April 13, 2015

BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA

ADDENDUM NO. 1 / IFB NO. Y15-767-PH

UNIVERSITY BOULEVARD FORCEMAIN PROJECT (QUADRANGLE BLVD TO ALAFAYA TRAIL)

BID OPENING: April 23, 2015

This addendum is hereby incorporated into the bid documents of the project referenced above. The following items are clarifications, corrections, additions, deletions and/or revisions to and shall take precedence over the original documents. Additions are indicated by underlining, deletions are indicated by ~~strikethrough.~~

A. BIDDER QUESTIONS

Q1. Is a Project Identification/Sign (01580) required for this project as noted in the Technical Specs?

A1. Yes. Please use the format shown on the attached sample sign.

Q2. Is a Construction Field Office (01590) required for this project as noted in the Technical Specs?

A2: No

B. DRAWINGS

None

C. SPECIFICATIONS

1. Part D

Replace the Bid Schedule on page D-3 with the attached Bid Schedule.

2. Section 1010 – SUMMARY OF WORK

1. Page 1, Part 1, 1.01, B, 3 should be revised as follows:

Installation of a sanitary sewer force main system via open cut and ~~close tolerance~~ horizontal directional drilling (HDD)

2. Page 2, Part 1, 1.02, A should be revised as follows:

   Working hours for the County Inspector are an 8-hour period between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday. Any work beyond the 8-hour period is to be requested in writing 48 hours prior and paid for by the Contractor. Any work required on Saturday, Sunday or Holidays shall be requested in writing 48 hours in advance. All requests must be submitted to the County and approved by the County in advance. Under emergency situations, a verbal request may be made with a follow-up written request. This project will require work to be performed by the Contractor outside of normal County working hours <u>for Work that requires closure of travel lanes within University Boulevard</u>.

3. Section 01025 – MEASUREMENT AND PAYMENT

1. Page 6, Part 1, 1.05, C, 6 should be revised as follows:

   Item 6 - 12" Wastewater Force Main (DR-18, PVC) and Fittings (~~Close Tolerance~~ HDD Construction)

4. Section 01370 – SCHEDULE OF VALUES

1. Page 2, Part 1, 1.05, a, 6 should be revised as follows:

   12" Wastewater Force Main (DR-18 PVC) and Fittings (~~Close Tolerance~~ HDD Construction)

5. Section 02665 – HORIZONTAL DIRECTIONAL DRILLING OF PRESSURE MAINS

1. Attached section to be added to the specifications.

6. Specification Table of Contents

1. Page 2, Division 2 – Site Work should be revised to add the new specification section as follows:

DIVISION 2 - SITE WORK
02140 Dewatering
02215 Finish Grading
02220 Excavating, Backfilling and Compacting

02575 Pavement Removal and Replacement
02576 Concrete Sidewalks and Driveways
02578 Solid Sodding
02661 Wastewater Force Mains
02665 Horizontal Directional Drilling of Pressure Mains
02777 Close Tolerance Horizontal Directional Drilling

C. The Bidder shall acknowledge receipt of this addendum by completing the applicable section in the solicitation or by completion of the acknowledgement information on the addendum. Either form of acknowledgement must be completed and returned not later than the date and time for receipt of the bid.

All other terms and conditions remain the same.

Receipt acknowledged by:

_____ _____
Authorized Signature Date Signed

_____
Title

_____
Name of Firm

(Revised) BID SCHEDULE
UNIVERSITY BOULEVARD 12-INCH FORCE MAIN PROJECT
(Quadrangle Boulevard to Alafaya Trail)

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Amount
1	Mobilization, Demobilization, Bonds, Insurance, and Permits (not to exceed 5% of the total for Items 2-17)	1	LS		
2	Indemnification	1	LS	$100.00	$100.00
3	Project Record Drawings (minimum 1% of the total for Items 6-17)	1	LS		
4	Maintenance of Traffic	1	LS		
5	Preconstruction Audio/Visual Documentation and Construction Photographs	1	LS		
6	12” Wastewater Force Main (DR-18 PVC) and Fittings (HDD Construction)	2,600	LF		
7	Force Main Connection to Existing Manhole 33660010 and 12” Wastewater Force Main between MH 33660010 and FMV-2	1	LS		
8	12” Plug Valve and Box with Accessories	3	EA		
9	12” Wet Tap (Tapping Sleeve, gate valve, & plug valve)	1	EA		
10	12” Linestop	1	EA		
11	2” Combination Air Release Valve Assembly	2	EA		
12	Asphalt Pavement Removal and Replacement (w/temp asphalt surface)	1220	SY		
13	Concrete Curb and Gutter Removal and Replacement	570	LF		
14	Concrete Sidewalk Removal and Replacement	170	SY		
15	Utility Support and/or Protection	1	LS		
16	Unsuitable Material Excavation Below Grade	20	CY		
17	Contaminated Groundwater Treatment and Disposal	30	Days		

TOTAL ESTIMATED BID AMOUNT $_____

Revised D-3

SECTION 02665 – ADDENDUM #1
HORIZONTAL DIRECTIONAL DRILLING OF PRESSURE MAINS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: Furnish and install underground utilities using the horizontal directional drilling (HDD) method of installation, also commonly referred to as directional boring or guided horizontal boring for pressure pipe. This Work shall include all piping services, equipment, materials, and labor for the complete and proper installation testing, restoration of underground utilities, and environmental protection and restoration.

1.02 QUALITY ASSURANCE

A. Qualifications
   1. Directional drilling Contractor or Subcontractor shall have a minimum of 4-years experience constructing water, wastewater, or reclaimed water experience to include pipelines of the same or larger diameter and the same or greater lengths. All pipe and appurtenances of similar type and material shall be furnished by a single manufacturer.
   2. The Contractor's operations shall be in conformance with the Directional Crossing Contractors Association (DCCA) published guidelines (latest edition) and pipe manufacturer's guidelines and recommendations.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. Submittals shall be submitted to the County for review and acceptance prior to construction in accordance with the General Conditions and specifications Section 01300 "Submittals."
   1. Work Plan
   2. Pipe
   3. Couplings
   4. HDPE mechanical joint adapters
   5. Training and experience of directional boring machine operator
   6. Directional drilling equipment Specifications including calibration records

B. Prior to beginning Work, the Contractor must submit a work plan to the County detailing the procedure and schedule to be used to execute the Project. The Work plan should include the following:
   1. A description of all equipment to be used
   2. Down-hole tools
   3. A list of personnel and their qualifications and experience
   4. List of Subcontractors
   5. A schedule of work activity
   6. A safety plan and traffic control plan (if applicable)

7. An environmental protection plan and
8. Contingency plans for possible problems

C. Equipment
1. The Contractor will submit specifications on directional drilling equipment to be used to ensure that the equipment will be adequate to complete the Project. Equipment shall include but not be limited to the following:
a. Drilling rig
b. Mud system
c. Mud motors (if applicable)
d. Down-hole tools
e. Guidance system and
f. Rig safety systems

PART 2 - PRODUCTS

2.01 GENERAL

A. All material supplied shall be one of the products specified in Appendix D "List of Approved Products" appended to these technical specifications.

B. The directional drilling equipment shall consist of the following:
1. A directional drilling rig of sufficient capacity to perform the bore and pullback operations.
2. A drilling fluid mixing, delivery, and recovery system of sufficient capacity to complete the crossing.
3. A drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused.
4. A magnetic guidance system to accurately guide boring operations.
5. A vacuum truck of sufficient capacity to handle the drilling fluid volume and
6. Trained and competent personnel shall operate the system.

C. All equipment shall be in good, safe operating condition with sufficient supplies, materials, and spare parts on hand to maintain the system in proper working order.

2.02 DRILLING SYSTEM

A. The directional drilling machine shall consist of a hydraulically powered system to rotate, push, and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing, and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pullback pressure during pullback operations. The rig shall be grounded during drilling and pullback operations. There shall be a system to detect electrical current from the drilling string and an audible alarm that automatically sounds when an electrical current is detected.

2.03 PIPE

A. Pipe shall be PVC or HDPE pipe with ductile iron pipe outside diameters in accordance with AWWA C900 (C905) or C906 respectively. The dimension ratio shall be verified by the Contractor based on the pipe, joint, and material pull strength required for the directional drilling.

B. PVC Pipe

1. PVC restrained joint pipe shall have maximum dimension ratios equal to the following table:

Table 02665-1
Maximum Dimension Ratios for PVC Pipe

Type of Pipe System	Maximum Dimension Ratio
Wastewater	18
Reclaimed Water	18
Water	18

2. PVC pipe shall meet the requirements of AWWA C900. The pipe shall be joined using separate couplings that have beveled edges, built-in sealing gaskets and restraining grooves or steel ring-and-pin gasketed joints. The restraining splines shall be square and made from Nylon 101. Pipe and couplings shall be Underwriters Laboratory and Factory Mutual approved.
3. Installation Curvature: The pipeline curvature shall not have a radius less than as shown in Table 02665-2.

Table 02665-2
PVC Pipe Deflection Information

Pipe Diameter (inches)	Minimum Radius of Curvature (feet)	Offset per 20-ft Length (inches)	Deflection per 20-ft Length (degrees)
4	133	17.25	8.6
6	200	12.00	5.7
8	266	9.00	4.3
10	333	6.75	3.5
12	400	6.00	2.9
16	532	4.50	1.5

C. HDPE Pipe

1. HDPE pipe and related fittings shall be made with prime virgin resins exhibiting a minimum cell classification as defined in ASTM D3350 and meeting the PE 3408 code designation with maximum dimension ratios equal to the following.

Table 02665-3
Maximum Dimension Ratios for HDPE Pipe

Type of Pipe System	Maximum Dimension Ratio
Wastewater	11
Water	11
Reclaimed Water 11	11

2. HDPE pipe 4-inch and larger nominal diameter shall be joined by means of zero leak-rate butt (thermal heat) fusion welds and/or approved flanged joints. Joints shall provide axial pullout resistance. Pipe shall meet the requirements of ANSI/AWWA C906, and have an outside diameter dimension of ductile iron pipe. Flanged joints shall not be used below finished grade for horizontal directional drilling applications.
3. HDPE pipe shall have been continuously marked by the manufacturer with permanent printing indicating at a minimum the following:
   a. Nominal size (inches)
   b. Dimension ratio (DR)
   c. Pressure rating (psi)
   d. Trade name
   e. Material classification (PE 3408)
   f. Plant, extruder, and operator codes
   g. Resin supplier code
   h. Date produced and
   i. HDPE pipe used for portable water mains shall bear the NSF Seal of Approval.
4. HDPE pipe shall be black in color with permanent colored stripes extruded into the pipe length or shall be 1 solid-color, per the applicable service.

Table 02665-4
Pipe Color

Pipe Use	Color Coding
Potable Water	Blue
Wastewater	Green
Reclaimed Water	Purple

5. Installation Curvature
   The pipeline curvature shall not have a radius less than as shown in Table 02665-5.

Table 02665-5
HDPE Pipe Deflection Information

Pipe Diameter (inches)	Minimum Radius of Curvature (feet)	Offset per 20-ft Length (inches)
4	23	9.3
6	34	6.1
8	44	4.6
10	56	3.5
12	67	3.0
16	88	2.3

2.04 LOCATING WIRE

A. Locating wire shall be 10-gauge continuous single strand solid core copper wire with non-metallic insulation.

B. Color-coding shall be similar to pipeline identification colors.

C. A minimum of 3 locating wires shall be attached with nylon wire ties at different radial locations around the pipe to ensure continuity in at least 1 wire subsequent to installation. Contractor shall be required to provide as many wires as necessary to maintain continuity throughout the length of the directional bore. Failure of continuous continuity in the locating wire shall result in abandonment and reinstallation of the directional drill, at the discretion of the County.

2.05 DRILLING FLUIDS

A. Drilling fluids shall consist of a mixture of potable water and gel-forming colloidal material, such as bentonite or a polymer surfactant mixture producing a slurry of custard-like consistency.

PART 3 - EXECUTION

3.01 PERSONNEL REQUIREMENTS

A. Responsible representatives of the Contractor and Subcontractor(s) shall be present at all times during directional drilling operations. A responsible representative as specified herein is defined as a person experienced in the type of work being performed and who has the authority to represent the Contractor in a routine decision making capacity concerning the manner and method of carrying out the Work.

B. The Contractor and Subcontractor(s) shall have sufficient number of competent workers on the Project at all times to ensure the utility placement is made in a timely, satisfactory manner. Adequate personnel for carrying out all phases of the directional drilling operation (where applicable: tunneling system operators, operator for removing spoil material, and laborers as necessary for various related tasks) must be on the job site at the beginning of Work. A competent and experienced supervisor representing the Contractor or Subcontractor that is thoroughly familiar with the equipment and type of work to be performed, must be in direct charge and control of the operation at all times. In all cases, the supervisor must be continually present at the project site during the directional drilling operation.

3.02 WORK PLAN

A. Work plan should be comprehensive, realistic, and based on actual working conditions for this particular Project. Plan should document the requirements to complete the Project.
   1. Calibration records for guidance equipment shall be included. Specifications for any drilling fluid additives that the Contractor intends to use or might use shall be submitted.

3.03 COORDINATION OF THE WORK

A. The Contractor shall notify the County at least 3-days in advance of starting Work. In addition, the actual crossing operation shall not begin until the County is present at the project site and agrees that proper preparations for the crossing have been made. The County's approval for beginning the crossing shall in no way relieve the Contractor from the ultimate responsibility for the completion of the Work.

B. The Contractor and the County shall select a mutually convenient time for the crossing operation to begin in order to avoid schedule conflicts.

3.04 PROCEDURE

A. The installation of appropriate safety and warning devices in accordance with the "FDOT Manual on Traffic Control and Safe Practices" shall be completed prior to beginning Work.

3.05 INSTALLATION

A. Erosion and sedimentation control measures and on-site containers shall be installed to prevent drilling mud from spilling out of entry and/or exit pits. Drilling mud shall be disposed of off-site in accordance with local, state, and federal requirements and/or permit conditions.
   1. No other chemicals or polymer surfactant shall be used in the drilling fluid without written consent of the County and after a determination is made that the chemicals to be added are not harmful or corrosive to the facility and are environmentally safe.

B. Pilot Hole: Pilot hole shall be drilled on bore path with no deviations greater than 2% of depth over a length of 100-feet. In the event that pilot does deviate from bore path more than 2% of depth in 100-feet, the Contractor shall notify the County. The County may require the Contractor to pullback and re-drill from the location along bore path before the deviation.

C. Reaming: Upon successful completion of pilot hole, the Contractor will ream borehole to a minimum of 25% greater than outside diameter of pipe using the appropriate tools. Contractor will not attempt to ream at one time more than the drilling equipment and mud system are designed to safely handle.

D. Pullback: After successfully reaming borehole to the required diameter, Contractor shall put the pipe through the borehole. In front of the pipe shall be a swivel and barrel reamer to compact bore hole walls. Once pullback operations have commenced, operations must continue without interruption until pipe is completely pulled into borehole. During pullback operations, the Contractor shall not apply more than the maximum safe pipe pull pressure at any time. A break away head rated at the maximum safe pull pressure shall be utilized.

E. As-built variance from the designed bore path shall not exceed ± (plus or minus) 1-foot in the vertical plane and ± 2-feet in the horizontal plane. The Contractor shall submit any proposed deviations from the design bore path with Shop Drawings.

F. The pipe entry area shall be graded to provide support for the pipe to allow free movement into the borehole. The pipe shall be guided in the borehole to avoid deformation of, or damage to, the pipe.

G. If unexpected subsurface conditions are encountered during the bore, the procedure shall be stopped. The installation shall not continue until the County has been consulted.

H. The pipe shall be pulled back through the borehole using the wet insertion construction technique. The pipe shall be installed full of water.

I. The pipe shall be installed in a manner that does not cause upheaval, settlement, cracking, movement or distortion of surface features.

J. A boring log shall be kept with horizontal and vertical location every 10-feet. The horizontal location of the bore shall be marked in the field during the bore. The Surveyor shall locate these marks and include this information with the bore depths in the Record Drawings. The Surveyor may make a note on the drawing page containing the directional drill and provide an exception for the directional drill only, as the directional drill route cannot be uncovered and physically located.

K. The pipe shall be installed at a depth of no more than 15-feet below pavement, as measured from the top of pipe.

3.06 FIELD TESTING

A. PVC Pipe

Perform hydrostatic testing for leakage following installation in accordance with the applicable test sections.

B. HDPE Pipe

1. Perform hydrostatic testing for leakage following installation of the directional drill.
   a. Test Duration: The total test time including initial pressurization, initial expansion, and time at test pressure must not exceed 8-hours. If the test is not completed due to leakage, equipment failure, etc., the test section shall be depressurized and allowed to "relax" for a minimum of 8-hours before it is brought back up to test pressure. The test procedure consists of the initial expansion phase and leakage test phase.
   b. Initial Expansion Phase: During the initial expansion phase, the test section is pressurized to the test pressure and enough make-up liquid is added each hour for 3-hours to return to test pressure.
   c. Leakage Test Phase: The leakage test phase follows immediately and shall be either 2 or 3-hours in duration. At the end of the time test, the test section shall be returned to test pressure by adding a measured amount of liquid. The amount of make-up liquid added shall not exceed the values provided in Table 02665-6 plus allowable leakage.

Table 02665-6
Allowance for Make-up Water Under Pressure*

Test Duration (hours)	2	4	6	8	12	16	20	24
	Allowance/100-feet of Pipeline (gallons)							
2	0.11	0.25	0.60	1.00	2.30	3.30	5.50	8.90
3	0.19	0.40	0.90	1.50	3.40	5.50	8.00	13.30
*Applies to test period and not to initial expansion phase								

C. Pressure Testing

1. The test pressure for the pipe shall be 150-psi for water and reclaimed water and 100-psi for wastewater.

D. Mandrel Testing

1. Perform mandrel testing through the entire length of the installed pipe. The mandrel size shall be 90% of the inside diameter of the pipe.

END OF SECTION

ORANGE COUNTY GOVERNMENT
FLORIDA

WESTERN REGIONAL WATER SUPPLY FACILITY IMPROVEMENTS PHASE 3A

BOARD OF COUNTY COMMISSIONERS

AJIT LALCHANDANI, P.E.
COUNTY ADMINISTRATOR

TERESA JACOBS
COUNTY MAYOR

RAYMOND E. HANSON P.E.
DIRECTOR OF UTILITIES

S. SCOTT BOYD
DISTRICT 1

FRED BRUMMER
DISTRICT 2

PETE CLARK
DISTRICT 3

JENNIFER THOMPSON
DISTRICT 4

TED B. EDWARDS
DISTRICT 5

TIFFANY MOORE RUSSELL
DISTRICT 6

DESIGN ENGINEER:

TETRA TECH, INC.

GENERAL CONTRACTOR:

PCL CONSTRUCTION

Contact: PCL Construction, Inc. General Superintendant Nathan Rine at (813) 727-3544