AMENDMENT I
ENGINEERING SERVICES AGREEMENT

THIS SERVICES AUTHORIZATION is made and entered into this _____ day of _____, 20___, by and between the **City of Orlando, Florida**, a municipal corporation existing under the laws of the State of Florida (CITY), **Tetra Tech, Inc.**, and doing business locally at 201 East Pine Street, Suite 1000, Orlando, Florida 32801 (ENGINEER).

WHEREAS, the CITY and the ENGINEER have previously entered into an agreement for the ENGINEER's professional services (Agreement) on December 16, 2016, concerning the Wastewater Force Main System Evaluation Project (Project); and

WHEREAS, the CITY and the ENGINEER wish to amend the Agreement as set forth herein; and

WHEREAS, the CITY and the ENGINEER now wish to memorialize their understanding for the ENGINEER's additional professional services for the Project.

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein and given one to the other, the sufficiency of which is hereby acknowledged, the parties agree as follows:

I. SCOPE OF SERVICES

The scope of services has been agreed to by the parties, and is attached hereto and incorporated herein, by reference, as APPENDIX I.

II. FEE

The not-to-exceed fee of $929,936.88, has been agreed to by the parties, as set forth on APPENDIX I.

III. TERM

ENGINEER shall complete all work in accordance with the timeframes set forth in the scope of work, if any, provided, however, that all work and the term of the Services Authorization shall be completed by the end of business (5:00 p.m.) one hundred and twenty-five (125) weeks from issuance of Notice to Proceed. It is also agreed that the CITY shall have an option for extension of this Services Authorization as necessary to complete the present scope of Services (APPENDIX I) or to provide additional services.

IV. ENTIRE AGREEMENT

This Services Authorization supersedes all previous services authorizations, amendments, agreements, or representations, either verbal or written, heretofore in effect between the CITY and the ENGINEER that may have concerned the matters covered herein, except that this Services Authorization shall in no way supersede or amend the Agreement or other services authorizations or amendments except as specifically provided herein. No additions, alterations, or variations to the terms of this Services Authorization shall be valid, nor can the provisions of this Services Authorization be waived by either party, unless such additions, alterations, or waivers are expressly set forth in writing in a document duly executed by both parties. ENGINEER acknowledges and agrees that any proposals or proposed agreements from subconsultants attached to this SERVICES AUTHORIZATION are attached solely to reflect the scopes of work to be performed and the fees to be charged by such subconsultants. By executing this SERVICES AUTHORIZATION, the CITY does not become a party thereto or bound by the terms thereof.

IN WITNESS WHEREOF, the parties hereto have executed this Services Authorization on the day and year first written above.

City of Orlando, Florida

By:_____
David Billingsley, CPSM, C.P.M.
Chief Procurement Officer

APPROVE AS TO FORM AND LEGALITY
for the use and reliance of the
City of Orlando, Florida, only.

_____, 20____.

_____
Assistant City Attorney
Orlando, Florida

Tetra Tech, Inc.

By:_____

_____
(Print Name)

Title:_____

STATE OF FLORIDA }

COUNTY OF _____}

PERSONALLY APPEARED before me, the undersigned authority,_____, [ ] well known to me or [ ] who has produced _____ as identification, and known by me to be the _____of the corporation named above, and acknowledged before me that he/she executed the foregoing instrument on behalf of said corporation as its true act and deed, and that he/she was duly authorized to do so.

WITNESS my hand and official seal this ____ day of _____, 20___.

_____
NOTARY PUBLIC
Print Name:_____
My Commission Expires:

EXHIBIT I – SCOPE OF SERVICES

Engineering Services Proposal
for
City of Orlando
Wastewater Force Main System, Project 1
Lift Station #2 Force Main

DESCRIPTION OF PROJECT

A. BACKGROUND AND PROJECT DESCRIPTION

The City of Orlando's wastewater transmission system serving the downtown and east Orlando service area was initially constructed in 1949 to direct wastewater to the then Wastewater Treatment Plant (WWTP) located at Bennett Road, north of Colonial Drive. The system constructed in 1949 included Lift Stations 1, 2, 3 and 4 and is the backbone transmission system that has served the City for over 66 years. The wastewater was collected at Lift Stations 1, 2 and 3 and pumped through 20-inch cast iron force mains to Lift Station 4 where the flows would be re-pumped through a 30-inch cast iron force main to the Bennett Road WWTP. In 1987, the Bennett Road WWTP was removed from service and Lift Station 248 constructed to pump the flows from the downtown and east Orlando service area to the Iron Bridge Regional Water Reclamation Facility (RWRF). The 20-inch cast iron force mains from Lift Stations 2 and 3 currently bypass around Lift Station 4 and pump directly into the 30-inch cast iron force main to Lift Station 248.

The scope of this project is to install a new 20-inch, 24-inch, 30-inch and 36-inch force mains between Lift Station 2 and a connection point to the existing 30-inch force main on Illinois Street at Palm Drive. The proposed route for this force main is shown in Figure 1 attached as Exhibit C. The project corridor begins at Lift Station 2 located in the parking garage at Legion Place and runs south to N. Garland Avenue, east along N. Garland Avenue to Orange Avenue, south across the railroad tracks to Weber Street, northeasterly along Weber Street, north on Magnolia Avenue, east along the Urban Trail corridor, east on Lake Highland Drive, south along Thornton Avenue, east on Canton Street to Hampton Avenue, south on Hampton Avenue to Weber Street and then Palm Drive to Illinois Street. The project corridor crosses 10 intersecting roads including the major thoroughfares of Orange Avenue, Magnolia Avenue, Lake Highland Drive, and Mills Avenue as well as residential cross streets and the FDOT railroad tracks on Orange Avenue. The force main length for this route is 11,100 feet.

SCOPE OF WORK

The proposed Tetra Tech design team will provide engineering services from preliminary design through final design, permitting assistance, bidding and construction contract administration that meet or exceed the City's requirements for the construction of the proposed force main system. The following tasks will be performed as part of the work:

- Task 1 Surveying and SUE
- Task 2 Geotechnical Services
- Task 3 Final Design
- Task 4 Permitting
- Task 5 Public Relations and Meetings
- Task 6 Bidding Assistance
- Task 7 Construction Administration

TASK 1 – SURVEY AND SUE

Task 1.1 Topographic Survey and Control

Tetra Tech will provide a topographic survey of the pipeline corridor in accordance with the Standards of Practice set forth under the Florida Administrative Code and City standards including the Engineering Standards Manual. Property boundaries, right-of-way lines, and easement lines within the limits of the survey will be located as part of the survey. The horizontal and vertical spatial relationship of the above ground natural or man-made features lying within the limits of survey will be established and mapped. The survey limits will be full right-of-way plus 10 feet on both sides, and include any adjacent or intersecting easements and 10 feet beyond intersection radius. Elevations shall be taken along the route at 50-foot intervals and at apparent high and low points. Spot elevations shall be taken as necessary to identify significant elevation changes occurring within the limits of survey. The survey will indicate 1-foot contour intervals. Trees having a diameter of four (4) inches (measured three feet above the ground level) lying within the limits of survey, shall be located. Surface appurtenances of utilities such as water meters, hydrants, valves, sanitary lateral clean-outs, utility poles, guy poles and anchors, junction boxes, and transformers shall be located within the limits of the proposed topographic corridor including height above the surface. Utility poles with direction of overhead lines shall be shown on the Topographic Survey. Sanitary and drainage structures shall be located, with rim and invert elevations, size, direction and material provided as a minimum. The size, material, depth of cover and the direction of the wastewater force main pipes, valves and air/vacuum valves shall be surveyed and identified. Tetra Tech will locate the marked utilities designated by our Subconsultant and utility company representatives. The utility details and utilities contact logs will be provided to the City with the final survey deliverables.

Tetra Tech will use Global Navigation Satellite Systems and conventional leveling methods to establish a permanent control network of control points at 500+- feet intervals along a survey baseline of construction and will be based on State Plane Coordinates NAD 1983, Florida East Zone, NAVD 88 Vertical Datum and City of Orlando Vertical Control Network. Tetra Tech will set a ½" Iron rod or Nail and Disc at each Control Point. The location of benchmarks shall be coordinated with the design such that a minimum of one monumented bench mark is located within the limits of each sheet of the plans. Benchmarks must meet the requirements of 5J-17.

Task 1.2 Boundary Survey at LS 2 and Easements

Provide a Boundary Survey for fee simple property and permanent easements including all improvements at Lift Station 2 and the easements to the ROW. The Survey along with the Survey Map Report and/or legal description shall meet the minimum requirements of Chapter 5J-17 Standards of Practice for a boundary survey.

Task 1.3 Specific Purpose Right of Way Survey

Existing plats and land records containing the project rights-of-way shall be obtained and reviewed. Sufficient monumentation will be recovered, field located and verified to calculate and determine the right-of-way lines through the project area, as well as any platted easements adjacent to the rights-of-way. Found or set monuments for rights-of-way, easements and lot lines shall be adequately depicted on the Topographic Survey. Sufficient dimensions will be shown to support the location of the right-of-way lines relative to the survey control baselines. Reference point details will be included in the CADD files provided to the City.

Any major discrepancy between field monumentation and the right-of-way established by the surveyor shall be noted on the survey and described within the Surveyor's Report. The Surveyor shall notify the City Surveyor in writing the effect of the discrepancy.

Task 1.4 Collection of Existing Subsurface Utility Data

Our subconsultant, Barnes Ferland and Associates (BFA), will provide the services identified in this subtask. Tetra Tech will coordinate and schedule this work with our topographic survey.

Utility Designation: Sunshine One Call (SSOC) will be notified for a Design Ticket to acquire utility provider information for the specified work areas. Electronic sensing equipment and ground penetrating radar (GPR) will be used to detect and mark those underground utilities that will transmit a signal to meet ASCE Quality B Level of Designation Utility designation will indicate the presence and approximate horizontal location of most underground utilities. Paint marks and/ or wire flags will be placed on the ground surface that will indicate the approximate location of the underground utility. Each utility will be color coded according to the ASCE standard industry color. Sketches will be made depicting the results of the designation to assist with the field location and drawing the lines connecting the utilities. Utilities designated will include electric, water, force main, gas, numerous communication lines or other utilities that may be discovered. Small service lines and irrigation lines will not be designated.

Utility Location: A total of 45 utility excavations are estimated for this proposal with 20 excavations taking place in FDOT rights-of-way, 15 excavations taking place in grass or dirt and 10 within brick or paved roadways. The utilities excavated and located will meet ASCE Quality A Level of Designation. This effort will be coordinated with the remaining utility location excavations in the Preliminary Design scope of work. Utility excavations will be performed to positively locate and identify the underground utility lines. Excavations will provide the horizontal and vertical location of the utility as well as the size, type, material and general condition of the utility. A detailed Test Hole Report will be made for the excavation that will show a semi-permanent mark set directly above the water line for survey location. The sketch will show the

measurement from the mark to the top of the utility with reference ties to nearby features to aid in the recovery of the mark. All other information obtained will also be on the sketch.

MOT for utility designation and location will be provided when necessary on this project. City right of way permits are generally not required for City projects. FDOT Standard Indexes for MOT will be submitted to the City Traffic Control Manager (Scott Walker) for review prior to setting up MOT within roadways.

TASK 2 - GEOTECHNICAL SERVICES

Task 2.1 Geotechnical:
Perform a geotechnical investigation to facilitate design of the proposed mains and construction of the Project. Our subconsultant for the geotechnical investigation services during design is Antillian Engineering Associates. For geotechnical services for construction materials testing refer to Task 7 Construction Administration and CPWC's proposal.

Field Investigation: Before initiating the drilling program, conduct a site reconnaissance to verify access for the drilling equipment and stake the boring locations for underground utility location and marking in accordance with Florida statutes. Coordinate with representatives of the utility companies as needed to confirm and mark the locations of underground service facilities. Perform twenty-eight (28) soil-test borings to ten feet and four (4) to 30 feet. Drill the borings by hand-auger as needed to avoid possibly unmarked utilities, then by continuous split-spoon sampling. Conduct the Standard Penetration Test (SPT) with each split-spoon sample in accordance with ASTM D 1586. Provide fifteen (15) pavement cores to determine the functional and structural conditions of the pavement for restoration.

Soils penetrated during the drilling operations would be logged in the field. If unusual odors are noticed during drilling, it will be documented and reported to the City. Representative samples will be collected and sealed for testing. The groundwater level encountered in each borehole will be measured and recorded on the field logs. At the completion of the drilling program, the borings would be backfilled to the ground surface with soil and drill cuttings. Leave boring identification stakes in place near the completed boreholes for design survey by Tetra Tech. The surface elevations of the bore holes will be included in the design survey.

Laboratory Testing: A geotechnical engineer will examine the recovered soil samples to confirm the descriptions on the field logs and classify the soils visually. Testing will consist of 60 percent fines tests, 4 organic content tests, 12 Atterberg limits test series, and 16 natural moisture content tests.

Report: The exploration will be supervised by a qualified Geotechnical Engineer registered in the state of Florida, and the results of the exploration will be presented in a geotechnical engineering report. The report will address and document the following items:

1. Existing site conditions.
2. Exploration, testing and sampling methods.

3. Subsurface soil conditions encountered and soil classifications.
4. Soil densities for proposed trenchless construction methods.
5. Pavement sections.
6. Depth to groundwater at the time of the exploration and estimated seasonal high groundwater levels.
7. A discussion of general site preparation techniques, excavation, backfilling and fill compaction for installation of the proposed pipelines.

MOT for soil borings will be provided when necessary on this project. City right of way permits are generally not required for City projects. FDOT Standard Indexes for MOT will be submitted to the City Traffic Control Manager (Scott Walker) for review prior to setting up MOT within roadways. For borings within FDOT ROW, MOT and Permit will be prepared and submitted to FDOT.

Task 2.2 Groundwater Sampling/Testing:
During the Preliminary Design, Tetra Tech had identified contaminated sites within or near the project site. A total of 14 locations that represent potential contaminant sources were identified within 500 feet of the proposed route based on data obtained from the EDR report, and FDEP contamination location map (CLM). As a result, soil and groundwater quality should be evaluated prior to excavation and dewatering to insure compliance with FDEP statutes. Tetra Tech will perform excavations and soil/groundwater quality screening using direct push technology and fixed based lab analysis for targeted chemicals of concern and national pollutant discharge elimination system (NPDES) criteria. The results of this effort will be presented in a report. Specifications will be included in the construction documents to notify the bidders regarding any special work requirements within the projects corridors.

For the corridor outside the known contamination areas, Tetra Tech will perform additional groundwater sampling along the project corridor and test for the water quality parameters specified in the FDEP Generic Permit for the Discharge of Produced Ground Water from any Non-Contaminated Site Activity. Tetra Tech will coordinate this effort with the anticipated depths of cuts at each location.

TASK 3 FINAL DESIGN

Task 3.1 Kick-off Meeting
Kick-off Meeting: At the start of the project, attend a project kick-off meeting with City staff to discuss the overall project, establish lines of communication, coordinate field work, and discuss schedule and reporting requirements. Prepare meeting summary and submit electronically to the City's Project Manager.

Task 3.2 Construction Document
Tetra Tech will prepare construction documents including engineering drawings and specifications and submit to the City for review at 60%, 90% and 100% completion levels. The drawings will be prepared using AutoCAD and the specifications will be prepared using Microsoft Word. The

construction documents shall be complete and meet all requirements for construction contract competitive bid formulation and subsequent construction of the Project. All documents shall comply with the current requirements of the City's Standards. Design services will include maintenance of traffic (MOT) and Storm Water Pollution Prevention plans and documents. Tetra Tech has estimated four (4) general sheets, seven (7) survey and control sheets, twenty-eight (**28**) plan and profile drawings at a scale of 1" = 20' horizontal and 1" = 4' vertical, fourteen (14) each of SWPPP, MOT and Restoration/ADD plan drawings, and five (5) detail drawings. Plan sheets shall be prepared as 22"x 34" (full size) sheet format and shall also be reproducible at 1/2 scale on 11" x 17" sheets. The existing utilities shall be shown on the drawings in accordance with the CI/ASCE 38-02, ASCE Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data. The date of the field work shall be depicted with the Subsurface Utility Data. All existing utilities shall be identified with a utility quality level by the appropriate abbreviation and legend. Division 1 through 15 Contract Specifications will be prepared in CSI format for inclusion with the City of Orlando's Front-End Bidding Documents (Division 0). Tetra Tech will review and incorporate the City's standard Division 1 Specifications.

Task 3.3 Utility Coordination

Tetra Tech will coordinate with utility companies potentially affected by the proposed pipeline alignment and submit a pdf version of the 60% and 90% construction drawings to the utilities with a return receipt cover letter requesting markups or verification of utilities not affected. This coordination will include follow-up calls and emails which will be documented in a technical submittal to the City. Tetra Tech will coordinate three (3) meetings with utility companies in the project corridor.

Task 3.4 Maintenance of Traffic (MOT)

Tetra Tech's subconsultant, Civil/Site Engineering, Inc., will prepare Maintenance of Traffic Control Plans based upon FDOT Standard Plans Index 600 series. MOT plans will include detail sheets for work within major roadways and railroad crossings, including lane closures, taper lengths, lane shifts, sign spacing, and channelizing device spacing as required. Typical detour details for work within low traffic level 2-lane residential neighborhood street will be developed and referenced on the overall MOT aerial map. Additionally, the maintenance of traffic control plans will address pedestrian sidewalk closures or temporary sidewalks, trails and bike route detours, allowable on-street parking within the immediate vicinity of the worksite, and access to buildings immediately adjacent to work site and driveways blocked by construction activities as applicable.

Task 3.5 Stormwater Pollution Prevention Plans (SWPPP)

Tetra Tech will prepare Stormwater Pollution Prevention Plans based on the City's Standard Template and coordinate with the City's stormwater section regarding the City's NPDES permit.

Task 3.6 ADA Requirements

The project is anticipated to impact pedestrian trails and sidewalks along the project construction corridor. The scope of work includes ADA review of the sidewalks along the project coridors and presentation in a report of any defiencies identied during the field revliews. Improvements for ADA requirements will be included on the project restoration drawings and the estimated costs for

which will be identified.

Task 3.7 QA/QC and Submittals

Tetra Tech will submit to the City for review at 60%, 90% and 100% completion levels. Provide quality assurance and constructability review prior to all submittals to the City. If requested, documentation of the in-house QA/QC review comments will be provided to the City. Tetra Tech will provide copies of the City's QA/QC comments and their origin with each design stage submittal The design team will attend design review meetings with the City at each completion level. Tetra Tech will prepare a detailed estimate of project costs at the 60% design stage. An Engineer's Opinion of Probable Construction Cost will be provided at each subsequent design submittal. The Engineer's Opinion of Probable Construction Cost at the 90% and 100% completion level will include itemization consistent with the proposed bid form. The contingency percentage included in the Cost Opinions will be identified at each design phase. At each submittal stage, Tetra Tech will provide seven (7) paper copy sets of drawings and specifications and a copy in electronic format of the drawings (AutoCAD and PDF formats) and specifications (Microsoft Word and PDF formats, and cost estimates (Microsof Execl and PDF formats.

TASK 4 – PERMITTING

Tetra Tech will prepare and submit required Project related permit applications and supporting documentation necessary to obtain required permits for construction and operation of the Project. Tetra tech will respond to requests for additional information from permitting agencies. Permit application fees will be paid by the City unless specified to be paid by the selected contractor. Tetra Tech will provide the City with information related to the fee amounts and copies of the basis of the fee amounts, for the City's internal 'check request' use. The following permit tasks are anticipated for the project

- Prepare and submit FDEP Permit Application for Wastewater Collection and Transmission System Construction. If necessary, respond to FDEP request for additional information.
- FDOT Permits: Coordinate with FDOT/SGL for proposed force main design and construction within the N. Garland Avenue corridor adjacent to the 1-4 road widening project. Prepare FDOT Utility Permit for proposed pipeline crossings at Orange Avenue, Magnolia Avenue (S.R. 527), and Mills Avenue (U.S. 17).
- Prepare and submit for the crossing of the CSX Transportation and SunRail Railroad Tracks for the proposed pipeline crossing on Orange Avenue.
- Prepare and submit a Notice of Intent (NOI) to use the NPDES FDEP Generic Permit for Stormwater Discharge from Large and Small Construction Activities. The notice will be signed by the City and the selected contractor and the permit application fee will be provided by the selected contractor.

TASK 5 – PUBLIC RELATIONS AND MEETINGS

Community Meetings:
Tetra Tech and their MOT subconsultant will assist the City's Public Works Outreach coordinator with the following tasks:

- Prepare a Public Notification Boundary Map for City's review.
- Prepare a draft Community Meeting Notification Letter and a draft Power Point Presentation. The City will print and mail the public notifications.
- Attending up to four (4) community meetings.
- Present a brief summary of the project and respond to public comments/questions at up to four (4) community meetings.

Coordination Meetings:
During the project, attend coordination meetings and provide brief meeting summaries as requested with the City elected officials, homeowner associations, businesses, and the Lake Highland Preparatory School to assist the City with overall project public coordination. Five (5) coordination meetings are included during this project. Coordination meetings do not require public notification and typically involve only a few City representatives meeting with a business, school representative or homeowner's association representative(s).

Task 6 - BIDDING ASSISTANCE

In is anticipated that the proposed improvements will be bid as one (1) project by the City. Upon authorization to proceed with the bidding and award phase of the project, Tetra Tech will perform the following services.

1. Furnish the City with an electronic and a "Master Set" of 22" x 34" bid drawings and technical specifications for reproducing bid documents.
2. Also, provide USB drive to include the following:
   a. Drawings & Specifications in PDF Format
   b. Drawings in AutoCAD Format
   c. Specifications in Word Format
   d. Signed & Sealed Drawings in PDF Format
   e. Final Engineer's Opinion of Probable Construction Cost in Microsoft Excel and PDF Format
3. Attend a pre-bid conference conducted by the City to describe the project and answer any technical questions from prospective bidders.
4. Provide written responses and clarifications to the City's Project Manager based on questions raised by prospective bidders. Prepare draft addenda, as approved by the City, containing technical revisions that become apparent during the bidding phase. The City will issue the addendums as required.
5. Prepare a bid tabulation in Microsoft Excel format. Assist the City in evaluating bids and bidders and make a recommendation for the award of the project.

6. Incorporate into the construction documents any revisions and clarifications that occurred during the bidding phase and all City (Purchasing) required and Contractor executed documents. Tetra Tech will be totally responsible for Conforming Contract Drawings, and will assist, as necessary, the City's Project Manager and Purchasing Agent in the development of the Conformed Project Manual. Submit two (2) paper copies and an electronic copy of a conformed set of Contract Documents for the City and one (1) electronic set to the Contractor for reproduction.

TASK 7 - CONSTRUCTION ADMINISTRATION

The City will provide Construction Contract Management and fill-time resident inspection of the project during construction. All instructions to the Contractor(s) shall be issued through the City's Construction Manager. The construction time frame for the project is anticipated to be 16 months. Tetra Tech will be assisted by CPWC, Inc. in providing Construction Administration and construction material testing services for the project. The following tasks are anticipated:

1. Attend the preconstruction conference conducted by the City's Construction Manager with other City personnel, selected Contractor, subcontractors, and regulatory agencies. Tetra Tech will prepare and distribute the meeting minutes.
2. Assist the City's Construction Manager in the review and negotiations of the Schedule of Values for the project.
3. Conduct thirty-two (32) by bi-monthly site visits to the construction site to observe construction of the project and attend thirty-two (32) bi-monthly progress meetings conducted by the City's Construction Manager. The site visits will be to observe the progress and quality of the construction and to document general conformance with the Contract Documents. The site visits will be conducted following each progress meeting. Observations and concerns will be discussed with the City's Construction Manager or Inspector immediately following each site visit. A summary of the observations and any concerns will be e-mailed to the City's Construction Manager within one working day of the site visit.
4. Conduct sixteen (16) additional site visits to the construction sites to observe construction of the project, as requested by the City's Construction Manager. Observations and concerns will be discussed with the City's Construction Manager and/or Inspector immediately following each site visit. A summary of the observations and any concerns noted will be e-mailed to the City's Construction Manager within one working day of the site visit.
5. Provide reviews of initial and periodic construction schedule submittals by the Contractor for compliance with Contract requirements and sequencing for prosecution and completion of the Work. Total number of construction schedule reviews estimated at 16.
6. Provide interpretation or clarification of the design documents when requested, and prepare change orders required for clarification or minor modification of the Contract Documents.
7. Review shop drawings and other required Contractor submittals up to two (2) times per submittal for general conformance with the Contract Documents. Construction Contract will require that additional reviews are paid for by the Contractor. Forty (40) submittals are anticipated for this task.
8. Review, recommend and assist the City in negotiations of contract modifications with the

Contractor. Number of contract modifications is estimated at ten (10).

9. Provide construction materials testing services though our subconsultant CPWC. In general, the scope of work will include performing laboratory testing (Proctors, LBR's and classification testing) of existing and/or imported soils, in-place density testing of pipelines, structures and pavement components, concrete compressive strength testing and laboratory testing of asphaltic concrete.
10. Review test reports for soils, concrete and other materials.
11. Assist in the preparation of responses to community concerns during the construction of the project.
12. Conduct a substantial completion site visit and develop a punch list of items to be corrected by the Contractor.
13. Submit Record Drawings and necessary documents for project certification of completion to FDEP. Preparation and submittal of all certification of completion documents to FDOT and CSX Transportation to obtain final release approvals.
14. Conduct a final completion site visit to determine if the punch list items have been completed in accordance with the Contract Documents and if the Contractor's obligations are fulfilled, and recommend final payment to the Contractor.
15. Review the As-Built Survey which delineate the dimensions, location, and elevations of all facilities constructed based on signed and sealed as-built information provided by the Contractor's surveyor and reviewed and approved by the City Surveyor and City's Construction Manager. Prepare and submit to the City one (1) hard copy and an electronic file of the record drawings for the City incorporating changes made during construction based on record information furnished by the Contractor.

Assumptions

1. Road Restoration. All restoration will be from curb to curb to maintain the current stormwater drainage. The current width of impacted streets will remain per current conditions. Additional right of way is not anticipated for the project.
2. Evaluation of stormwater system along the route have not been performed, are not included in the scope of services and improvements are not currently known to be planned by the City.
3. Evaluation of vehicular and pedestrian traffic signalization and signage has not been performed and improvements are not currently planned by the City.
4. Should permits be required by the City for utility designations or location excavations it will be considered extra services and a separate proposal will be provided to the City. Preparation of maintenance of traffic (MOT) plans and MOT submittals are included.
5. Ecological Investigations: The project is in developed areas of the City and ecological investigations are not anticipated to be required for permitting.
6. The project construction is anticipated to impact wastewater service laterals along the project corridor. Replacement of these services is included in the proposal. However, replacement or improvements of parallel sanitary sewers is not included in the proposal.
7. The Orlando Utilities Commission (OUC) may want to replace parallel potable water mains along the project corridors. If added to project, additional services will be required to design these replacements. Water Services will be replaced by the Contractor or OUC if impacted by the construction.

OWNER CONTROLLED CONTINGENCY

During the prosecution of the above described services, additional items may be identified and added to the Scope of Work by the City of Orlando. An Owner controlled contingency of $75,000 has been included in the budget for additional unanticipated work as identified and authorized by the City of Orlando. The Contingency shall not be used without prior written authorization from the City of Orlando.

COMPENSATION

The total hourly not-to-exceed fee for the Scope of Services described above is $929,936.88. This fee reflects a multiplier of 3.00, which is fully acceptable to Tetra Tech. Exhibit A presents a detailed breakdown of the estimated hours and compensation for the Scope of Services. Proposals from the various sub-consultants that will provide services for this project are provided in the attached Exhibit B.

Compensation Summary

Task	Fee ($)
Task 1 Surveying and SUE	167,659.91
Task 2 Geotechnical Services	56,153.86
Task 3 Final Design	330,953.19
Task 4 Permitting	36,913.84
Task 5 Public Relations and Meetings	28,086.22
Task 6 Bidding Assistance	17,623.05
Task 7 Construction Administration	186,938.24
Subconsultant Administration	30,608.57
Owner Controlled Contingency	75,000.00
Total	929,936.88

M/WBE Participation

M/WBE PARTICIPATION

Firm Participation	Fee ($)	MWBE Percentage
Tetra Tech	548,851.18	
Antillian Engineering (Non-MBE)	45,322.36	
BFA (MBE)	61,526.35	7.2%
CSEI (WBE)	90,465.23	10.6%
CPWC (MBE)	43,733.26	5.1%
CPWC (Materials Testing Sub)(Non-MWBE)	42,886.50	
DPT Borings (Non-MWBE)	10,050.00	
Test America (Non-MWBE)	12,102.00	
Total (W/O Contingency)	854,936.88	
Total MWBE Participation		**22.9%**

EXHIBIT II

FEE ESTIMATE

Exhibit II Fee Estimate

Orlando Wastewater Force Main System, Project 1

Design, permitting and construction services for 11,100 feet of Wastewater Force Main

Submitted to: Water Reclamation Division
Attn: Bob Rutter

Contract Type: Hourly, Fee-Not-To-Exceed

Labor Plan — 18 Resource

Project Phases / Tasks	Labor Hrs	Senior Project Manager (D. Allen)	Proj. Eng. IV (J. Alexander)	Proj. Eng. II (Z. Wasowska)	Proj. Eng. II (A. Valdez)	Proj. Eng. IV (Civil/ADA) (T. Vanderwalker)	Proj. Eng. II (Civil/ADA) (A. McCormick)	CAD Manager (J. Evans)	CAD Designer (P. Davalos)	Sr GIS Analyst (A. Montalvo)	Sr Admin Assistant (A Backer)	Proj. Eng. II (ENV)	Proj. Eng. IV (ENV)	Senior Hydrogeologist	Const. Admin. (M. Gagne)	Sr Land Surveyor (E. Jenkins)	Survey Team (Two (2) Person Team)	Labor	Subs	ODCs	Task Totals
Bill Rate >		228.42	176.88	91.74	90.21	139.50	82.35	136.59	98.79	117.99	85.05	108.18	139.95	168.63	79.32	152.61	187.77				
	4,127	158	680	375	631	96	202	45	1,140	20	95	96	16	54	103	74	342	512,338.11	306,085.70	3,334.50	929,936.88
Task 1 Surveying and SUE	**590**	**2**	**8**	**-**	**12**	**-**	**-**	**-**	**160**	**-**	**2**	**-**	**-**	**-**	**-**	**72**	**334**	**92,634.00**	**75,025.91**	**-**	**167,659.91**
Topographic Survey	296															36	260	54,314.16			54,314.16
Control	30								2							4	24	5,314.50			5,314.50
Drafting	148								140							8		15,051.48			15,051.48
R/W Research	18								2							16		2,639.34			2,639.34
Survey/SUE Coordination	98	2	8		12				16		2					8	50	15,314.52			15,314.52
MOT and Permitting for SUE (CSEI)	-																		13,499.56		13,499.56
Subconsultant (BFA - SUE)	-																		61,526.35		61,526.35
Task 2 Geotechnical Investigation and GW Sampling	**46**	**2**	**10**	**-**	**18**	**-**	**-**	**-**	**4**	**-**	**2**	**-**	**-**	**-**	**-**	**2**	**8**	**6,222.06**	**49,931.80**	**-**	**56,153.86**
Geotechnical Coordination	36	2	6		12				4		2					2	8	4,973.28			4,973.28
GW Sampling Coordination	10		4		6													1,248.78			1,248.78
MOT and Permitting for Borings (CSEI)	-																		4,609.44		4,609.44
Subconsultant (Antillian)	-																		45,322.36		45,322.36
Task 3 Final Design	**2,237**	**101**	**258**	**87**	**437**	**78**	**170**	**39**	**824**	**8**	**69**	**96**	**16**	**54**	**-**	**-**	**-**	**256,261.95**	**69,558.04**	**2,563.20**	**330,953.19**
Kick Off Meeting/Minutes	**26**	**3**	**8**	**11**	**-**	**-**	**-**	**-**	**-**	**-**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**3,449.64**	**-**	**-**	**3,449.64**
Prepare Agenda and Meeting	19	3	6	8							2							2,650.56			2,650.56
Prepare and Distribute Summary	7		2	3							2							799.08			799.08
Drawings	**1,252**	**27**	**92**	**-**	**233**	**28**	**84**	**34**	**754**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**133,414.35**	**-**	**-**	**133,414.35**
General (4)	37		4		8			1	24									3,936.75			3,936.75
Survey Control (7)	25		2		8			1	14									2,595.09			2,595.09
Storm Water Pollution Prevention Plans (14)	125	2	4		6	14	42	1	56									12,786.15			12,786.15
MOT Plans (14) (CSEI)	24	3	6					1	14									3,266.19			3,266.19
Restoration and ADA Plans (14)	161	6	14		28	14	42	1	56									17,453.25			17,453.25
Plan and Profile (1"=20') (28)	826	14	56		168			28	560									87,405.36			87,405.36
Details (5)	54	2	6		15			1	30									5,971.56			5,971.56
Specifications	**124**	**8**	**24**	**-**	**48**	**4**	**16**	**-**	**-**	**-**	**24**	**-**	**-**	**-**	**-**	**-**	**-**	**14,319.36**	**-**	**-**	**14,319.36**
Div. 1 thru 15	104	4	16		40	4	16				24							11,268.96			11,268.96
Front End Coordinaion	20	4	8		8													3,050.40			3,050.40
Utility Coordination	**184**	**6**	**48**	**-**	**96**	**-**	**-**	**2**	**24**	**-**	**8**	**-**	**-**	**-**	**-**	**-**	**-**	**21,845.46**	**-**	**-**	**21,845.46**
Maintenance of Traffice (MOT)	**88**	**8**	**32**	**40**	**-**	**-**	**-**	**-**	**-**	**-**	**8**	**-**	**-**	**-**	**-**	**-**	**-**	**11,837.52**	**47,406.04**	**-**	**59,243.56**
Coordination and Meetings (8)	88	8	32	40							8							11,837.52			11,837.52
Subconsultant (CSEI)	-																		47,406.04		47,406.04
Stormwater Pollution Prevention Plans	**26**	**2**	**4**	**-**	**-**	**8**	**12**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**3,268.56**	**-**	**-**	**3,268.56**
Coordination and Meetings (1)	26	2	4			8	12											3,268.56			3,268.56
ADA Requirements	**74**	**6**	**6**	**-**	**-**	**16**	**40**	**-**	**-**	**-**	**6**	**-**	**-**	**-**	**-**	**-**	**-**	**8,468.10**	**-**	**-**	**8,468.10**
Field Investiagtions and Mtg (1)	52	4	4			12	32											5,930.40			5,930.40
Summary Report	22	2	2			4	8				6							2,537.70			2,537.70
Environmental and Contamination Evaluation	**178**	**1**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**8**	**1**	**96**	**16**	**54**	**-**	**-**	**-**	**23,341.65**	**22,152.00**	**-**	**48,063.65**
Tetra Tech GEO & Coordination	178	1	2							8	1	96	16	54				23,341.65			23,341.65
Soil/Borings (Subconsultant DPT)	-																		10,050.00		10,050.00
Soil/GQ Analysis (Lab. Test America	-																		12,102.00		12,102.00

Exhibit II Fee Estimate

Field Equipment and Materials																			2,570.00
EOPC	105	5	18	-	60	-	-	-	22	-	-	-	-	-	-	-	11,911.92	-	-	**11,911.92**
60% EOPC	42	2	8		24				8								4,827.24			4,827.24
90% EOPC	36	2	6		20				8								4,112.64			4,112.64
100% EOPC	27	1	4		16				6								2,972.04			2,932.04
QA/QC	36	26	-	-	-	10	-	-	-	-	-	-	-	-	-	-	7,333.92	-	-	**7,333.92**
60% QA/QC	14	10				4											2,842.20			2,842.20
90% QA/QC	12	8				4											2,385.36			2,385.36
100% QA/QC	10	8				2											2,106.36			2,106.36
Submittals and Mtgs.	144	9	24	36	-	12	18	3	24	-	18	-	-	-	-	-	17,071.47	-	2,563.20	**19,634.67**
60% Submittal and Mtg.	48	3	8	12		4	6	1	8		6						5,690.49			5,690.49
90% Submittal and Mtg.	48	3	8	12		4	6	1	8		6						5,690.49			5,690.49
100% Submittal	48	3	8	12		4	6	1	8		6						5,690.49			5,690.49
Direct Costs	-																		2,563.20	2,563.20
Task 4 Permitting	232	15	48	108	-	-	-	-	48	-	13	-	-	-	-	-	27,672.03	9,241.81	-	**36,913.84**
City Permitting	48	2	8	24					12		2						5,429.22			5,429.22
FDEP - General Wastewater	27	1	4	12					8		2						2,997.24			2,997.24
FDOT/CFX ROW Use	47	1	8	24					12		2						5,200.80			5,200.80
FDOT/SGL Permit	43	1	8	24					8		2						4,805.64			4,805.64
Meetings (5)	67	10	20	24					8		5						9,239.13			9,239.13
Subconsultant (CSEI)	-																	9,241.81		9,241.81
Task 5 Public Relations and Meetings	130	13	47	56	-	-	-	-	-	12	2	-	-	-	-	-	18,006.24	10,079.98	-	**28,086.22**
Notification Boundary Map	25	1	4	8						12							3,085.74			3,085.74
Draft Notices and Powerpoint Presentation	39	1	12	24							2						4,722.84			4,722.84
Community Mtgs (4)	46	6	16	24													6,402.36			6,402.36
Coordination Mtgs (5)	20	5	15														3,795.30			3,795.30
Subconsultant (CSEI-MOT)																		10,079.98		10,079.98
Task 6 Bidding	148	4	36	-	60	2	4	1	26	-	7	-	-	-	8	-	17,237.40	-	385.65	**17,623.05**
Prepare Bid Documents	27	1	4		12				6		4						2,951.40			2,951.40
Attend Pre-bid Conference	4		4														707.52			707.52
Answer Questions/Prepare Addenda	62	2	20		24	2	4		8		2						7,728.30			7,728.30
Bid Tabulation/Evaluation	18	1	4		12						1						2,103.51			2,103.51
Conform Documents (TT)	37		4		12			1	12						8		3,746.67			3,746.67
Direct Costs	-																		385.65	385.65
Task 7 - Construction Administration	744	21	273	124	104	16	28	5	78	-	-	-	-	-	95	-	-	94,304.43	92,248.16	385.65	**186,938.24**
Pre-Construction Conference (TT/CPW)	8		4	4													1,074.48			1,074.48
Review Schedule of Values (TT/CPW)	4		3												1		609.96			609.96
Progress Meetings and Site Visits (TT/CPW)	82	2	48	27											5		11,820.66			11,820.66
Addtional Site Visits (TT/CPW)	57	4	32	16											5		8,438.28			8,438.28
Review Construction Schedules (TT/CPWC)	14	3	8												3		2,338.26			2,338.26
Clarfications and RFIs (25) (TT/CPW)	154	6	75	25		8	8	1	6						25		21,417.15			21,417.15
Shop Drawing Review (40) (TT)	204	2	40		104	6	12								40		21,911.88			21,911.88
Assist with Change Orders (TT/CPW)	28	3	20												5		4,619.46			4,619.46
Construciton Materials Testing (CPW)	-																			-
Review test reports (TT/CPW)	7		5												2		1,043.04			1,043.04
Assist in responding to Public's Questions	36		16	16											4		4,615.20			4,615.20
Substantial Completion Inspections (TT/CPW)	28		8	8		2	8								2		3,245.40			3,245.40
FDEP Certification & FDOT/CSX Approvals(TT)	32	1	4	8					16						3		3,488.46			3,488.46
Final Completion Inspection (CPW)	2		2														353.76			353.76
Record Dwgs (TT)	88		8	20				4	56								9,328.44			9,328.44
Direct Costs	-																		385.65	385.65
Subconsultant (CPW)	-		-															88,619.76		88,619.76
Subconsultant (CSEI)																		5,628.40		5,628.40
Subconsultant Administration																				**30,608.57**
Owner Controlled Contingency																				**75,000.00**
Totals	**4,127**	**158**	**680**	**375**	**631**	**96**	**202**	**45**	**1,140**	**20**	**95**	**96**	**16**	**54**	**103**	**74**	**342**	**512,338.11**	**306,085.70**	**3,334.50**	**929,936.88**

Orlando Wastewater FM Project 1 - Other Direct Costs (ODCs)

Task	B/W Copies		Plan Sheets				Binding for Specifications		Total Direct Costs
	8-1/2" x 11"		11" x 17"		22" x 34"				
	Units	Rate	Units	Rate	Units	Rate	Units	Rate	
		$0.05		$0.40		$0.75		$3.50	
Task 3 Final Design	12,000	$600.00	783	$313.20	2,088	$1566.00	24	$84.00	
									$2,563.20
Task 6 Bidding Assistance	1,500	$75.00	261	$104.40	261	$195.75	3	$10.50	
									$385.65
Task 7 Construction Administration	1,500	$75.00	261	$104.40	261	$195.75	3	$10.50	
									$385.65
Totals	**15,000**	**$750.00**	**1305**	**$522.00**	**2610**	**$1,957.50**	**30**	**$105.00**	**$3,334.50**

EXHIBIT III

PROJECT SCHEDULE

The work effort described above will be completed in accordance with the schedule provided below.

Task	Duration (Weeks)	Weeks After Notice to Proceed
Survey and SUE	12	12
60% Submittal	8	20
City Review	3	23
90% Submittal	6	29
City Review	3	32
100% Submittal	4	36
City Review	3	39
Permitting	4	43
Bidding	10	53
Construction	72	125

EXHIBIT IV

SUBCONSULTANT PROPOSAL(S)

- Antillian Engineering: Geotechnical Investigation
- Barnes, Ferland and Associates: Collection of Existing Subsurface Utility Data:
- CSEI: Maintenance of Traffic
- CPWC, Inc.: Construction Administration Services and Construction Materials Testing

ANTILLIAN
ENGINEERING ASSOCIATES, INC.

January 5, 2018

Tetra Tech, Inc.
201 East Pine Street, Suite 1000
Orlando, Florida 32801

Attention: Daniel Allen, P.E.

Reference: Proposal for Geotechnical Engineering Services
Lift Station 2 Force Main from Lift Station 2 to Illinois Street
Orlando, Florida

Dear Mr. Allen:

Antillian Engineering Associates, Inc. is pleased to submit this proposal to provide geotechnical engineering services for the above-referenced project. It was prepared in response to your e-mail request dated December 20, 2017and a subsequent e-mail request for additional services. This proposal supersedes our proposal dated January 5, 2018.

SCOPE OF SERVICES

The City of Orlando Public Works Department is planning to install a new sanitary-sewer force-main from Lift Station 2 to Woodcock Street. Lift Station 2 is on the southeastern side of the I-4 Lake Ivanhoe Street interchange. The first segment of force-main extends from Lift Station 2 to the intersection of Hampton Avenue and Illinois Street. Tetra Tech staff advised that this section is about 11,100 feet long, and that most of the force-main pipeline will be installed within ten feet of the existing ground surface, using conventional, excavate-and-backfill ("cut-and-cover") construction methods. Trenchless methods, i.e., jack-and bore or horizontal directional drilling are anticipated at two locations. Tetra Tech advised that the spacing between borings should be about 500 feet, that possibly contaminated soils may exist along portions of the Urban Trail and Lake Highland Drive near Orlando Utilities Commission property, and that and that portions of the alignment may be in Florida Department of Transportation ("FDOT) right-of-way ("ROW"). As a result, more coordination will be needed with Tetra Tech staff, City staff, FDOT staff, and others to assure safe field operations..

We propose to conduct a geotechnical engineering investigation to support the design of this force-main segment. The overall scope of services would be separated into tasks as follows:

Task 1 - Site Reconnaissance/Field Investigation - Before initiating the drilling program, we would establish a boring location plan and conduct a site reconnaissance to establish MOT needs and verify access for the drilling equipment. We would stake and white-line the boring locations for underground utility location and marking in accordance with Florida statutes. We would coordinate with representatives of the utility companies as needed to confirm and mark the locations of underground service facilities. Based on the 500-foot spacing between borings advised by Tetra Tech a cursory examination of the proposed force-main alignments, and discussions with Tetra Tech staff, we estimated that 28 soil-test borings to ten feet we estimated 28 soil-test borings to ten feet and four borings to 30 feet (for the trenchless crossings) should be sufficient for this project. Tetra Tech also estimated 15 full-depth cores to assess pavement thickness and component-layer materials..

We would start drilling the borings by hand-auger as needed to reduce the risk of damage to possibly unmarked utilities, then continue by continuous split-spoon sampling and mud-rotary drilling methods. The field crew would conduct the Standard Penetration Test (SPT) with each split-spoon sample in accordance with ASTM D 1586. Tests would be conducted continuously from the bottom of the hand-auger interval to ten feet, and then at five-foot intervals to the indicated completion depths as needed. Time will be needed to complete operations at each location, move the drilling equipment to the next location along the alignment, don and remove personal protective equipment, and decontaminate drill tools and rods in areas where possibly contaminated soils are encountered.. The currently-unknown cost of MOT resources (arrow boards, barricades, etc.) would be covered by conversion into hours of drill-rig-and-crew time.

Soils penetrated during the drilling operations would be logged in the field. Representative samples would be sealed in clean, airtight containers, and transported to our office. The groundwater level encountered in each borehole would be measured and recorded on the field logs. At the completion of the drilling program, the ten-foot borings would be backfilled to the ground surface with soil and drill cuttings. The 30-foot borings would be grouted to reduce the risk of weakness in the soil that could allow of HDD drilling fluid to emerge during construction. We would leave the stakes in place near the completed boreholes for survey by others, if needed. The pavement-core holes would be cbackfilled with tamped, cold-patch asphalt.

Task 2 - Laboratory Testing - A geotechnical engineer would examine the recovered soil samples to confirm the descriptions on the field logs and classify the soils visually. The engineer would select representative specimens for testing, which could consist of 60 percent fines tests, 4 organic content tests, 12 Atterberg limits test series, and 16 moisture content tests. Soil corrosion potential testing was not proposed because polymer pipe is anticipated.

Task 3 - Engineering Services - We would perform the following services:

- review available information to develop a general understanding of the proposed improvements
- compile field and laboratory data with available information to characterize the encountered subsurface conditions
- tabulate the pavement layer thicknesses and material types
- evaluate the suitability of the subsurface conditions for the proposed construction
- prepare final boring logs, maps and plans
- prepare a geotechnical engineering report

The report would contain a summary of available information pertaining to the proposed force mains, appropriate surface and subsurface characterization, a summary of the laboratory test data and recommendations for force-main design and construction, earthwork, groundwater control, excavation safety, jack-and-bore or HDD installation, and other concerns as appropriate. The report would be sealed by a Professional Engineer registered in Florida.

COMPENSATION FOR SERVICES

We propose to provide the described services for an hourly, not-to-exceed fee of $45,322.36. An itemized breakdown of the fee is attached as Appendix A, which represents our best estimate of the scope of services needed to satisfy the needs of this project based on the information that Tetra Tech provided. Additional geotechnical; services would be provided at the unit rates shown in the itemized estimate, if needed. Construction-phase quality-assurance services are not included in this scope and fee estimate. Environmental monitoring and testing services (including, but not limited to, field monitoring, testing with photo-ionization detectors, and analytical laboratory testing for hydrocarbons and other organic compounds) are not included in this scope or fee estimate.

SCHEDULE

We can begin work on this project within two weeks of receiving your notification to proceed. The field and laboratory investigations should take about four weeks. We would submit a draft report for review within six weeks after completion of the laboratory investigations. The final report would be submitted after addressing any review comments.

LIMITATIONS

The work on this project will be performed in general accordance with accepted procedures for the practice of geotechnical engineering. Please call if you have any questions or if you need additional information.

Respectfully submitted,
ANTILLIAN ENGINEERING ASSOCIATES, INC.

Peter G. Suah, P.E.
Principal Engineer/President

Attachments: Appendix A - Fee Estimate

APPENDIX A
FEE ESTIMATE
LIFT STATION 2 FORCE MAIN to ILLINOIS ST
ORLANDO, FLORIDA

DESCRIPTION	UNIT	QTY	RATE		TOTAL
Field Investigation					
Equipment Mobilization, Truck Rig	each	2	$350.00	$	700.00
SPT Borings (cut-and-cover, 28 to 10 ft)	LF	280	$12.00	$	3,360.00
SPT Borings (possible trenchless crossings, 4 to 30 ft)	LF	120	$12.00	$	1,440.00
Grout boreholes (trenchless crossings)	LF	120	$4.00	$	480.00
Drill Rig and Crew (movement between locations, decontaminatic	hours	28	$180.00	$	5,040.00
Drill Rig and Crew (estimated cost for MOT on City/FDOT ROW)	hours	20	$180.00	$	3,600.00
Signs/Barricades (normal, non-ROW operations)	days	3	$200.00	$	600.00
Pavement Cores, Asphalt	each	15	$150.00	$	2,250.00
Project Engineer(init. coord., recon., utility loc., stake borings)	hours	40	$122.19	$	4,887.60
Project Engineer(coord. with City/FDOT, ROW use/MOT permits)	hours	16	$122.19	$	1,955.04
Project Engineer(field/drilling supervision)	hours	40	$122.19	$	4,887.60
Laboratory Testing					
Visual classification/sample preparation	each	76	$10.00	$	760.00
Grain Size Analysis, Single Sieve	each	60	$30.00	$	1,800.00
Atterberg Limits	each	12	$90.00	$	1,080.00
Organic Content	each	4	$30.00	$	120.00
Moisture Content	each	16	$10.00	$	160.00
Engineering Services					
Project Manager	hour	20	$129.38	$	2,587.60
Project Engineer	hour	60	$122.19	$	7,331.40
Draftsperson	hour	36	$63.42	$	2,283.12
				$	45,322.36

BFA Environmental Consultants
Barnes, Ferland and Associates, Inc.

April 18, 2018

Mr. Daniel Allen, PE
Senior Project Manager
Tetra Tech
Water, Environment, and Infrastructure Group
201 East Pine Street, Suite 1000
Orlando, Florida 3280

Re: City of Orlando – Orlando Eastern Force Main System
Project 1 – Lift Station 2 to Illinois Street

Dear Mr. Allen,

Pursuant to your request, Barnes, Ferland & Associates, Inc. (BFA) is pleased to submit our proposal for subsurface utility exploration (SUE) services. As we understand your request, BFA will Designate (mark) all utilities along the approximate 11,100 feet length of the above noted project.

Project Location: The project area is located in downtown Orlando and is approximately 11,100 feet in length. It begins at Lift Station 2 located in the parking garage off of Legion Place and runs south to Legion Place, east along Legion Place to Orange Avenue, south to Weber Street, northeasterly along Weber, north on Magnolia, east on the Urban Trail, east on Lake Highland Drive, south along Thornton Avenue, east on Canton Street and south on Palm Drive to Illinois Street. The project corridor crosses 10 intersecting roads including the major thoroughfares of Orange Avenue, Magnolia Avenue and Mills Avenue as well as residential cross streets.

Scope of Services

Utility Designation: For the length of the entire corridor it is estimated that 4 underground utilities are within the right of way. Major crossing will have 6 to 8 utilities and minor side street crossings will have 2 to 4 underground utilities. All underground utilities within the corridor will be Designated and marked.

Electronic sensing equipment and ground penetrating radar (GPR) will be used to detect and mark those underground utilities that will transmit a signal. Paint marks and/ or wire flags will be placed on the ground surface that will indicate the approximate location of the underground utility. Each utility will be color coded according to the ASCE standard industry color. Sketches will be made depicting the results of the designation to assist with the field location and drawing the lines connecting the utilities. Utilities designated will include electric, water, force main, gas, numerous communication lines or other utilities that may be discovered. Small service lines and irrigation lines will not be designated.

Please see attached Exhibit "A" Limitations regarding underground utilities.

1230 Hillcrest Street • Orlando, Florida 32803
Office (407) 896-8608 • Fax (407) 896-1822

Utility designation will indicate the presence and approximate horizontal location of most underground utilities through the use and application of electronic sensing equipment and ground penetrating radar. BFA will notify Sunshine One Call (SSOC) for a Design Ticket to acquire utility provider information for the specified work areas. Those utilities that can be marked using the described techniques will be designated and marked with paint and/ or flags.

Review: A limited amount of time has been estimated to review drawings and plans prepared by Tetra Tech for accuracy and completeness of the lines as Designated by BFA.

Utility Location: Excavations will provide the horizontal and vertical location of the utility as well as the size, type, material and general condition of the utility. A detailed Test Hole Report will be made for the excavation that will show a semi-permanent mark set directly above the water line for survey location. The sketch will show the measurement from the mark to the top of the utility with reference ties to nearby features to aid in the recovery of the mark. All other information obtained will also be on the sketch.

This proposal includes Location (excavation) of 8 utilities within Orange Avenue, 6 within Magnolia Avenue and 6 within Mills Street. All three of these are FDOT right of ways. The excavations will be done within the right of way but will not require lane closure as they will not be performed with travel lanes. A certified Maintenance of Traffic (MOT) plan will be required within the right of way as part of an FDOT general use right of way permit. Tetra Tech will prepare any MOT plans required and apply for the FDOT right of way permit. Each of these excavations will be repaired per the requirements of the attached "Typical Test Hole Profile" with an asphalt cold patch or concrete mix at twice the thickness of the existing asphalt or concrete. Should additional paving or repair of the asphalt be required by the FDOT it would be considered additional services and a separate proposal will be prepared.

Within residential roads a total of 25 utility excavations are estimated for this proposal with 15 excavations taking place in grass or dirt and 10 within brick or paved roadways. Utility excavations will be performed to positively locate and identify the underground utility lines.

A total of 45 utility excavations are included in this proposal.

Survey: Survey services are not a part of this proposal.

Maintenance of Traffic (MOT): MOT for Designation will be provided by BFA when necessary on this project. Through residential areas Location MOT for City of Orlando lane closures will be provided by and set up by Flash-Rite. In areas not requiring lane closure MOT will be provided by BFA. Please see above regarding MOT within FDOT right of ways.

Except for FDOT right of ways, Right of Way permits are generally not required for city projects. An FDOT Standard Index for MOT will be submitted to Mr. Scott Walker for review prior to setting up MOT within City of Orlando roadways.

Fee Estimate: See the attached spread sheet for a breakdown of the man hours and our **Not to Exceed Fee** to provide you with the requested services.

Deliverables: Color coded wire flags and/ or paint marks will be the field deliverable with color coded Designation Sketches provided to assist in the field and office to connect the field marked lines. Review comments and markups will be made on copies of the survey drawings.

Location (excavation) will result in a Test Hole Report for each utility excavated. The Test Hole Report will note the utility and show the semi- permanent marker with distance to the top of the utility. Reference ties to nearby physical features will assist your survey crews to recover the marker. Other information such as the type, material, size and general condition of the utility will be noted.

Schedule: We are prepared to commence work within 10 working days of written notice to proceed for the project. As Designation Sketches and Test Hole Reports become available we will provide for your use when surveying the corridor.

If you should have any questions or need more information, please give me a call.

Sincerely,

William Miller, PLS
Survey Division Manager

Encl: Man hour and Fee estimate spread sheet
Exhibit "A" Limitations
Typical Test Hole Profile

Project: Orlando Eastern Force Main System

Date: January 19, 2018

Firm: Barnes, Ferland and Assoc.

Orlando Eastern Force Main System - Subsurface Utility Exploration (Not to Exceed Fee)

Project 1 - LS 2 to Illinois Street

Task	Maintenance of Traffic		Senior Surveyor and Mapper		Surveyor and Mapper		Survey Tech.		Utility Coordinator		SUE Crew 2 person		SUE Crew 3 Person		Total Salary Costs	Total Hours
	$880.00	(Daily Rate)	$131.56	(Rate)	$97.17	(Rate)	$67.27	(Rate)	$76.48	(Rate)	$ 139.78	(Rate)	$178.21	(Rate)		
	Days	Cost	Hrs	Cost	Hrs	Cost	Hrs	Cost	Hrs	Cost	Hrs	Cost	Hrs	Cost		
Excavation																
Utility Designation	0.0	$0.00	30.0	$3,946.80	0.0	$0.00	30.0	$2,018.10	160.0	$12,556.80	30.0	$4,193.40	0.0	$0.00	$22,715.10	250
	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	$0.00	0
Utility Location	0.0	$0.00	10.0	$1,315.60	0.0	$0.00	25.0	$1,681.75	45.0	$3,531.60	30.0	$4,193.40	90.0	$15,768.90	$26,491.25	125
	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	$0.00	0
	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	0.0	$0.00	$0.00	0
SubTotal	0	$0.00	40	$5,262.40	0	$0.00	55	$3,699.85	205	$16,088.40	60	$8,386.80	90	$15,768.90	$49,206.35	460
Maintenance of Traffic																
a. MOT (Flash-Rite)	14	$12,320.00		$0.00	0	$0.00	0	$0.00		$0.00		$0.00		$0.00	$12,320.00	14
Sub Total	0	$12,320.00	0	$0.00	0	$0.00	0	$0.00		$0.00		$0.00			$12,320.00	464
															$0.00	
TOTAL	14	$12,320.00	40	$5,262.40	0	$0.00	0	$3,699.85	205	$16,088.40	60	$8,386.80	90	$15,768.90	$61,526.35	464

Exhibit "A" Limitations

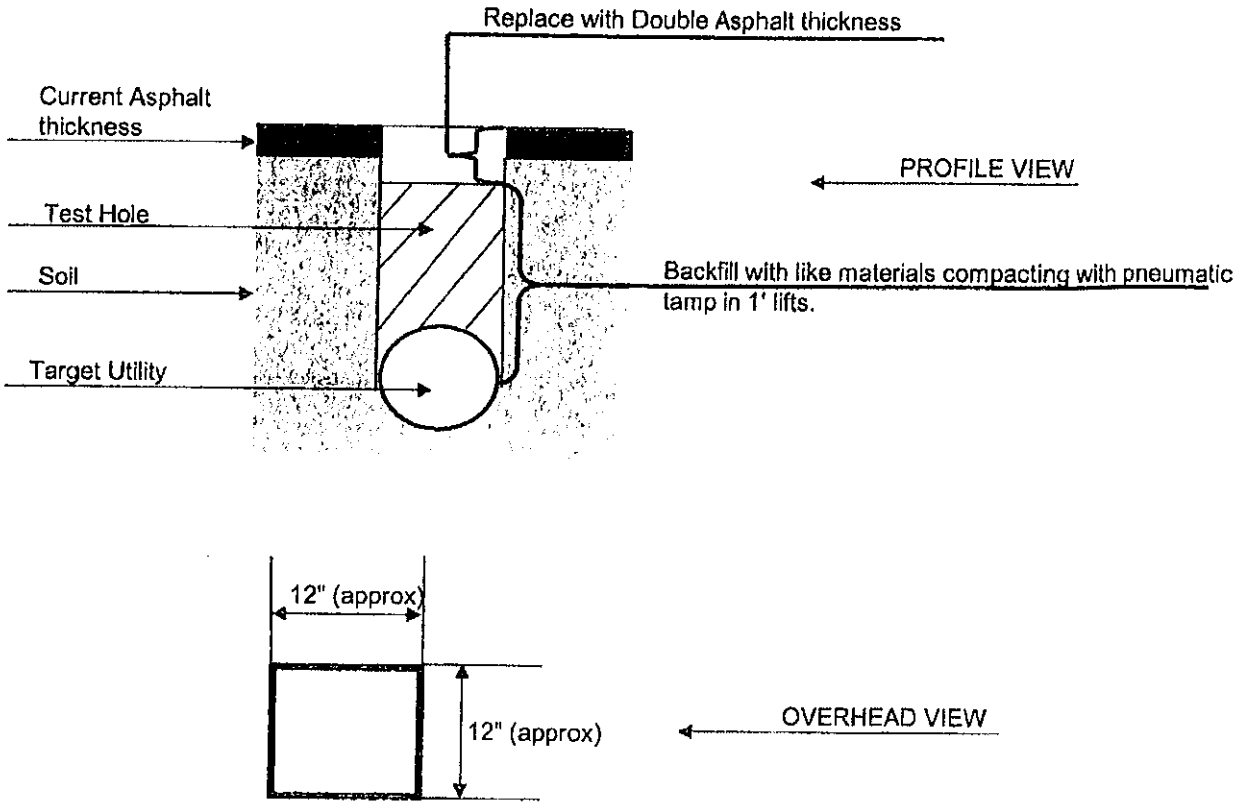
Subsurface Utility Engineering (SUE) services are utilized to identify and document the underground utility installations as stipulated in the scope of services and by contractual agreement. As in all disciplines, there are limitations of equipment, technology and personnel. The following describes, but is not limited to, the limitations usually encountered.

- Impervious subsurface material: Rock, below a depth of 3 feet. BFA will use pneumatic techniques to remove rock and pavement up to a depth of 3 feet. Below that depth we will rely solely on remote sensing and disclaim definitive results.
- Ground-water: BFA will make every reasonable attempt to definitively identify depth, size and type of underground utilities where ground-water is present. There are situations where groundwater will make visual inspection impracticable. We will use manual sensing to make the most reasonable measurements under these conditions, but it is understood that without direct visual confirmation the measurements and characteristic are limited to 'closely approximate'.
- Depth: Direct visual observation is limited to 7 feet under ideal conditions and diminishes as conditions deteriorate. Below 7 feet manual sensing is used to determine physical characteristics. Size by manual sensing is generally reliable, but the physical characteristics (type) of utility is dependent on too many variables to be considered definitive.
- There may be utilities that do not transmit electronic signals, that have not been made known to BFA, or that have no evidence at or above ground level. These utilities may not be detected or located.
- Ownership of underground utilities is not evident by observation of the buried utility. Every reasonable attempt will be made to determine ownership. Subsurface Utility Engineering (SUE) services do not include sanitary sewer installations/structures (gravity), or storm water lines/structures (gravity). However, the location of these utilities may be negotiated as a specific additional service.
- Consultant or Client Instructions: The Consultant or the Client may, from time to time, issue instructions or modify the scope of work. Any such instructions or modifications will be written and accepted by both parties prior to implementation.

If the Consultant or Client has plans, surveys, or other documentation that might assist in determining what utilities are present, they will be provided. As part of the Quality Assurance process, completed plans showing data derived from BFA's services will be submitted for review and confirmation if requested.

BFA's services are intended as an aid to the designers of this project and it may affect actual construction operations. The information provided by BFA is based, in part, upon data furnished by utility owners and their representatives, or by the Consultant or Client.

Typical Test Hole Profile



CPW Construction

March 15, 2018

Daniel L. Allen, P.E.
Tetra Tech
201 East Pine Street, Suite 1000
Orlando, FL 32801

Via Email: daniel.allen@tetratech.com

Re: Construction Administration Services
City of Orlando
Orlando Force Main Project 1

Dear Daniel:

Please find our proposal dated March 15, 2018 for construction administration services to assist the City of Orlando during construction of Orlando Force Main Project 1 for your use.

I look forward to working with you and providing services to the City of Orlando. Please call me at 321-436-0822 or e-mail me at cwatts@cpwconstruction.com at your convenience should you require additional information.

Very truly yours,

Charlyn P. Watts
President

Enclosures

P.O. Box 121084 Clermont, FL 34712 Phone (321) 436-0822

CPW Construction

SCOPE OF SERVICES and PROJECT BUDGET
LABOR ESTIMATE

City of Orlando
Orlando Force Main Project 1- LS #2

	Task Description	Project Manager $142.51 /Hr.		Assist Project Manager $95.55 /Hr.		Total
		Hrs.	$	Hrs.	$	
Task	**Construction Administration (CA) Services (Estimated 16 Months contract time)**					
Task 2	**Pre-construction conference.** *CPW Construction will attend the pre-construction conference, conducted by the City Construction Manager with other City personnel, the selected contractor, subcontractors, and regulatory agencies.*	3	$427.53	3	$286.65	**$714.18**
Task 2A.	**Schedule of Values.** *CPW Construction will assist the City's Construction Manager in reviewing and negotiating the Schedule of Values for the project.*	6	$855.06	0	$0.00	**$855.06**
Task 3	**Attend twice-monthly progress meetings, conducted by others. Concurrently on the day of the construction progress meeting, observe the construction of the project and discuss any concerns with the City.** *CPW Construction will attend (32) bi-monthly progress meetings and conduct (32) bi-monthly site visits to the construction site following each progress meeting to observe the progress and quality of the construction. Observations and concerns will be discussed with the City's Construction Manager or Inspector immediately following each site visit. A summary of the observations and any concerns will be e-mailed to the City's Construction Manager within one working day of the site visit.*	64	$9,120.64	64	$6,115.20	**$15,235.84**
Task 4	**Conduct one additional site visit per month to observe construction.** *CPW Construction will complete one additional site visit per month, (16 visits), and provide Tetra Tech with a written project observation report and photographs within 5 business days of observation. Observation of work at the project site shall not make CPWC responsible for the work performed by another party; the means, methods, techniques, sequences, or procedures selected by another party; nor the safety precautions or programs of another party. Identified construction concerns will be discussed with the Owner representatives.*	0	$0.00	64	$6,115.20	**$6,115.20**
Task 5	**Construction Schedule Review.** *CPW Construction will provide reviews of initial and periodic construction schedule submittals by the Contractor for compliance with Contract requirements and sequencing for prosecution and completion of the Work. These reviews will be included in the discussions during applicable Construction Progress Meetings. Total number of construction schedule reviews is estimated at (16) plus initial review.*	36	$5,130.36	0	$0.00	**$5,130.36**
Task 6	**Receive, review, evaluate, distribute and/or issue RFIs, Supplemental Instructions, RFPs, CDDs, and sketches and drawings to resolve actual field conflicts encountered and provide consultation and advice during the construction process.** *CPW Construction will assist Tetra Tech in responding to (6) RFI's.*	24	$3,420.24	0	$0.00	**$3,420.24**
Task 8	**Review, recommend and assist the City in negotiations of contract modifications with the Contractor.** *CPW Construction will assist Tetra Tech in responding to change directives by reviewing (10) project changes.*	30	$4,275.30	0	$0.00	**$4,275.30**
Task 9	**Review test reports for soils, concrete and other materials provided by the testing lab.** *CPW Construction will review materials testing results estimated at 3 hours per month for (16) months.*	48	$6,840.48	0	$0.00	**$6,840.48**
	Materials Testing - See attached proposal from Ardaman & Associates testing lab. *When requested by the City Inspector, Ardaman and Associates will provide materials testing services during construction of the project. A written field report will be provided to the City Inspector at the site upon completion of test. Task will Not-to-Exceed Ardaman and Associates' proposal for $42,886.50 as attached.*					**$42,886.50**
Task 10	**Conduct substantial completion inspections of the project and prepare the appropriate punch lists.** *CPW Construction will provide the punch lists to City Inspector and Tetra Tech within 5 business days of inspection.*	0	$0.00	6	$573.30	**$573.30**
Task 12	**Complete final completion inspection of the project.** *CPW Construction will perform a final completion inspection and verify all items listed on the Substantial Completion Punch List have been addressed to the City's satisfaction.*	0	$0.00	6	$573.30	**$573.30**
TASK TOTAL - Construction Admin. (CA) Services		**211**		**143**		**$86,619.76**

Schedule - For the purposes of assessing compensation, it has been assumed construction for this project will be completed within 16 months. If additional services are required from CPWC, Inc. beyond those described herein, additional funding will be requested and authorized via contract amendment.

Compensation - CPWC, Inc. will be compensated for the services described above at the billing rate shown. Work performed will be paid on an Hourly Not-to-Exceed basis. Payment for services rendered shall be in accordance with approved monthly invoices. CPWC shall receive payment within 60 days of invoicing to Tetra Tech.

Ardaman & Associates, Inc.

Geotechnical, Environmental and
Materials Consultants

February 14, 2018
Proposal File No. 18-61-029

CPW Construction
P.O. Box 121084
Clermont, Florida 34712

Attention: Ms. Charlyn Watts

Subject: Proposal for Construction Materials Testing
City of Orlando Force Main Project #1 Lift Station
Orlando, Florida

Dear Ms. Watts:

As requested, Ardaman & Associates, Inc. is pleased to present this budget estimate to provide construction materials testing services for the subject project. It is our understanding that the project includes the installation force main pipeline and structures. The project also includes pavement removal/restoration. We understand that the project duration will be 18 months.

In general, the scope of our work will include performing Laboratory testing (Proctors, LBR's and classification testing) of existing and/or import soils, in-place density testing of pipelines, structures and pavement components, concrete compressive strength testing and laboratory testing of asphaltic concrete. A summary of our scope of services is included on the attached cost estimate.

Based on our experience with similar projects, we suggest a budget of **$42,886.50** be established for this project. A summary of the scope of work, estimated number of units and the associated costs is attached. Other testing that may be required on the project but not identified on the attached cost estimate will be charged according to the unit rates contained in our City of Orlando continuing contract. We believe that we have proposed an adequate budget to provide the needed services based on our understanding of the project. However, the cost for the testing services will be a function of the actual quantities of work performed and may be more or less than the estimated amount.

We appreciate the opportunity to submit this estimate and look forward to working with you on this project. If this proposal meets with your approval, please sign and return the attached Proposal/Project Acceptance form or provide us with the appropriate notice to proceed. Please call if you have any questions or require additional information.

Respectfully,
ARDAMAN & ASSOCIATES, INC.

Jason M. Parker, P.E.
Manager/Senior Project Engineer
Orlando Construction Services

Attachment: Scope of Work and Cost Estimate
Proposal/Project Acceptance

Budget Estimate
Construction Materials Testing Services
City of Orlando Force Main Project #1 Lift Station
Ardaman Proposal No. 18-61-029

	Task	Quantity	Units	Unit Cost	Cost
I	**Field Inspection and Testing Services**				
	In-place Density Tests	700	each	$25.00	$17,500.00
	Concrete Compressive Strength Tests	10	sets	$120.00	$1,200.00
	Asphalt Paving Technician	40	hours	$65.00	$2,600.00
	Mobilization of Asphalt Coring Equipment	2	trips	$250.00	$500.00
	Obtain Asphalt Cores	15	cores	$65.00	$975.00
	Senior Field Technician	100	hours	$58.00	$5,800.00
II.	**Laboratory Testing**				
	Laboratory Proctor Tests	6	each	$125.00	$750.00
	Limerock Bearing Ratio Tests	15	each	$350.00	$5,250.00
	Percent Fines	15	each	$37.10	$556.50
	Crushed Concrete Gradation	5	each	$95.00	$475.00
	Asphalt Superpave Extraction/Gradation/Rice	5	each	$367.00	$1,835.00
	Asphalt Core Thickness/Density	15	each	$45.00	$675.00
III.	**Professional Services**				
	Senior Project Engineer	10	hours	$127.00	$1,270.00
	CMT Project Manager	25	hours	$90.00	$2,250.00
	Clerical	25	hours	$50.00	$1,250.00
		ESTIMATED TOTAL COST			**$42,886.50**

NOTES:

1. A minimum of five (5) in-place density tests per trip is required for unit test pricing. If less than 5 tests are perfomed then we will charge by the technician hourly rate.
2. Cancellation of work without notice will be invoiced at the technician's hourly rate.

CIVIL / SITE ENGINEERING, INC. CSEI

Scope of Services

Client Information:	Tetra Tech, Inc. (US Based Operations) 201 East Pine Street, Suite 1000, Orlando, FL 32801
Date:	January 19, 2018, Revised March 23, 2018
CSEI Proj #:	16011.1
Project Name:	City of Orlando Wastewater FM System Project 1 MOT Design Services Proposal
Engineering Consultant:	Civil/Site Engineering, Inc. 1645 N. Maitland Avenue Maitland, FL 32751

I. DESCRIPTION OF PROJECT:

Civil/Site Engineering, Inc. (CSEI) understands this project consists of constructing new 20-inch, 24-inch, 30-inch and 36-inch force mains between Lift Station 2 and a connection point to the existing 30-inch force main on Illinois Street at Palm Drive. The proposed route for this force main is shown in Figure 1 attached as Exhibit C. The project corridor begins at Lift Station 2 located in the parking garage at Legion Place and runs south to N. Garland Avenue, east along N. Garland Avenue to Orange Avenue, south across the railroad tracks to Weber Street, northeasterly along Weber Street, north on Magnolia Avenue, east along the Urban Trail corridor, east on Lake Highland Drive, south along Thornton Avenue, east on Canton Street to Hampton Avenue, south on Hampton Avenue to Weber Street and then Palm Drive to Illinois Street. The project corridor crosses 10 intersecting roads including the major thoroughfares of Orange Avenue, Magnolia Avenue, Lake Highland Drive, and Mills Avenue as well as residential cross streets and the FDOT railroad tracks on Orange Avenue. The force main length for this route is 11,100 feet.

This proposal is for the preparation of maintenance of traffic (MOT) plans, associated cost estimate for the Final Engineering Plans, and community outreach meeting assistance for above route. It is assumed that CSEI will prepare planning level MOT design concepts for the above routes per the Wastewater Force Main System Evaluation Phase 1, Preliminary Design and Engineering services and receive the Tetra Tech and the City's feedback prior to preparing the final engineering MOT plans.

The attached Scope and Fee proposal are based on the route shown in the attached Figure 1.

II. DESCRIPTION OF SCOPE: FINAL ENGINEERING AND CONSTRUCTION ADMINISTRATION SUPPORT SERVICES

Civil/Site Engineering, Inc. shall provide the **CLIENT** with the following final engineering services:

Attend pre-application and coordination meetings with FDOT/SGL Constructors, CSX, MPO (trails and bike lanes). Assist Tetra Tech with FDOT Utility Permitting and CSX permitting.

Prepare 60%, 90%, and 100% Maintenance of Traffic Control Plans based upon FDOT Standard Plans Index 600 series. MOT plans will include detail sheets for work within major roadways and railroad crossings, including lane closures, taper lengths, lane shifts, sign spacing, and channelizing device spacing as required. Typical detour details for work within low traffic level 2-lane residential neighborhood street will be developed and referenced on the overall MOT aerial map. Additionally, the maintenance of traffic control plans will address pedestrian sidewalk closures or temporary sidewalks, trails and bike route detours, allowable on-street parking within the immediate vicinity of the worksite, and access to buildings immediately adjacent to work site and driveways blocked by construction activities as applicable. Cost estimates for MOT will be provided at 90% and 100% plans submittals.

Prepare MOT plans to support FDOT General Use Permit required for SUE and geotechnical exploration work within FDOT Right-of-Way's (Orange Avenue/SR 527, Magnolia Avenue/SR 527, and Mills Avenue/SR 15).

Provide community outreach meeting assistance to Tetra Tech:

- Prepare PowerPoint slides for insertion into Tetra Tech's presentation for the proposed project showing the various detour routes for the different segments of construction.
- Participate in Community Meetings, led by Tetra Tech and the City of Orlando, serving as a resource for answering questions related to Maintenance of Traffic design.
- Prepare up to two (2) Exhibits for Tetra Tech to discuss with affected businesses

Review and provide responses to Requests for Information (RFI's) related to MOT plans during the construction process.
Information to be provided by Tetra Tech:

- Base files in AutoCad and PDF format.
- Assist Civil/Site Engineering, Inc., with obtaining recent MOT construction cost data from the City on similar wastewater utility projects.
- Master slide for PowerPoint presentation.

III. FEE SCHEDULE:

Final Engineering and Construction Administration Support Services: Not-To-Exceed Fee	**$90,465.23**

Civil/Site Engineering, Inc.
1645 N. Maitland Ave
Maitland, FL 32751
Phone: 407.644.6570, Fax: 407.644.8945

IV. ADDITIONAL SERVICES

In the event additional services beyond the Scope of Services specified herein are requested and authorized by the Client, the work will be conducted as Additional Services and the fees will be based on hourly charges plus direct costs.

APPROVED AND ACCEPTED THIS _____ DAY OF _____, 2018

CIVIL / SITE ENGINEERING, INC.	**TETRA TECH, INC.**
By_____	**By** _____
Andrea Marlea Jernigan-Gwinn, President	Mr. Daniel Allen, P.E., Sr, Project Manager

Civil/Site Engineering, Inc.
1645 N. Maitland Ave
Maitland, FL 32751
Phone: 407.644.6570, Fax: 407.644.8945

EXHIBIT I

City of Orlando
Orlando East Wastewater Force Main Systems
Preferred Route LS2 to POC

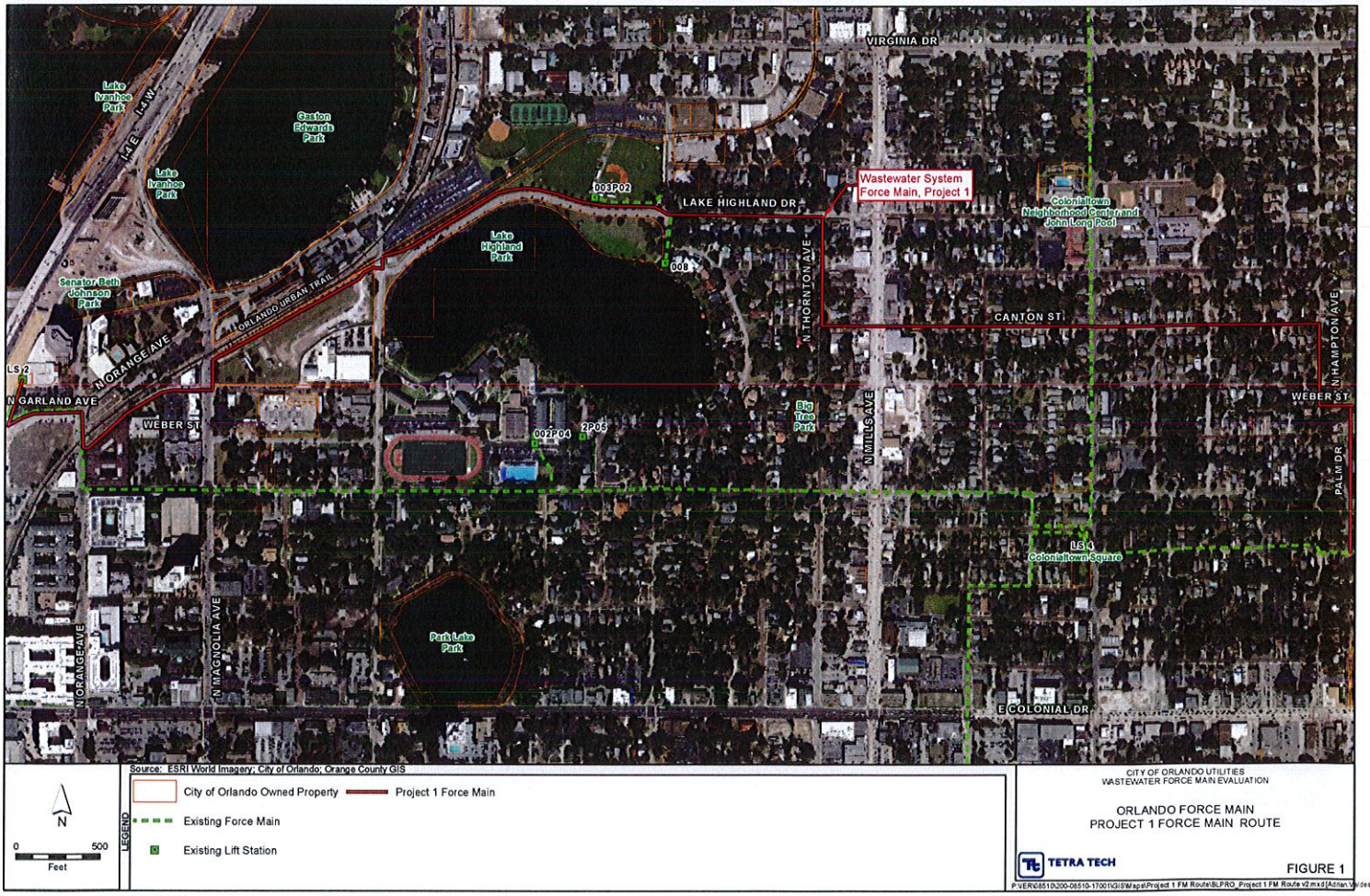
CSEI Labor Costs

1/6/2018

TASK	Senior Engineer (QC) Labor Rate $62.50 Billing Rate $164.38		Project Engineer Labor Rate $52.50 Billing Rate $138.08		Senior Designer Labor Rate $39.38 Billing Rate $103.57		CSEI Labor Totals with 2.63 Multiplier	
	Hours	Costs	Hours	Costs	Hours	Costs	Hours	Costs
FDOT General Use Permit MOT Plans for SUE(Orange Ave., Magnolia Ave., & Mills Ave.)								
FDOT General User Permit MOT Plans & Permitting Assistance	4.0	$657.52	48.0	$6,627.84	60.0	$6,214.20	112.0	$13,499.56
Subtotal	**4.00**	**$657.52**	**48.00**	**$6,627.84**	**60.00**	**$6,214.20**	**112.00**	**$13,499.56**
FDOT General Use Permit MOT Plans for Geotechnical Exploration (Orange Ave.)								
FDOT General User Permit MOT Plans & Permitting Assistance	2.0	$328.76	16.0	$2,209.28	20.0	$2,071.40	38.0	$4,609.44
Subtotal	**2.00**	**$328.76**	**16.00**	**$2,209.28**	**20.00**	**$2,071.40**	**38.00**	**$4,609.44**
60% Submittal								
Prepare 60% MOT Plans	8.0	$1,315.04	108.0	$14,912.64	120.0	$12,428.40	236.0	$28,656.08
60% Submittal Review Meeting			3.5	$483.28			3.5	$483.28
Subtotal	**8.00**	**$1,315.04**	**111.50**	**$15,395.92**	**120.00**	**$12,428.40**	**239.50**	**$29,139.36**
90% Submittal								
Prepare 90% MOT Plans	4.0	$657.52	32.0	$4,418.56	40.0	$4,142.80	76.0	$9,218.88
Prepare 90% MOT Estimate	2.0	$328.76	8.0	$1,104.64	4.0	$414.28	14.0	$1,847.68
90% Submittal Review Meeting			3.5	$483.28			3.5	$483.28
Subtotal	**6.0**	**$986.28**	**43.5**	**$6,006.48**	**44.0**	**$4,557.08**	**93.5**	**$11,549.84**
100% Submittal								
Prepare 100% MOT Plans	4.0	$657.52	16.0	$2,209.28	20.0	$2,071.40	40.0	$4,938.20
Prepare 100% MOT Estimate	2.0	$328.76	4.0	$552.32	4.0	$414.28	10.0	$1,295.36
100% Submittal Review Meeting			3.5	$483.28			3.5	$483.28
Subtotal	**6.0**	**$986.28**	**23.5**	**$3,244.88**	**24.0**	**$2,485.68**	**53.5**	**$6,716.84**
Permitting Assistance								
FDOT Pre-Application Meeting			3.5	$483.28			3.5	$483.28
Coordination Meetings w/ SGL Constructors (2 Meetings)			7.0	$966.56			7.0	$966.56
FDOT Utility Permitting & Response to Comments	2.0	$328.76	16.0	$2,209.28	24.0	$2,485.68	42.0	$5,023.72
CSX Permitting Assistance	2.0	$328.76	4.0	$552.32	8.0	$828.56	14.0	$1,709.64
MPO Coordination (Trails and Bike Lanes)	3.5	$575.33	3.5	$483.28			7.0	$1,058.61
Subtotal	**7.5**	**$1,232.85**	**34.0**	**$4,694.72**	**32.0**	**$3,314.24**	**73.5**	**$9,241.81**
Community Outreach Meeting Assistance								
Presentation Preparation	3.0	$493.14	16.0	$2,209.28	4.0	$414.28	23.0	$3,116.70
Community Outreach Meetings	16.0	$2,630.08	16.0	$2,209.28			32.0	$4,839.36
Exhibit Preparation for Business (e.g. AutoTurns)	2.0	$328.76	4.0	$552.32	12.0	$1,242.84	18.0	$2,123.92
Subtotal	**21.0**	**$3,451.98**	**36.0**	**$4,970.88**	**16.0**	**$1,657.12**	**73.0**	**$10,079.98**
Response to RFI's During Construction								
Responses to RFI's	4.0	$657.52	36.0	$4,970.88			40.0	$5,628.40
Subtotal	**4.00**	**$657.52**	**36.00**	**$4,970.88**			**40.00**	**$5,628.40**
Subtotal	**58.5**	**$9,616.23**	**348.5**	**$48,120.88**	**316.0**	**$32,728.12**	**723.0**	**$90,465.23**

EXHIBIT V

ROUTE FIGURE


VIRGINIA DR
Lake Ivanhoe Park
I-4 W
Gaston Edwards Park
Lake Ivanhoe Park
003P02
LAKE HIGHLAND DR
Wastewater System Force Main, Project 1
Colonialtown Neighborhood Center and John Long Pool
Lake Highland Park
008
N THORNTON AVE
Senator Beth Johnson Park
ORLANDO URBAN TRAIL
CANTON ST
N HAMPTON AVE
N ORANGE AVE
LS 2
N GARLAND AVE
WEBER ST
002P04
2P05
Big Tree Park
N MILLS AVE
WEBER ST
PALM DR
LS 4
Colonialtown Square
Park Lake Park
N ORANGE AVE
N MAGNOLIA AVE
E COLONIAL DR
Source: ESRI World Imagery; City of Orlando; Orange County GIS
City of Orlando Owned Property
Project 1 Force Main
Existing Force Main
Existing Lift Station
LEGEND
N
0
500
Feet
CITY OF ORLANDO UTILITIES
WASTEWATER FORCE MAIN EVALUATION
ORLANDO FORCE MAIN
PROJECT 1 FORCE MAIN ROUTE
TETRA TECH
FIGURE 1