

SCOPE OF SERVICES

CITY OF HOLLYWOOD PROJECT # 18-7100

HALLANDALE BEACH FORCE MAIN REPLACEMENT – LUM 07

SURVEY, GEOTECHNICAL INVESTIGATION, DESIGN, PERMITTING, AND BIDDING SERVICES

I. PROJECT DESCRIPTION

The City of Hollywood requested that Tetra Tech provide this scope of services to provide engineering services under the General Engineering Consulting Services contract (City Project No. 17-1325). This scope of services is for survey, geotechnical investigation, utilities verification, design, permitting, and bidding for replacement of approximately 4,800 feet of an existing force main from the City of Hallandale Beach large user meter located on the south side of Pembroke Road and S 18th Court to an existing 30-inch diameter force main connection located at the intersection of S 15th Avenue and the alley between Rodman and Funston Streets. The existing flow meter, air release valve, electrical components, vaults and site will also be replaced and or improved. Construction administration services for this project are not included in this proposal and will be authorized under a future work order.

The City owns and operates various water, wastewater and stormwater utility infrastructure within the project right-of-way. Other existing utilities that typically share the right-of-way include power, telephone, cable, gas utilities, and others. The City would like to implement the force main replacement while avoiding relocation of existing utilities, if possible. A portion of survey has been completed within the City's rights-of-way in this area as part of another project and will be utilized for this project and augmented by additional survey west of S. Federal Highway to the existing large user meter site. This project includes design of approximately 4,800 linear feet of force main replacement.

To provide logical, orderly completion of this assignment, the project has been broken down into distinct tasks, further described herein.

II. SCOPE OF SERVICES

A. Large User Meter 7 Site Survey

Gibbs Land Surveyor, a subconsultant to Tetra Tech, will provide land surveying services for a fenced compound approximately 270 feet west of Federal Highway, on the south side of Pembroke Road, in line with 18th Court. The survey is to extend out 20 feet beyond fence and north to the south side back of sidewalk.

Land Survey Services:

1. Perform a topographic survey locating and identifying all visible existing aboveground and underground utilities (as marked in the field) within the above limits.
2. Locate and/or provide permanent construction controls on site in State Plane Coordinates (1983 adjustment) and vertical control based on the North American Vertical Datum of 1988

(NAVD88). Horizontal and vertical controls will be referenced to the Florida State Plane Coordinate system on the digital files.

3. Platted rights-of-way or easement and property boundaries shall be plotted on survey drawings for the project route.
4. Provide location of all existing buildings, concrete pads, valve boxes, water/electrical meter boxes, electrical pull boxes, telephone/cable risers, fences, hydrants, above-ground utilities, wood/concrete utility poles, overhead electrical lines, culverts, guardrails, pavement limits, pavement markings, traffic signage and type, headwalls, endwalls, manholes, vaults, driveways, right-of-way limits, landscaping, and any other visible improvements.
5. Provide random elevations throughout survey limits.
6. Identify swale material, denoting grass, dirt or gravel.
7. Provide rim and invert elevations and pipe size and type on all visible gravity sewer structures and/or outfalls (sanitary and storm drainage) within the above limits.
8. Provide location of vegetation and individual trees greater than four (4) inches in diameter.
9. Digital files shall delineate all field collected data as well as existing limits of referenced right-of-ways.

Deliverables:

- The final survey map to be prepared at 1"=20' horizontal in a standard 22"x34" plan sheet format in include all topographic data listed above, right-of-way lines and property lines (GIS derived), baselines and platted right-of-way lines based upon existing monumentation and utilities verification and subsurface utility data, if provided.
- Provide a signed and sealed copy or copies of the survey.
- CAD files (.dwg files) and cross sections and topographic /elevations (.txt files) and signed and sealed copy of survey.

B. Kickoff Meeting, Data Collection, Review, and Preliminary Design Memo

Tetra Tech will prepare an agenda for the kickoff meeting, attend the kickoff meeting with the City, and prepare and transmit meeting minutes.

Tetra Tech will obtain readily available data required to proceed with the design tasks. Data to be obtained, reviewed, and processed includes the following:

- As-builts for the existing force main to be replaced,
- As-builts for the existing City of Hallandale Beach large user meter,
- As-builts for the existing 30-inch diameter force main where the proposed force main will connect,
- Tie-in pressures in the existing 30-inch diameter force main, and
- Other data.

Tetra Tech will utilize the information collected to prepare a preliminary design memorandum for review and approval by the City prior to continuing with design. Factors to be considered in the memo will include the following:

- Force Main Sizing – The City will provide information to be utilized to size the proposed force main. Once the force main has been sized, the replacement meter size will be determined accordingly.
- LUM 07 Site – Once the proposed force main is sized, preliminary site improvements will be identified. The preliminary site improvements will identify approximate meter and bypass vault sizing to accommodate the upsized force main.
- Routing – Two paths for the proposed force main will be identified and reviewed. Factors to be considered include overall length, construction methods, and existing utility conflicts.
- Costs – Preliminary construction costs will be estimated for the two force main routes.
- Review comments/input from City of Hollywood and City of Hallandale Beach are expected after review of the tech memo.

Hydraulic modeling will not be performed by Tetra Tech. A 30 percent preliminary design will be developed to establish force main routing, size, and costs. An overall plan, excluding profiles, will be developed.

Deliverables:

- Kickoff meeting agenda and minutes.
- Data collection list.
- Draft Preliminary Design Memo.
- Final Preliminary Design Memo.

C. Utilities Verification

Utilities Verification: Tetra Tech will perform the utility verification for the existing buried power, telecommunication, cable television, gas, water, sewer and drainage facilities, and identified facilities within limits of the survey.

1. Tetra Tech will coordinate with SSOCOF to open Design Tickets, will contact all existing utilities provided by SSOCOF and will submit sketches of the proposed work to obtain available atlas, mark-ups, records, as-builts, etc.
2. The locations of the existing underground utilities will be depicted based on the records received, by using the above ground visible features (i.e. valves, manhole covers, inlets) to approximate the locations of the utilities.
3. The horizontal locations of services will be approximated, to the extent possible, based on the limited information provided and above ground visible features within the ROW (i.e. water meters).

4. Vertical locations for sewers will be approximated, to the extent possible, based on invert elevations at manholes and inlets, if accessible, etc. Vertical locations for services and laterals will be assumed based on City standards.

Deliverables:

- Utility matrix.

D. Subsurface Utility Evaluations

Subsurface Utility Evaluations will be performed by Cardno using surface geophysical methods as described below:

Vacuum Excavation: Cardno proposes to use vacuum excavation equipment to perform up to 10 minimally intrusive excavations at locations as directed by Tetra Tech. Vacuum excavation methods will enable Cardno to visualize the utility in question for a high degree of certainty. Cardno will make every effort to vacuum excavate to a depth of eight feet using high pressure air methods. However, vacuum excavation will cease when these methods are unable to progress below refusal, such as bedrock or flowable fill. Cardno will not employ destructive methods, such as jackhammers or chipping hammers, to break up bedrock or other refusal within a test hole due the high risk of damage to buried utilities and safety risk to Cardno employees. Utilities deeper than 8 feet may not be found.

Cardno will notify Sunshine 811 2 full business days in advance of excavation. Cardno will mark the conductive utilities by inductive methods utilizing electromagnetic geophysical prospecting equipment. Known non-conductive utilities will be marked utilizing 2-D Radar (GPR). Aerial facilities are not included for this project.

Deliverables:

- Test hole data sheets.

E. Force Main Route Surveying

Gibbs Land Surveyor, a subconsultant to Tetra Tech, will provide land surveying from the LUM-7 site, crossing Pembroke Road, west to 19th Avenue, north on 19th Avenue to Plunkett Street; east crossing Federal Highway and running along Plunkett Street to S 15th Avenue, turning north and running along S15th Avenue to stop 150 feet north of Rodman Street. Note: Topography to be provided 100 feet east and west of the Pembroke road force main crossing; full right-of-way locations. An alternate, shorter, route may be surveyed, if decided during design.

Land Survey Services:

1. Perform a topographic survey locating and identifying all visible existing aboveground and underground utilities (as marked in the field) within the above limits.
2. Locate and/or provide permanent construction controls on site in State Plane Coordinates (1983 adjustment) and vertical control based on the North American Vertical Datum of 1988 (NAVD88). Horizontal and vertical controls will be referenced to the Florida State Plane Coordinate system on the digital files.

3. Platted rights-of-way or easement and property boundaries shall be plotted on survey drawings for the project route.
4. Provide location of all existing buildings, concrete pads, valve boxes, water/electrical meter boxes, electrical pull boxes, telephone/cable risers, fences, hydrants, above-ground utilities, wood/concrete utility poles, overhead electrical lines, culverts, guardrails, pavement limits, pavement markings, traffic signage and type, headwalls, endwalls, manholes, vaults, driveways, right-of-way limits, landscaping, and any other visible improvements.
5. Provide cross-sections at 100-foot intervals to extend 5 feet beyond the right-of-way lines.
6. Provide centerline elevations at 100-foot intervals and significant grade breaks (highs and lows) within the alley rights-of-way.
7. Identify swale material, denoting grass, dirt or gravel.
8. Provide rim and invert elevations and pipe size and type on all visible gravity sewer structures and/or outfalls (sanitary and storm drainage) within the above limits.
9. Provide location of vegetation and individual trees greater than four (4) inches in diameter.
10. Digital files shall delineate all field collected data as well as existing limits of referenced rights-of-way.

Deliverables:

- The final survey map to be prepared at 1"=20' horizontal in a standard 22"x34" plan sheet format in include all topographic data listed above, right-of-way lines and property lines (GIS derived), baselines and platted right-of-way lines based upon existing monumentation and utilities verification and subsurface utility data, if provided.
- Provide a signed and sealed copy or copies of the survey.
- CAD files (.dwg files) and cross sections and topographic /elevations (.txt files) and signed and sealed copy of survey.

F. Geotechnical Investigation

Geotechnical services will be performed by NV5, Inc. NV5 will perform four (4) borings to 10 feet, one (1) boring to 8 feet, and four (4) borings to 4 feet below grade. The purpose of our services on this project will be to perform Standard Penetration Tests and provide soil parameters for the excavations and recommendations for backfilling of the trenches for the proposed force main and the meter vault.

The scope of services is as follows:

1. NV5 will perform a subsurface exploration that will consist of four (4) borings to 10 feet below grade and four (4) borings to 4 feet at right-of-way or paved locations in the vicinity of the proposed force main alignment and one (1) boring to 8 feet near Pembroke Road and US-1. The borings will be drilled with a truck-mounted drill rig utilizing the rotary wash method. Samples of the subsurface materials encountered will be collected continuously down to the specified depth above depth using a Standard Penetration Test (SPT) sampler per ASTM D-1586. Upon

completion of the boring, the borehole will be abandoned with soil cuttings and grouted to for the last two feet to the ground surface.

2. For performing the field work NV5 will contact Sunshine One Call for advice about the location of underground utilities.
3. An engineer from NV5 will layout test locations based on the furnished drawings. NV5 will perform borings in areas which are indicated to be free from underground utilities.
4. Test locations are accessible to a regular truck-mounted drill rig. Cones can be used as Maintenance of Traffic (MOT) if needed and is included in this proposal. Right-of-way drilling permits not included in this proposal.
5. Based on our field data we will perform engineering analyses and prepare a comprehensive engineering report with evaluations and discussions of the geotechnical aspects of the proposed project and provide recommendations for design and construction. Specifically, the report will provide:
 - Drawings showing boring locations, a graphic summary of the generalized subsurface conditions, and boring logs with detailed descriptions of the materials encountered.
 - Discussion of generalized subsurface conditions at the site including groundwater levels.
 - Design parameters for the subsurface materials encountered
 - Recommendations for site preparation and grading, including the re-use of site excavated materials for fill, fill placement and compaction.
 - Construction considerations including excavation support and dewatering, impacts of organic soils or nearby foundations, and impacts for adjacent structures.
 - The report will be signed and sealed by a professional engineer licensed in the State of Florida.

Deliverables:

- Signed and sealed geotechnical report.

G. Design

This task includes design to upsize the existing force main to replace the existing force main from the existing large user meter (LUM-7) located on the south side of Pembroke Road and S 18th Court to an existing 30-inch diameter force main located on S 15th Avenue between Rodman and Funston Streets. The existing LUM-7 will be improved to accommodate the upsized force main. Currently, the LUM-7 site includes a vault with an air release valve, a vault with the meter and meter bypass and sump pump and piping, an electrical panel, and an antenna. These components are anticipated to be replaced as part of this project. The following will be included:

- LUM-7 plans and sections for mechanical, electrical, structural, and site improvements.
- Plan and profile view engineering drawings for the proposed force main at 1-inch = 20-ft horizontal and 2-ft vertical Scale. The crossing of Pembroke Road will utilize open cut construction. The crossing of Federal Highway will utilize horizontal directional drilling.

- Notes and details, including details for the two connection points.
- Project technical specifications and cost estimates.

The design will be predominantly pressure PVC pipe installed by open trench construction (except crossing of Federal Highway). All other roads other than Pembroke Road and Federal Highway (US1) are City roads. This project will require two (2) reviews, which will be at the 90%, and 100% completion levels. The 90% improvements submittal will include plan and profile drawings, draft specifications, and an engineer's opinion of probable construction cost. The 100% completion level will incorporate final City comments to finalize the drawings and specifications.

Three (3) sets of drawings and/or specifications will be provided to the City for each review. Also, an engineer's opinion of probable construction cost will accompany the 90%, and 100% design documents. Tasks to be conducted as part of this task include:

1. Prepare drawings in AutoCAD and specifications based on survey and geotechnical engineering base information. A preliminary list of drawings is presented below:
 - Cover, notes, and legend sheets.
 - Demolition Plan for Flow Meter Upgrade
 - Civil/Site Plan for Flow Meter Upgrade
 - Mechanical Plan for Flow Meter Upgrade
 - Structural Plan for Flow Meter Upgrade
 - Electrical/Instrumentation Plan for Flow Meter Upgrade
 - Plan and Profile Drawings for Force Main and Flow Meter (8 sheets at 1-inch = 20-ft horizontal and 2-ft vertical Scale for plan and profiles).
 - Standard City Sewer Details (2 Sheets).
 - Flow Meter detail.
 - Other details (1 Sheet).
 - 1) Prepare technical specifications and modify the City's front-end specifications, as required, for submittal with the 90% and 100% submittals.
 - 2) Attend design review meeting at 90% completion level, prepare agenda and minutes.
 - 3) Coordination meetings with the City Hollywood and the City of Hallandale Beach.
 - 4) Prepare an engineer's estimate of construction cost based on previous bid tabulations, vendor quotes, and estimates provided by Contractors. Cost estimate will be provided at the 90%, and 100% completion level.

Deliverables:

- Three (3) Copies of the 90 percent Force Main and Flow Meter plans, specifications, and cost estimate, two 11" x 17, one 24" x 36".

- Three (3) Copies of the 100 percent Force Main and Flow Meter plans, specifications, and cost estimate, two 11" x 17, one 24" x 36".
- Electronic files of the Force Main and Flow Meter plans, specification, and cost estimate.

H. Permitting

Tetra Tech will prepare and submit permit applications and supporting documentation necessary to obtain permits from the Broward County Environmental Protection and Growth Management Department (EPGMD), the Broward County Traffic Engineering Department, FDOT, and City of Hollywood Building Department for the proposed force main. Accordingly, Tetra Tech will perform the following tasks:

2. Prepare and submit one (1) "Notification/Application for Constructing a Domestic Wastewater Collection/Transmission System" [DEP Form 62-604.300(8) (a)] and one (1) "Application to Construct a Wastewater Collection/Transmission System" [Broward County Domestic Wastewater Licensing Program Form] to the EPGMD and respond to "Requests for Additional Information" (RAI) issued by the regulatory agency. All permit application fees are to be paid by the CITY.
3. Prepare and submit two (2) signed and sealed sets of plans to the City of Hollywood Building Department for review and response to "Requests for Additional Information" (RAI) issued by the regulatory agency.
4. Prepare FDOT Utility Permit (ROW Use) application and corresponding standard Indices for Maintenance of Traffic (MOT) exhibits for Pembroke Road and response to one (1) anticipated "Request for Additional Information" (RAI) issued by the regulatory agency or one (1) teleconference with agency staff. Detailed MOT plans along with Lane Closure permitting will be required to be submitted by the Contractor once the ROW Use permit is approved by FDOT.
5. Tetra Tech will prepare and submit a permit submittal package to Broward County Traffic Engineering Division (TED) complete with the Permit Set of drawings for review and approval. Tetra Tech will respond to one (1) anticipated "Request for Additional Information" (RAI) issued by the regulatory agency or one (1) teleconference with agency staff. TED requests photos of the construction restoration and photos and correspondence with the agency are included in this proposal.
6. The City will be responsible for all permitting fees.

Deliverables:

- Permit application submittals.
- Final approved permits.
- Construction restoration photos.

I. Bidding and Award

The proposed improvements will be bid as one (1) project. Bidding and award activities will be led by the City. Tetra Tech will conduct the following services during the bidding process.

1. Tetra Tech will work with the City staff to provide a master copy of the updated Bid Set construction drawings and specifications in electronic format (PDF), incorporating any changes after the 100 percent submittal. It is our understanding that the City will be responsible for distribution of bid packages to potential bidders via online plan distribution.
2. Support with addenda. Tetra Tech will respond to technical questions forwarded by the City. Tetra Tech will respond to questions using the Addendum Form for expedited response time and will generate necessary supporting documents, as applicable, and submit them to the City for distribution to registered plan holders.
3. Tetra Tech will attend the pre-bid meeting at the City and prepare agenda.
4. Tetra Tech will evaluate the bids, provide support for evaluation of the apparent low bidder's utilities contractor's qualifications for undertaking the utility work on the project, and provide a recommendation of award.

Deliverables:

- Updated bid set, electronically.
- Prebid meeting agenda.
- Responses to RAIs for addenda issuance by the City
- Recommendation of award letter.

J. Reimbursable Expenses

Reimbursable expenses including reproductions, fees, and other costs that may be incurred as part of this project will be paid and invoiced under this task.

Deliverables:

- Reimbursable costs receipts.

III. SERVICES NOT INCLUDED

- A. Construction administration or inspection services.
- B. Other Permits - This proposal does not include permitting services for any permits not previously listed, including any permits with the City of Hallandale Beach.
- C. Costs for advertising the Project are to be paid by the City.
- D. Obtaining easements on property for construction of the project is not included in this scope.
- E. All construction related layout and record drawing survey work and geotechnical services, including materials testing and other services are to be provided by the Contractor. This pertains only to such work that is completed during the construction phase.
- F. Services related to permitting pipeline construction through wetlands or environmentally sensitive areas are not anticipated and are not included in this scope.
- G. Hydraulic modeling.
- H. All permitting fees are to be paid by the City.

- I. Additional work due to a bid protest.
- J. Services related to the stormwater improvements design, permitting, bidding and construction administration.


IV. COMPENSATION SUMMARY

The total Lump Sum compensation for the Scope of Services described in Section II is \$147,917. The compensation for the Scope of Services by task is summarized below.

Task No.	Task Description	Total
A.	Large User Meter 7 Site Survey	\$2,090
B.	Kickoff Mtg., Data Collection, Review, and Prelim. Design Memo	\$28,284
C.	Utilities Verification	\$8,950
D.	Subsurface Utility Evaluations	\$5,328
E.	Force Main Route Surveying	\$17,842
F.	Geotechnical Investigation	\$3,080
G.	Design	\$58,046
H.	Permitting	\$14,626
I.	Bidding and Award	\$9,121
J.	Reimbursables	\$550
Total Lump Sum		\$147,917

V. SCHEDULE

Tasks A through G of this project are to be completed within six months. Task I is dependent on the City.

 Price Proposal		Labor Plan 11 Resource											Price Summary / Totals					
Hallandale Force Main Replacement <i>Design, permitting, and bidding of approximately 4,800 feet of force main</i>	Bill Rate >	247.00	193.00	95.00	92.00	97.00	190.00	91.00	187.00	109.00	125.00	148.00	Task Pricing Totals					147,917
	Proj Area >												Specify Add'l Fees on Setup					0
Submitted to: City of Hollywood (Attn: Jeff Jiang)													Technology Use Fee					
Contract Type: Lump Sum													Total Price					147,917
													Pricing by Resource					
	Total Labor Hrs	Sr. Project Manager	Sr. Engineer	Engineer II	Engineer I	CAD Designer III	Sr. Engineer (QA/QC)	Project Administrator	Sr. Engineer Structural	Engineer I Structural	Sr. Cad / Eng Designer I	Engineer V Electrical	Labor	Subs	Travel	Mat'ls & Equip	ODCs	Task Pricing Totals
Project Phases / Tasks	972	32	109	85	218	269	34	37	10	37	32	109	119,027	28,340	-	-	550	147,917
Task A - LUM 7 Site Survey	-	-	-	-	-	-	-	-	-	-	-	-	-	2,090	-	-	-	2,090
Task B - Kickoff Mtg, Data Collection, Review, and Preliminary	204	14	40	64	20	14	16	4	1	9	-	22	28,284	-	-	-	-	28,284
Task C - Utilities Verification	88	-	6	1	32	49	-	-	-	-	-	-	8,950	-	-	-	-	8,950
Task D - Subsurface Utility Evaluations	-	-	-	-	-	-	-	-	-	-	-	-	-	5,328	-	-	-	5,328
Task E - Force Main Route Surveying	-	-	-	-	-	-	-	-	-	-	-	-	-	17,842	-	-	-	17,842
Task F - Geotechnical Investigation	-	-	-	-	-	-	-	-	-	-	-	-	-	3,080	-	-	-	3,080
Task G - Design	472	11	41	16	91	132	16	22	7	28	29	79	58,046	-	-	-	-	58,046
Task H - Permitting	140	1	13	-	70	50	-	5	-	-	1	-	14,626	-	-	-	-	14,626
Task I - Bidding and Award	68	6	9	4	5	24	2	6	2	-	2	8	9,121	-	-	-	-	9,121
Task J - Reimbursables	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	550	550
Totals	972	32	109	85	218	269	34	37	10	37	32	109	119,027	28,340	-	-	550	147,917

GIBBS LAND SURVEYORS

2131 HOLLYWOOD BOULEVARD SUITE 204 HOLLYWOOD, FLORIDA 33020
PHONE: 954-923-7666 FAX: 954-923-7668
SSEELEY@GIBBSLANDSURVEYORS.COM

November 27, 2018

Ken Caban
Tetra Tech
450 N Park Road Suite 502
Hollywood FL 33021

RE: **City of Hollywood – Force Main Meter Site at Pembroke Road & U.S. 1**

Dear Mr. Caban:

We are pleased to submit the following proposal for Professional Land Surveying services on the above referenced project.

LIMITS OF WORK

Pembroke Road at Federal Highway – Force Main Meter Station – a fenced compound approximately 270 feet west of Federal Highway, south side of Pembroke Road, in line, more or less, with 18th Court; Survey to extend out 20 feet beyond fence and north to the south side back of sidewalk.

SCOPE OF WORK

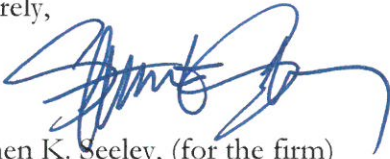
Land Survey Services:

1. Perform a topographic survey locating and identifying all visible existing above-ground and underground utilities (as marked in the field) within the above limits.
2. Locate and/or provide permanent construction controls on site in State Plane Coordinates (1983 adjustment) and vertical control based on the North American Vertical Datum of 1988 (NAVD88). Horizontal and vertical controls will be referenced to the Florida State Plane Coordinate system on the digital files.
3. Platted right-of-ways or easement and property boundaries shall be plotted on survey drawings for the project route.
4. Provide location of all existing buildings, concrete pads, valve boxes, water/electrical meter boxes, electrical pull boxes, telephone/cable risers, fences, hydrants, above-ground utilities, wood/concrete utility poles, overhead electrical lines, culverts, guardrails, pavement limits, pavement markings, traffic signage and type, headwalls, endwalls, manholes, vaults, driveways, right-of-way limits, landscaping, and any other visible improvements.
5. Provide random elevations throughout survey limits; cross section Pembroke Road at 100 intervals, east and west of meter station.
6. Identify swale material, denoting grass, dirt or gravel.
7. Provide rim and invert elevations and pipe size and type on all visible gravity sewer structures and/or outfalls (sanitary and storm drainage) within the above limits.

8. Provide location of vegetation and individual trees greater than four (4) inches in diameter.
9. Digital files shall delineate all field collected data as well as existing limits of referenced right-of-ways
10. The final survey map to be prepared at 1"=20' horizontal in a standard 22"x34" plan sheet format in include all topographic data listed above, right-of-way lines and property lines (GIS derived), baselines and platted right-of-way lines based upon existing monumentation and utilities verification and subsurface utility data, if provided.
11. Provide a signed and sealed copy or copies of the survey.
12. Deliverables: CAD files (.dwg files) and cross sections and topographic /elevations (.txt files) and signed and sealed copy of survey.

The above SCOPE OF WORK for this survey will be performed for a fee of
\$1,900.00

Sincerely,

A handwritten signature in blue ink, appearing to read 'Stephen K. Seeley', with a long horizontal flourish extending to the right.

Stephen K. Seeley, (for the firm)

October 3, 2018

Kenneth L. Caban, PE, BCEE
Tetra Tech
450 N Park Road Suite 502
Hollywood, Florida 33021

Cardno

3427 NW 55th Street
Fort Lauderdale, Florida 33309
USA

Phone: 954 938 9389

Fax: 954 938 6909

www.cardno.com

Subject: Fee Proposal for Utility Investigation Services

Project: City of Hollywood Forcemain Replacement

Dear Mr. Caban:

Cardno appreciates the opportunity to prepare this fee proposal for providing a utility investigation on the above referenced project. This letter will serve as our official scope of services and is accompanied by the included fee estimate.

Project Description: Cardno has been requested by Tetra Tech (the Client) to provide utility locating services to verify the horizontal and vertical positions of the existing utilities.

Project Limits: The limits of our investigation will include approximately 4,180 linear feet of a portions of:

1. S 15th Avenue (from alleyway south and parallel with Funston Street to the south side of Fletcher Street)
2. Fletcher Street (from the west side of S 15th Avenue to the east side of S 18th Court)
3. an alley way extension of S 18th Court (from the north side of Fletcher Street to the north side of Pembroke Road)
4. Pembroke Road (from the N R/W to the S R/W adjacent to the above described alley way extension of S 18th Court.

all in the City of Hollywood, Florida. The limits include right-of-way to right-of-way. These limits are depicted by the red outline as shown in the attached exhibit.

City of Hollywood Forcemain Replacement

October 3, 2018

Scope of Services: Cardno proposes utility locating services by using surface geophysical methods as described below:

Vacuum Excavation: Cardno proposes to use vacuum excavation equipment to perform up to 10 minimally intrusive excavations at locations as directed by the client. Vacuum excavation methods will enable Cardno to visualize the utility in question for a high degree of certainty. Cardno will make every effort to vacuum excavate to a depth of eight feet using high pressure air methods. However, vacuum excavation will cease when these methods are unable to progress below refusal, such as bedrock or flowable fill. Cardno will not employ destructive methods, such as jackhammers or chipping hammers, to break up bedrock or other refusal within a test hole due the high risk of damage to buried utilities and safety risk to Cardno employees. Utilities deeper than 8 feet may not be found.

Cardno will notify Sunshine 811 2 full business days in advance of excavation. Cardno will mark the conductive utilities by inductive methods utilizing electromagnetic geophysical prospecting equipment. Known non-conductive utilities will be marked utilizing 2-D Radar (GPR). Aerial facilities are not included for this project.

Survey: Not including in scope of services

Conditions and Understandings

Test Holes shall be done in batches of a minimum of 5 test holes per day and be billed at a minimum of at least 5 test holes per day.

Cardno cannot provide vacuum excavation services in areas where obstructions, such as unmovable vehicles or storage, exist.

Cardno field crews and equipment are not equipped or prepared to work in any areas that are, or may have been, contaminated with hazardous materials.

Backfill of test holes will be performed utilizing the removed material, if suitable. Areas will be restored as close as possible to their original condition. Test holes in asphalt will be restored using cold patch.

Deliverables:

1. Test hole data sheets will be provided.

Schedule: We propose to mobilize for this work 5 days from receipt of this proposal duly signed and barring any unforeseen condition.

Fees: We are prepared to provide the **locating services** described above for the lump sum fee of **\$4,844**.

We anticipate being able to accomplish the proposed work on time and within budget. Should any additional work be requested, Cardno will promptly notify the client prior to proceeding.

City of Hollywood Forcemain Replacement

October 3, 2018

Basis: The fees listed above are based on Cardno's crews being able to work during the hours of 7:00am to 4:30pm and being granted access to the site. Cardno's field crews and equipment are not equipped or prepared to work in any area that possibly are, or may have been, contaminated with hazardous materials at any time. Any fee or permit requested in order to perform the work will be submitted to the client at cost. MOT (if/when requested) will be provided by Cardno at no extra charge in accordance with indexes depicted by the most current FDOT Design Standards (No.625-010-003). The only items of works included in our fee proposal are the ones listed and described above in "Scope of services".

Again, we appreciate the opportunity to provide our utility investigation services for Tetra Tech. Please call me directly at 954.938.9389 ext. 207, if you have any questions or comments. We look forward to beginning work on this project upon receiving your authorization to proceed.

Sincerely,



Dennis Ritzel, PSM
Branch Manager
for Cardno
Direct Line 954.938.9389
Email: dennis.ritzel@cardno.com

GIBBS LAND SURVEYORS

2131 HOLLYWOOD BOULEVARD SUITE 204 HOLLYWOOD, FLORIDA 33020
PHONE: 954-923-7666 FAX: 954-923-7668
SSEELEY@GIBBSLANDSURVEYORS.COM

November 27, 2018

Ken Caban

Tetra Tech

450 N Park Road Suite 502

Hollywood FL 33021

RE: **City of Hollywood – Force Main – Route 2**

Dear Mr. Caban:

We are pleased to submit the following proposal for Professional Land Surveying services on the above referenced project.

LIMITS OF WORK

Pembroke Road at Federal Highway – from force main metering station, crossing Pembroke Road, west to 19th Avenue, north on 19th Avenue to Plunkett Street; east crossing Federal Highway and running along Plunkett Street to S 15th Avenue, turning north and running along S15th Avenue to stop 150 feet north of Rodman Street. Note: Topography to be provided 100 feet east and west of the Pembroke road force main crossing; full right-of-way locations.

SCOPE OF WORK

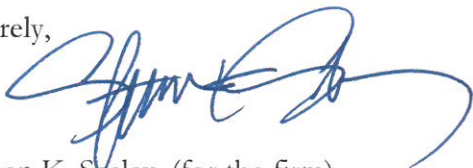
Land Survey Services:

1. Perform a topographic survey locating and identifying all visible existing above-ground and underground utilities (as marked in the field) within the above limits.
2. Locate and/or provide permanent construction controls on site in State Plane Coordinates (1983 adjustment) and vertical control based on the North American Vertical Datum of 1988 (NAVD88). Horizontal and vertical controls will be referenced to the Florida State Plane Coordinate system on the digital files.
3. Platted right-of-ways or easement and property boundaries shall be plotted on survey drawings for the project route.
4. Provide location of all existing buildings, concrete pads, valve boxes, water/electrical meter boxes, electrical pull boxes, telephone/cable risers, fences, hydrants, above-ground utilities, wood/concrete utility poles, overhead electrical lines, culverts, guardrails, pavement limits, pavement markings, traffic signage and type, headwalls, endwalls, manholes, vaults, driveways, right-of-way limits, landscaping, and any other visible improvements.
5. Provide cross-sections at 100 foot intervals to extend 5 feet beyond the Right-of-Way lines
6. Provide centerline elevations at 100 foot intervals and significant grade breaks (highs and lows) within the alley rights-of-way.
7. Identify swale material, denoting grass, dirt or gravel.
9. Provide rim and invert elevations and pipe size and type on all visible gravity sewer structures and/or outfalls (sanitary and storm drainage) within the above limits.

10. Provide location of vegetation and individual trees greater than four (4) inches in diameter.
11. Digital files shall delineate all field collected data as well as existing limits of referenced right-of-ways
12. The final survey map to be prepared at 1"=20' horizontal in a standard 22"x34" plan sheet format in include all topographic data listed above, right-of-way lines and property lines (GIS derived), baselines and platted right-of-way lines based upon existing monumentation and utilities verification and subsurface utility data, if provided.
13. Provide a signed and sealed copy or copies of the survey.
14. Deliverables: CAD files (.dwg files) and cross sections and topographic /elevations (.txt files) and signed and sealed copy of survey.

The above SCOPE OF WORK for this survey will be performed for a fee of
\$16,220.00

Sincerely,

A handwritten signature in blue ink, appearing to read 'Stephen K. Seeley', with a large, sweeping flourish extending to the right.

Stephen K. Seeley, (for the firm)

November 30, 2018

Mr. Kenneth L. Caban. P.E.
Vice President
Tetra Tech
450 N. Park Road
Hollywood, Florida 33021
954 364 1752
305 849 3404 Cell
ken.caban@tetrattech.com

Re: Revised Proposal for Subsurface Exploration & Geotechnical Engineering Study
Hollywood Force Main
S. 15th Avenue to S. 18th Court and Fletcher Street
Hollywood, Florida
NV5 Proposal No. 18-0669 Rev2

Dear Mr. Caban:

NV5, Inc. is pleased to submit this proposal in response to your request. This proposal describes our understanding of the project, lists a purpose for our work, suggests a specific scope of work, and presents our compensation.

CAPABILITIES AND EXPERIENCE

NV5, Inc. (formerly KACO) is a consulting firm providing geotechnical and construction materials engineering. We also have equipment and personnel capable of performing soil borings, installing monitor wells, and testing soil/concrete during construction. Our senior engineering personnel are registered professional engineers in Florida, California, Maine, Massachusetts, and New Hampshire. Combined, they have over 120 years of experience in geotechnical engineering.

As a local firm, we have the ability to exercise a great deal of flexibility during the various stages of project development, enabling us to provide a better and more efficient service to our clients, and to maintain direct involvement of the senior personnel on every project.

We have worked on many of South Florida's tallest, largest and most notable structures over our 35 year history. We have successfully completed over 5,000 projects. Our project experience ranges from residential, commercial, and industrial developments over soft soils to high-rise development.

PROJECT INFORMATION

Based on information received from you, we understand the project consists of a force main (FM) starting at Pembroke Road going north on S. 18th Court, then turning east on Fletcher Street and finally north on S. 15th Avenue. Total length of the project is about 4,800 feet. You requested the subsurface exploration to consist of four (4) borings to 10 feet and four (4) borings to 4 feet below grade. Additionally, one soil boring to eight (8) feet was recently requested at about 270 feet west of the southwest corner of the intersection between Pembroke Road and South Federal Highway (US-1).

PURPOSE

The purpose of our services on this project will be to perform Standard Penetration Tests and provide soil parameters for the excavations and recommendations for backfilling of the trenches for the proposed force main.

PROPOSED SCOPE OF SERVICES

1. We will perform a subsurface exploration that will consist of four (4) borings to 10 feet below grade and four (4) borings to 4 feet at right-of-way or paved locations in the vicinity of the proposed force main alignment and one (1) boring to eight (8) feet neat Pembroke Road and US-1. The borings will be drilled with a truck-mounted drill rig. Samples of the subsurface materials encountered will be collected continuously down to the specified depth above depth using a Standard Penetration Test (SPT) sampler per ASTM D-1586. Upon completion of the boring, the borehole will be abandoned with soil cuttings and grouted to for the last two feet to the ground surface.
2. For performing the field work NV5 will contact Sunshine One Call for advice about the location of underground utilities. NV5 cannot be held responsible for damage to below ground structures or utilities which are not identified to us by Sunshine One Call.
3. An engineer from our office will layout test locations based on the furnished drawings. NV5 will perform borings in areas which are indicated to be free from underground utilities.
4. Based on Google maps and street view options test locations are accessible to a regular truck-mounted drill rig. Cones can be used as Maintenance of Traffic (MOT) if needed and is included in this proposal. Right-of-way drilling permits not included in this proposal. If required they will be at additional cost.
5. Based on our field data we will perform engineering analyses and prepare a comprehensive engineering report with evaluations and discussions of the geotechnical aspects of the proposed project, and provide recommendations for design and construction. Specifically, the report will provide:
 - Drawings showing boring locations, a graphic summary of the generalized subsurface conditions, and boring logs with detailed descriptions of the materials encountered.
 - Discussion of generalized subsurface conditions at the site including groundwater levels.
 - Design parameters for the subsurface materials encountered
 - Recommendations for site preparation and grading, including the re-use of site-excavated materials for fill, fill placement and compaction.
 - Construction considerations including excavation support and dewatering, impacts of organic soils or nearby foundations, and impacts for adjacent structures.

The report will be signed and sealed by a professional engineer licensed in the State of Florida.

COMPENSATION

We can complete the scope of work described in this proposal for a lump sum fee of **\$2,800**. Our fee will be billed upon submittal of the final written report. The fee assumes that the access to the work site will be provided at no cost to us.



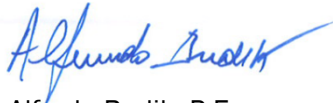
AUTHORIZATION AND SCHEDULE

Client to provide a sub-consultant agreement prior to mobilization to be reviewed and accepted by both parties prior to mobilization. We can begin field work on this project within two weeks of receipt of written authorization. We anticipate the field work would require 1 to 2 days and our report would be submitted within a week of completing the field work.

CLOSURE

We look forward to an opportunity to work on this project. If you have questions about information contained in this Proposal, please contact the writer at 305/901-2151.

Sincerely,
NV5, Inc.



Alfredo Budik, P.E.
Senior Engineer

Attachments: Tetra Tech Terms and Conditions

Distribution: Copy to Addressee via email
Copy to NV5 File

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