INVITATION FOR BIDS

CITY OF AUBURN

PROJECT NO. CP1122, CONTRACT NO. 14-08

30TH STREET NE AREA FLOODING – PHASE 1

The Office of the City Clerk will receive sealed bids at the Auburn City Hall, 25 West Main Street, Auburn, Washington until **11:00 AM PDT** on **July 10, 2014**, and will then and there be opened and publicly read aloud at the City Hall. All bids shall be filed with the City Clerk on or before the time set for bid opening.

The major items of work include installing approximately 3,900 linear feet of 42-inch gravity storm drainage pipe; approximately 860 linear feet of gravity storm drainage pipes ranging in size from 4 to 30 inch; catch basin and manhole structures; water main and sewer main pipe adjustment; upgrade pedestrian pushbutton system; induction loop detectors replacement; removal and replacement of curbs, gutters, sidewalks, and driveways, and fences; construction dewatering; trench shoring; pavement restoration and asphalt overlay; traffic control; temporary erosion control; and site restoration. The proposed bid range for the project is from $2,700,000 to $3,200,000. The entire project, including cleanup, shall be physically completed within 100 working days. This project is funded with City of Auburn monies.

All bid proposals shall be accompanied by a bid deposit in cash, certified check, cashier's check or proposal bond (surety bond) in an amount equal to five percent (5%) of the amount of such bid proposal. Should the successful bidder fail to enter into such Contract and furnish satisfactory Contract Bond within the time stated in the Bid Documents, the bid deposit shall be forfeited to the City of Auburn.

Disadvantaged, Minority, and Women's Business Enterprises are encouraged to respond. The City of Auburn does not discriminate on the grounds of race, color, religion, national origin, sex, sexual orientation, age or handicap in consideration for a project award.

The Plans, Specifications, Addenda, Bidders List, and Bid Proposal Package for this project are available exclusively through the City of Auburn's online plan room. Access is provided by going to Builders Exchange of Washington (**http://www.bxwa.com**) and clicking on: "**Posted Projects**"; "**Public Works**"; "**City of Auburn**", and "**Projects Bidding**". Bidders are encouraged to "Register" in order to receive automatic email notification of future addenda and to be placed on the "Bidders List". This online plan room provides bidders with fully usable online documents, with the ability to download, print to your own printer, order document sets from numerous reprographic sources, and a free online digitizer/take-off tool. Contact Builders Exchange of Washington at 425.258.1303 should you require assistance.

The City reserves the right to reject any and all bids, waive technicalities or irregularities and to accept any bid if such action is believed to be for the best interest of the City of Auburn.

Intended dates of publication:

Seattle Daily Journal of Commerce June 24, 2014 and July 1, 2014
Seattle Times June 24, 2014

CITY OF AUBURN
DEPARTMENT OF PUBLIC WORKS

ADDENDUM NO. 2 DATE July 9, 2014

Project Number CP1122, Contract No. 14-08
30th Street NE Area Flooding – Phase 1

Bid Opening Date: July 15, 2014
11:00 AM PDT

The following revisions, additions, and/or deletions are hereby made a part of the specifications and plans of the above-named contract and shall be taken into consideration by the bidder in submitting his bid:

Bid Proposal Package:

1. **REPLACE** the entire original Bid Proposal Package with the attached Bid Proposal Package.

    a. The following is a summary of the list of changes to the Bid Proposal Package:

        i. Page 5 of the Proposal Form.

            1. The quantity for Bid Item No. 66 "42-Inch Diam. Storm Pipe Installation, Sta. 34+50 to Sta. 39+50, Complete" is revised to 1.

Contract Provisions:

2. **ADD** Section 7-21.2(4) (High Density Polyethylene Pipe) to the Technical Special Provisions, Part 2 as shown below:

"7-21.2(4) HIGH DENSITY POLYETHYLENE PIPE

High Density Polyethylene (HDPE) Pipe shall meet the requirements of Section 9-30.1(6) and the following:

Shall be manufactured from resins meeting the requirements of ASTM D3350 with a cell classification of 345464C and a Plastic Pipe Institute designation of PE3408.

Shall be solid wall, Iron Pipe Size (IPS), with an inside diameter that is not less than shown on the Plans.

Shall have a Standard Dimension Ratio of 32.5 or less."

3. **SUPPLEMENT** Section 7-21.3(5)E (Steel Pipe Casing Welded Joints) of the Technical Special Provisions, Part 2 as shown below:

"7-21.3(5)E STEEL PIPE CASING WELDED JOINTS

BTC-P4 partial pen welds for field welds is acceptable with certification and visual inspection as required by AWS D1.1.

By signing the space provided in the "Receipt of Addenda" section of the "Bid Proposal", bidders certify and acknowledge receipt of Addendum No. 2 and to due consideration thereof in preparing and submitting the "Bid Proposal".

Failure to acknowledge receipt of this Addendum on the "Bid Proposal" may be considered an irregularity in the "Bid Proposal".

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Ingrid Gaub, P.E.
City Engineer

CITY OF AUBURN
DEPARTMENT OF PUBLIC WORKS

ADDENDUM NO. 1 DATE July 8, 2014

Project Number CP1122, Contract No. 14-08
30th Street NE Area Flooding – Phase 1

REVISED Bid Opening Date: July 15, 2014
11:00 AM PDT

The following revisions, additions, and/or deletions are hereby made a part of the specifications and plans of the above-named contract and shall be taken into consideration by the bidder in submitting his bid:

Bid Proposal Package:

1. **REPLACE** the entire original Bid Proposal Package with the attached Bid Proposal Package.

    a. The following is a summary of the list of changes to the Bid Proposal Package:

        i. Bid Opening Date
        The bid opening date has changed to **Tuesday, July 15, 2014 at 11:00 AM PDT**

        ii. Page 5 of the Proposal Form.

            1. The quantity for Bid Item No. 65 "Solid Wall Polyvinyl Chloride (PVC) Storm Pipe, PS46, 42-Inch Diam." is revised to 3,386.

            2. A new Bid Item No. 66 "42-Inch Diam. Storm Pipe Installation, Sta. 34+50 to Sta. 39+50, Complete" has been added and the subsequent Bid Item numbers have been revised.

        iii. Page 6 of the Proposal Form.

            1. The quantity for Bid Item No. 81 "Trench Shoring System" is revised to 36,500.

            2. A new Bid Item No. 92 "Removing Steel Casing Obstructions" has been added and the subsequent Bid Item numbers have been revised.

Contract Provisions:

2. **ADD** Section 5-04.3(3)A (Material Transfer Device/Vehicle) to the Technical Special Provisions, Part 2 as shown below:

   "5-04.3(3)A MATERIAL TRANSFER DEVICE/VEHICLE Deletion

   This section is deleted in its entirety."

3. **ADD** the following new paragraph to Section 7-04.2 (Materials):

   "Pipe and casing materials for trenchless installations shall be per Section 7-21 (Trenchless Pipe Installation)."

4. **REVISE** section heading "7-04. (Construction Requirements)" on page 7-1 of the Special Provisions, Part 2 to "7-04.3 (Construction Requirements)" and **ADD** the following paragraph:

   "Installation of the new 42-inch storm pipe from approximately station 34+50 to 39+50 shown on Sheets 18 and 19 of the Contract Plans is constrained to within a 15-foot wide City easement that is bound on both sides by privately owned structures. These conditions make it difficult for the storm pipe to be installed using common shoring methods and/or over excavation. The Contractor shall construct this segment of pipe using either an engineered shoring system per Section 7-08.3(6) (Trench Shoring System) or a jacked casing with carrier pipe system per Section 7-21 (Trenchless Pipe Installation), or a combination thereof. The Contractor shall select which method of installation for this pipe section and bid accordingly. No adjustments or additional payments shall be made to the Contractor to account for differences between the actual method(s) of pipe installation and the method(s) assumed when preparing the bid documents."

5. **ADD** the following paragraph to Section 7-04.4 (Measurement):

   "Measurement for "42-Inch Diam. Storm Pipe Installation, Sta. 34+50 to Sta. 39+50, Complete" shall be per Lump Sum."

6. **ADD** the following table item and paragraph to Section 7-04.5 (Payment):

"42-Inch Diam. Storm Pipe Installation, Sta. 34+50 to Sta. 39+50, Complete	Lump Sum

   The Lump Sum Contract price for "42-Inch Diam. Storm Pipe Installation, Sta. 34+50 to Sta. 39+50, Complete" shall be full pay for the Contractor to complete the installation of the 42-inch storm line including, but not limited to, the following:

   <u>For trenchless installation per Section 7-21 (Trenchless Pipe Installation)</u>:

   - Preparing the trenchless installation plan including all costs in connection with preparation, submittal and all resubmittals of work plans and calculations;
   - All work necessary to complete the jacking and receiving pits including all costs in connection with planning, design, submittal, resubmittals, excavation, maintenance, backfilling, compaction, site restoration, and shoring for the jacking and receiving pits;
   - All costs in connection with furnishing, splicing and installing the casing pipe, grouting outside the casing pipe, hauling and disposal of casing spoils, surveying, developing the final carrier pipe installation plan, installing the carrier pipe track system, and all associated quality assurance measures;

- All costs for furnishing and installing the HDPE carrier pipe, pressure testing, providing and installing temporary end caps, and filling the annuals with sand, and all associated quality assurance measures.

For open trench installation:

- Adjusting inverts to manholes;
- Cleaning and testing of pipes;
- Trenching and shoring system and plan per 7-08.3(6) (Trench Shoring System) specific to the pipe installation from Sta. 34+50 to 39+50;
- Installing bedding and backfill materials within the trench;
- Disposal of surplus trench excavation;
- General pipe installation work including plugs and connections;
- Plugging existing pipes for abandonment;
- Bypass pumping."

7. **ADD** Section 7-08.3(6) (Trench Shoring System) to the Technical Special Provisions, Part 2 shown below:

"7-08.3(6) TRENCH SHORING SYSTEM New Section

The Contractor shall design and provide a trench shoring system plan using accepted and professional methods consistent with current industry practice to provide a safe and functional work space to install the storm line. The trench shoring system plan shall be submitted in accordance with Section 1-06.7 (Submittals).

The Contractor shall be solely responsible for the design, installation, operation, maintenance, and any failure of any component of the system. Restoration of property damaged due to settlement caused by the trench shoring system shall be the Contractor's responsibility."

8. **REVISE** the last paragraph of Section 7-08.5 (Payment) of the Technical Special Provisions, Part 2 to read:

"The unit contract price for Trench Shoring System shall include all costs associated with designing, planning, plan submittal and resubmittal, furnishing, and installing the system in accordance with requirement of Section 2-09, excluding any trench shoring system required for the 42-inch storm pipe installation between Sta. 34+50 to 39+50."

9. **ADD** the following Section 7-21 (Trenchless Pipe Installation) to the Technical Special Provisions, Part 2 as shown below:

"7-21 TRENCHLESS PIPE INSTALLATION **New Section**

7-21.1 DESCRIPTION

This section covers trenchless installation of the 42-inch storm line along the private drive between Station 34+50 and Station 39+50 by pipe jacking should the Contractor choose to use this method of installation. The work includes the following:

- Furnishing and installing steel casing pipe;
- Furnishing and installing HDPE Carrier Pipe within the casing;
- Annular sand backfilling between the casing and carrier pipe;
- Furnishing and installing temporary end caps; and
- All associated site work to complete the trenchless installation, including surveying, construction of jacking and receiving pits, repair of surface deformations in excess of specified limits, and site restoration.

7-21.1(1) DEFINITIONS

Pipe Jacking: A technique using hydraulic cylinders to advance a specially designed steel casing pipe while removing spoils in the casing via a rotating inner drum.

Cobble: Rock having a maximum orthogonal dimension between 3 and 12 inches and an unconfined compressive strength of up to 60,000 pounds per square inch.

Boulder: Rock having a maximum orthogonal dimension greater than 12 inches and an unconfined compressive strength of up to 60,000 pounds per square inch.

Wood: Fibrous organic material having a maximum orthogonal dimension greater than 12 inches. Timber piles, logs, tree trunks, roots, dimensional lumber, and any other fibrous organic material shall be considered wood.

Obstruction: An obstruction is defined as a specific object (including, but not limited to, boulders, wood, and manmade objects) having a maximum orthogonal dimension greater than 12 inches encountered during casing advancement which prevents or hinders forward advancement of the casing. Cobbles are not obstructions, and all cobbles encountered shall be removed by the Contractor's excavation and spoil removal methods.

7-21.1(2) REFERENCES

The following is a list of standards which may be referenced in this section:

American Petroleum Institute (API):
5L, Specification for Line Pipe

American Water Works Association (AWWA):
C200, Steel Water Pipe – 6 in. (150 mm) and Larger.

ASTM International (ASTM):
A36/A36M, Standard Specification for Carbon Structural Steel.

A139/A139M, Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over).

D3350, Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

F2620, Standard Practice for Heat Fusion Joining of Polyethylene Pipe and Fittings.

F714, Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter

ANSI/AWWA

C906, Polyethylene (PE) Pressure Pipe and Fittings 4 in. (100 mm) Through 63 in. (1,600 mm), for Water Distribution and Transmission.

7-21.2 MATERIALS

7-21.2(1) STEEL CASING PIPE

Casing pipe shall be steel fabricated in accordance with AWWA C200 and ASTM A139/A139M Grade B with a minimum wall thickness that is adequate for anticipated jacking loads. (Note: minimum wall thickness may be increased if necessary to withstand installation forces or to match available casing pipe from different manufactures. In no instance shall casing pipe wall thickness be decreased.)

Hydrostatic testing of steel pipe used for casings is not required.

No exterior coating or interior lining is required.

Casing pipe joints shall be completed using full depth welding or through the use of snap-lock type joints as manufactured by Permalok, or Engineer approved equal.

7-21.2(2) GROUT HOLES

The Contractor shall furnish casing pipe with 2-inch diameter preformed and threaded flush-mounted grout holes at the crown for pressure grouting. Spacing of grout holes shall not exceed 5 feet. The Contractor shall provide and install flush mounted plugs to prevent soil entry during jacking.

The grout for filling voids outside casing shall be neat cement grout with a minimum compressive strength of 200 psi.

7-21.2(3) CASING END SEALS

Casing end seals shall be synthetic rubber, conical shape, pull-on or wrap-around style with Type 304 stainless steel bands.

Manufacturers for Casing End Seals shall be one of the following or an approved equal:

Pipeline Seal and Insulator, Inc. (PSI), Houston, TX.

Advance Products and Systems, Inc., Lafayette, LA.

Cascade Waterworks Mfg. Co., Yorkville, IL

7-21.2(5) CARRIER PIPE SUPPORT CHANNELS

Carrier pipe support channels shall be suitable for supporting the weight of the carrier pipe when full of water and when completing the installation of the sand backfill in the annular space. Carrier pipe support channels shall be welded perpendicular to the casing pipe length and shall meet the following requirements:

All stainless steel shall be A36 or better.

All welding shall be per AWS D1.1

7-21.3CONSTRUCTION REQUIREMENTS

7-21.3(1) SUBMITTALS

At least 30 working days prior to the start of work, the Contractor shall submit the following:

Documentation that the Contractor or Contractors performing the work in this section have experience defined under Quality Assurance (below). Proof of qualifications must include names of projects, descriptions of projects, names of project owners, dates of project work, and a project reference person and phone number for each project used to meet the requirements as defined below.

Casing pipe material details including the standard to which it is manufactured, outside diameter, wall thickness, physical and chemical properties, and joint configuration.

Details of casing supports, including Manufacturer's recommended spacing.

Jacking and receiving pit design drawings.

Estimated jacking forces compared to forces that can be accommodated by steel casing.

Plans for grade/alignment correction.

Trenchless installation plan indicating, at a minimum, schedule, working hours, equipment, stockpile areas, maximum deviation from line and grade at each joint location, jointing procedures, lubrication procedures, and grouting procedures.

Carrier pipe installation plan, including, at a minimum, methods, procedures, and equipment for installing carrier pipe inside the casing, and methods for backfilling the annular space between the carrier pipe and the casing with sand. Provide plan for maximum deviation of casing pipe at each joint so that casing supports or other means can be used to keep carrier pipe to specified line and grade. Provide maximum pipe length to be backfilled and methods for blocking the casing ends during backfilling operations, method of determining sand levels placed or completion of void filling, method of preventing carrier pipe floatation, movement, or buckling, communications provisions, testing procedures, and cleanup procedures. The work plan shall include pumping pressures, pumping rates, volumes to be placed per day, injection and venting locations, method of surveying or monitoring carrier pipe for movement during sand placement, and maximum injection pressures.

Manufacturer's Certification of Compliance for HDPE pipe stating the materials meet the requirements of ASTM D 3350 with the correct cell classification with the physical properties listed above. The supplier shall certify the dimensions meet the requirements of ASTM F 714 or as indicated in this Specification or the Plans.

Sand gradation proposed for use. Submittal shall include type, brand and source of sand; specific gravity of all materials; and results of required tests.

At least 5 days prior to beginning excavations the Contractor shall submit the following:

Written log of coordinates and elevations (location) of ground deformation monitoring points measured to the nearest 1/8-inch. The log shall include drawings showing the actual as-built installed location, the identification number, the installation date and time, and the coordinates and elevation of the point. Include details of accessories and protective measures including all dimensions and materials used.

Weekly as insertion or receiving pit construction progresses, daily while trenchless construction is underway, submit records of settlement at monitoring points.

During casing installation the Contractor shall submit the following:

Written logs of daily measurements of horizontal and vertical location of casing, by the next day.

Written logs of daily measurements of material removed from the boring recorded in cubic yards, by the next day.

Results of the survey of the casing pipe interior and plans for installing the carrier pipe to the line and grade and tolerances specified, at least 5 working days prior to carrier pipe installation.

During carrier pipe installation the Contractor shall submit the following on a daily basis:

Installation records, including footage installed, welding records, and Contractor's diaries

Records for backfilling the annular space:

- Delivery tickets conforming to the requirements of Division 1-09.2.
- Volumes of sand placed and lift (stage) heights achieved.
- Stationing of sand placement.
- Injection locations and pressures.
- Time of placement.

7-21.3(2) DESIGN CRITERIA

The Contractor shall design pit excavation support systems to withstand lateral earth pressures, ground loads, unrelieved hydrostatic pressure, bottom heave, equipment loads, applicable traffic, rail, and construction loads, and other surcharge loads to allow safe construction of pits without appreciable movement or settlement of ground, and to prevent damage to or movement of adjacent structures, streets, utilities, and trees.

The Contractor's design shall be signed and stamped by a professional civil or structural engineer registered in the State of Washington.

The Contractor shall design an excavation support system and select casing installation equipment that are compatible with geologic conditions defined in the Contract Documents.

7-21.3(3) INSTALLATION TOLERANCES

The Contractor shall install carrier pipe in the pipe casing within the tolerance limits specified in Division 7-08.3(2)B.

7-21.3(4) QUALITY ASSURANCE

Design Professional: Submittals for facilities requiring structural design shall be signed and stamped by a professional civil or structural engineer registered in the State of Washington.

Qualifications:

In addition to the requirements described in the Bid Proposal Package, jacking operations shall be performed by a qualified Contractor with at least 5 years of experience involving work of a similar nature. Onsite foreman and equipment operator shall have at least 3 years of experience involving work of this nature using similar

equipment, casing pipe (material, diameter and length), subsurface conditions, and steering tolerances. The Contractor shall provide documented proof of these qualifications per 7-21.3(1).

In addition to the requirements described in the Bid Proposal Package, carrier pipe installation and annular backfilling shall be performed by a qualified Contractor who has successfully installed welded HDPE pipe of similar or larger diameter and length to those specified on at least three projects. The Contractor shall provide documented proof of these qualifications per 7-21.3(1).

7-21.3(5) STEEL CASING PIPE INSTALLATION

7-21.3(5)A EQUIPMENT SELECTION

The Contractor shall select necessary equipment and methods to install casing and carrier pipe. The selected equipment shall be capable of accurate alignment and grade control, protect against subsidence or other disturbance of ground, existing utilities, and structures. The selected equipment shall be capable of accommodating all anticipated forces that will be encountered during installation of the casing pipe. Boulders, nested cobbles and wood should be anticipated; equipment for their breakup and removal shall be available.

7-21.3(5)B COORDINATION

The Contractor shall coordinate with other agencies as required.

The Contractor shall confirm location of all known existing utilities prior to start of pit excavation and pipe installation.

7-21.3(5)C PIT INSTALLATION

The Contractor shall notify the Engineer not less than 15 working days before beginning pit excavation.

Methods of construction for pits shall be such as to ensure the safety of the Work, Contractor's employees, the public, existing utilities, and adjacent property and improvements.

The Contractor shall provide complete surface runoff and groundwater control for excavations at all times. If dewatering deem necessary by the Engineer, then it shall be paid for under the "Dewatering System" bid item.

The Contractor shall place fencing, gates, lights, and signs, as necessary around pits and staging areas to provide for public safety.

The Contractor shall inspect pit excavations daily to check safety of excavation and structural integrity of support system.

7-21.3(5)D LUBRICATION OF CASING EXTERIOR

Bentonite slurry may be used to lubricate exterior of casing during installation.

7-21.3(5)E STEEL PIPE CASING WELDED JOINTS

Welds shall be continuous, complete joint penetration (CJP) butt joint welds as required for rigid and watertight connections.

Welding shall be in accordance with Section 6-03.23(25).

The Contractor shall grind smooth all rough welds at carrier pipe joints.

7-21.3(5)F CASING INSTALLATION

The Contractor shall verify casing pipe minimum wall thickness is adequate for anticipated jacking loads.

The Contractor shall verify installation equipment and equipment support are adequate for anticipated jacking loads.

The Contractor shall provide a means of steering casing to ensure allowable tolerance can be achieved.

The Contractor shall conduct boring operations in a manner that will not be detrimental to facility being crossed.

Tolerance shall be as indicated in the trenchless installation plan so that the carrier pipe can be installed to the tolerance specified herein.

The Contractor shall provide a means of checking grade continuously. The Contractor shall record line and grade at minimum 20-foot intervals and, when jacking progress is impeded, and at least once a day to confirm allowable tolerance has been achieved.

When efforts to advance past an obstruction result in the rate of advance being significantly reduced relative to the rate of advance for the rest of the casing, or result in a deviation in line or grade, then the Contractor shall cease forward advancement of the boring, notify the Engineer, and immediately commence removing obstruction as described in 7-21.3 (6).

If necessary to abandon a bored hole, remedial measures shall be taken by the Contractor, subject to review and approval by the Engineer and the Owner of the facility being crossed.

The Contractor shall ensure all permanent casing welded joints are watertight and no water is entering the casing from any source, and grind smooth all rough welds at casing joints.

The Contractor shall survey the interior of the casing pipe. Measurements shall be taken at the locations of all joints at the top, bottom, and sides at midline.

7-21.3(5)G CORRECTION OF GRADE

If casing misalignment at any time exceeds the maximum indicated in the carrier pipe installation plan, the Contractor shall stop forward advancement and develop plan for misalignment correction.

7-21.3 (6) REMOVING STEEL CASING OBSTRUCTIONS

If an obstruction is encountered during casing installation as defined and described above, the Contractor shall notify the Engineer before removal of obstruction begins. The Contractor shall pull the rotating drum from within the casing, and remove or breakup the obstruction such that the casing installation can proceed on line and grade. Grade and alignment control shall be verified prior to restart of jacking.

7-21.3 (7) GROUTING JACKED CASING

Exterior Voids (outside casing pipe):

After casing has been jacked into position and line and grade has been confirmed, the Contractor shall pressure grout through grout holes provided to fill voids outside of casing.

The Contractor shall start grouting at centerline hole at one end and pump grout until grout appears in grout hole at crown, then start grouting through opposite spring line hole until grout appears at hole in crown.

The Contractor shall grout through hole at crown until grout appears in next set of holes along casing.

The Contractor shall plug holes at starting point and move to next set of holes and repeat grouting sequence until full length of casing has been grouted.

7-21.3(9) HIGH DENSITY POLYETHYLENE (HDPE) CARRIER PIPE JOINTS

HDPE pipe shall be joined into a continuous length by an approved butt welding method.

The joints shall not increase the outside diameter of the pipe other than that created by the welding bead.

The joints shall be water tight and pressure tested in accordance with Section 7-04.3(1) B.

Joints to be welded by butt fusion, shall meet the requirements of ASTM F 2620 and the manufacturer's recommendations.

Fusion equipment used in the joining procedure shall be capable of meeting all conditions recommended by the pipe manufacturer, including but not limited to fusion temperature, alignment, and fusion pressure.

All field welds shall be made with fusion equipment equipped with a Data Logger.

Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the Quality Control records.

Electro-fusion may be used for field closures as necessary.

Joint strength shall be equal or greater than the tensile strength of the pipe.

At the time of manufacture, each lot of pipe, liner, and fittings shall be inspected for defects and tested for Elevated Temperature Sustain Pressure in accordance with ASTM F 714. The Contractor shall not install any pipe that is more than 2 years old from the date of manufacture. A Manufacturer's Certificate of Compliance meeting the requirements of Division 1-06.3 affirming these requirements shall be provided with each delivery.

At the time of delivery, the pipe shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters, or deleterious faults.

The Contractor shall mark pipe at 5 foot intervals or less with a coded number which identifies the manufacturer, SDR, size, material, machine, and date on which the pipe was manufactured.

7-21.3 (10) INSTALLATION OF CARRIER PIPE IN STEEL CASING

Based on the survey results, the Contractor shall develop a plan for installing pipe support channels or other means to install the carrier pipe such that it meets the line and grade shown in the Plans.

The Contractor shall remove all water, soil, and debris from casing pipe.

The Contractor shall install carrier pipe in accordance with specified tolerances and approved submittals.

The Contractor shall prevent flotation, movement, or damage to the carrier pipe during installation, water pressure testing, and annular space backfill placement. Every individual pipe section shall be supported by at least two sets of welded pipe support channels or more, if recommended by the pipe manufacturer to prevent carrier pipe movement during backfill of the annular space.

The Contractor shall install carrier pipe without sliding or dragging it on the ground or in the casing in a manner that could damage the pipe.

The Contractor shall coat the casing channel supports with a non-corrosive/environmentally safe lubricant to minimize friction when installing the carrier pipe.

After pressure testing and acceptance of the carrier pipe installation by the Engineer, the Contractor shall furnish and install permanent caps or plugs on the upstream and downstream ends of the carrier pipe prior to backfill and restoration activities. The Contractor shall ensure that a minimum of 6-feet of carrier pipe extends beyond the upstream and downstream end of the casing pipe, to allow for future connection.

7-21.3(11) ANNULAR SPACE BACKFILLING

Carrier pipe testing shall be complete and accepted by the Engineer prior to backfilling the annular space.

The Contractor shall properly place sand as specified herein. The carrier pipe shall be anchored to prevent floatation or movement off established line and grade during the installation of the annular space backfill. Backfill shall be placed such that loading on the carrier pipe does not exceed its ability to withstand buckling pressures.

Methods for completely filling the annular space between carrier pipe and the casing shall be utilized in accordance with submittals that are reviewed and approved by the Engineer.

The Contractor shall construct temporary bulkheads, or provide some other means to contain sand at the ends of the steel casing during backfill operations.

The Contractor shall construct bulkheads so the annular space is completely backfilled.

An opening shall be provided in the tunnel crown to allow entrapped air to escape. Vent outlets shall be provided as required.

The Contractor shall inform the Engineer at least 24 hours in advance of the time and place where placement of sand is anticipated.

Any damage to the pipe caused by or occurring during the backfilling operations shall be repaired by a method approved by the Engineer, at no additional cost to the City.

7-21.3(12) VENTING OF STEEL CASING

The Contractor shall ensure that each end of the steel casings are vented to the adjacent connecting manhole with 2-inch PVC schedule 40 pipe. The vents shall not interfere with the end seals. The vents shall connect the crown of the casing with a threaded water tight fitting, to the manhole with a screened end cap.

7-21.3(13) REMOVAL OF PIT SUPPORT SYSTEMS

Within the access pit excavations, the Contractor shall backfill areas within the pipe zone and backfill zone in accordance with section 7-08.3 and as shown in the pipe trench details. As an option and for no additional cost to the Contracting Agency, the pipe zone within the pits may be backfilled with CDF in accordance with section 2-09.3(1)E. If CDF is used, the

Contractor shall prevent floatation of the pipe. For areas within the access pits that are outside pipe trench limits, the Contractor shall backfill with Gravel Borrow For Trench Backfill and compact the backfill in accordance with section 2-09.3(1)E. The Contractor shall remove the temporary support elements, and compact backfill materials in horizontal lifts up to and against the pit walls, in a manner that will not disturb or harm adjacent construction or facilities, and will not put workers or public at risk of injury. All areas outside the limits of roadway grading and/or paving shall be restored to pre-project conditions including grading, seeding, vegetation replacement, and fence replacement.

7-21.4 MEASUREMENT

No specific unit of measure shall apply to the bid item "Removing Steel Casing Obstructions".

7-21.5 PAYMENT

Payment will be made in accordance with Section 1-04.1 for the following bid items when included in the proposal:

Removing Steel Casing Obstructions	Per Equitable Adjustment

Payment for "Removing Steel Casing Obstructions" will be per Section 1-09.4 (Equitable Adjustment) for all costs in connection with removing, breaking-up, or pushing aside casing obstructions as described in Section 7-21.3(6) of this Special Provision.

The Contractor and the Engineer shall evaluate the effort made and reach agreement on the equipment and employees utilized and the number of hours involved for each. Once these cost items and their duration have been agreed upon, the payment amount will be determined using the rate and markup methods specified in Section 1-09.6 (Force Account). For the purpose of providing a common proposal for all bidders, the City has entered an amount for the item "Removing Casing Obstructions" in the bid proposal to become a part of the total bid by the Contractor.

If casing construction equipment is idled as a result of the work required to remove the obstruction and cannot be reasonably reassigned within the project, then standby payment for the idled equipment will be added to the payment calculations. If labor is idled as a result of the work required to remove the obstruction and cannot be reasonably reassigned within the project, then all labor costs resulting from Contractor labor agreements and established Contractor policies will be added to the payment calculations. Obstructions should be anticipated and idle time incurred for equipment mobilization in excess of 4 hours per instance will not be paid."

By signing the space provided in the "Receipt of Addenda" section of the "Bid Proposal", bidders certify and acknowledge receipt of Addendum No. 1 and to due consideration thereof in preparing and submitting the "Bid Proposal".

Failure to acknowledge receipt of this Addendum on the "Bid Proposal" may be considered an irregularity in the "Bid Proposal".

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Ingrid Gaub, P.E.
City Engineer