Cement Material Inc. Reliner
- Quadex Aluminaliner

Epoxy coating: With specified thickness application.

- Raven 405 Series High Build Epoxy Liner: Required thickness 125 mils
- Spray Wall Polyurethane System: Required thickness 125 mils
- Carboline "Plasite 4500" System: Required thickness 125 mils
- SewperCoat 2000HR: Required thickness 1-inch

910.6 Liner Application

Application procedures shall conform to the recommendations of the liner manufacturer, including material handling, mixing, environmental controls during application, safety, and equipment. The liner application equipment shall be specifically designed to accurately apply the specified liner materials and shall be regularly maintained and proper working order. The liner material must be applied by a Certified Applicator of the liner manufacturer. The liner shall be applied to minimum thickness or as specified by the Engineer according to the Owner's requirements and manufacturer's recommendations. Temperature of the surface to be coated shall be maintained between 40 deg F and 120 deg F during application. Prior to and during application, care should be taken to avoid exposure of direct sunlight or other intense heat source to the structure being coated. Where varying surface temperatures do exist, care should be taken to apply the liner when the temperature is falling versus rising (later afternoon into evening versus early morning into afternoon).

910.7 Measurement

Manhole Rehabilitation shall be measured by vertical feet of manhole depth. Sewer Structure Rehabilitation (Noncircular Manholes, and Manholes Greater than 4 ft. in Diameter) shall be measured by the square feet of area to be rehabilitated.

910.8 Testing

Contractor shall perform testing for manhole rehabilitation in accordance with the following:

A. Leakage Testing:
All rehabilitated manholes must pass a leakage test prior to coating. The contractor shall test each manhole (after assembly and backfilling) for leakage, separate and independent of all other sanitary sewer piping, by means of hydrostatic testing, vacuum testing, or other methods approved by the Engineer.

1. Hydrostatic Testing: Hydrostatic testing shall be conducted by utilizing approved plugs to seal all influent and effluent pipes in the manhole and filling the manhole to the top of the cone with water. Additional water may be added over a 24 hour period to compensate for absorption and evaporation losses. At the conclusion of the 24 hour saturation period, the manhole shall be filled to the top of the cone and observed for one hour. A loss greater than 0.025 gallons per foot diameter per foot of manhole depth per hour shall be considered an unsuccessful test. If the test is unsuccessful, the Contractor shall then assess the needed repairs, perform such repairs (subject to the approval of the Engineer), and notify the Inspector when the retest can be performed.

All effort, materials, retesting or other costs shall be solely at the Contractor's expense.

2. Vacuum Testing:
   a. General: Manholes shall be tested after construction/installation and backfilling with all connections (existing and/or proposed) in place. Lift holes and any other voids shall be plugged with an approved non-shrink grout prior to testing. Drop-connections and gas sealing connections shall be installed prior to testing.

   b. Test Procedure: The lines entering the manhole shall be temporarily plugged with the plugs braced to prevent them from being drawn into the manhole. The plugs shall be installed in the lines beyond drop connections, gas sealing connections, etc. Contractor shall use a minimum 60 inch/lb torque wrench to tighten the external clamps that secure the test cover to the top of the manhole. The test head shall be inflated in accordance with the manufacturer's recommendations. A vacuum of 10 inches of mercury shall be drawn, and the vacuum pump will be turned off. With the valve closed, the level vacuum shall be read after the required test time. If the drop in the level is less than 1 inch of mercury (final vacuum greater than 9 inches of mercury), the manhole will have passed the vacuum test. The required test time is 2 minutes.

   c. Acceptance: Manholes will be accepted with relation to vacuum test requirements, if they meet the criteria above. Any manhole which fails the initial test must be repaired with a non-shrink grout or other suitable material that is compatible with the material of which the manhole is constructed. The manhole shall be retested as described above until a successful test is attained. After a successful test, the temporary plugs will be removed. To insure that the plugs have been removed, Contractor shall do so in the presence of the Inspector.

   d. Repairs to Existing Manholes: Any existing manhole which fails to pass the vacuum test shall be closely examined by the Inspector and the Contractor to determine if the manhole can be repaired. Thereafter, the Contractor shall either repair or remove and replace the manhole as directed. The manhole shall then be retested and coated with a SAWS-approved sewer structural coating as stated above. The Owner may elect to simply remove and replace the existing manhole with a new one. Any manhole excavated for repairs or excavated for tie in shall be backfilled with flowable fill up to 1 foot below the top of the cone. The Contractor also has the option of backfilling with approved secondary materials, subject to the provisions of Item No. 804, "Excavation, Trenching and Backfill."

B. Holiday Testing:
Inspect each manhole that is rehabilitated using high-voltage holiday detection equipment. All detected holidays shall be marked and repaired by abrading the coating surface with grit disk paper or other hand tooling method. After abrading and cleaning, additional protective coating material shall be applied to the repair area. All touch-up repair procedures shall follow the protective coating manufacturer's recommendations.

If a manhole fails to pass one of the above tests, it shall be repaired in accordance with the manufacturer's recommendation and re-tested. It shall not be accepted until it passes all tests. All repairs and re-testing shall be at no additional cost to SAWS.

For manholes located within the Edwards Aquifer Recharge Zone (EARZ), under no circumstances shall flows be released in the system until all testing has been approved by SAWS.

910.9 Warranty

Contractor shall warrant all work against defects in materials and workmanship for a period of two (2) years, unless otherwise noted, from the date of final acceptance of the projects. Applicator shall, within a reasonable time after receipt of written notice thereof, repair defects in material or workmanship which may develop during said two (2) year period, and any damage to other work caused by such defects or the repairing of same, at their own expense and without cost to the Owner.

910.10 Payment

This item shall be paid for by square foot at the unit price bid or by the vertical foot of depth for the unit price bid for "Manhole Rehabilitation." Payment shall be full compensation for materials, labor, equipment, tools, testing, and any incidentals necessary to complete the work including the bench, invert, and all interior surfaces of the manhole. Payment will be made under the following:

Pay Item (910.1): Manhole Rehabilitation (Standard Manholes 4 ft diameter) per Vertical Feet.

Pay Item (910.2): Sewer Structure Rehabilitation (Noncircular Manholes, and Manholes Greater than 4 ft. in Diameter) – per Square Feet.