



**R.J.Behar & Company, Inc.**  
Engineers • Planners

March 28, 2022

*Via email: pkunen@hallandalebeachfl.gov*

Peter A. Kunen, P.E., CFM  
Assistant Director of Public Works/City Engineer  
City of Hallandale Beach Public Works Department  
630 NW 2<sup>nd</sup> Street,  
Hallandale Beach, FL 33009

RE: **RFP # FY 2018-2019-012 Consultant Competitive Negotiation Act (CCNA)  
Continuing Professional Architectural and Engineering and Other Services  
Proposal for 12-in Watermain Replacement on Atlantic Shores Blvd. Between NE  
14th Ave and Three Island Blvd.  
Discipline: Civil Engineering**

Dear Mr Kunen:

In accordance with Resolution No 2020-054 awarding RFP # FY 2018-2019-012 Consultant Competitive Negotiation Act (CCNA) Continuing Professional Architectural and Engineering and Other Services, attached please find the proposal for subject project.

**SCOPE OF WORK**

1. See attached scope of work and fee proposal.

This proposal, when executed, shall be incorporated in and become an integral part of the Agreement of Professional Services between the City and R. J. Behar & Company, Inc., hereafter referred to as the Agreement.

Please do not hesitate to contact me should you have any questions or require any additional information.

Sincerely,  
**R.J. BEHAR & COMPANY, INC.**

A handwritten signature in blue ink, reading 'Juan H. Vazquez'.

Juan H. Vazquez, P.E., PH, BCEE  
Vice President

L:\City of Hallandale Beach\12 in waterline Atlantic Shores\CoverLetterdoex.docx

## **SCOPE OF SERVICES**

**Proposal for 12-in Watermain Replacement on Atlantic Shores Blvd. Between NE 14<sup>th</sup> Ave and Three Island Blvd.**

**RFP # FY 2018-2019-012 Consultant Competitive Negotiation Act (CCNA) Continuing Professional Architectural and Engineering and Other Services**

**Discipline: Civil Engineering Services  
12/10/2021**

### **I. Introduction**

The City of Hallandale Beach has requested a proposal from RJ Behar to design the replacement of an existing 12-in watermain on Atlantic Shores Blvd. The project's limits are along Atlantic Shores between NE 14<sup>th</sup> Ave and Three Island Blvd. There is a project on Atlantic Shores Blvd between US-1 to Diplomat Parkway currently under design. That project overlaps with this one between NE 14<sup>th</sup> Avenue to Diplomat Parkway. The intent is to have the waterline replaced ahead of the Atlantic Shores Blvd project. The length of the new line is approximately 2,600 feet.

### **II. Scope of Work**

#### **A. Design Analysis**

##### **1. Field Review**

Field visits will be required to refine the scope of the improvements. This task will consist of a review of the site and documenting existing conditions with photos and notes. One field review is anticipated for this project.

##### **2. Route Analysis**

Based on the field reviews, review of location of all existing utilities, and other improvements, the location of the proposed lines will be determined. At this time the method of construction (open cut, directional drilling, etc.) will be determined in consultation with the City. The size of the new line was provided by the City to be 12 inches.

##### **3. Connection to Existing Systems and Fire Hydrant Spacing**

Several connections are needed including at NE 14<sup>th</sup> Ave., Diplomat Pwy. and at Three Island Blvd. The new connections must be designed to minimize the disruption to traffic, and disruption of service. RJ Behar shall also verify the fire hydrant spacing and add fire hydrants if necessary.

##### **4. Plans Preparation**

Final designs and plans will be prepared based on the results of field reviews, analyses, and discussions with the City's Staff. RJ Behar shall prepare preliminary plans 60%, 90% and final plans (100%) of the proposed improvements and submit to the City for review and approval.

The following is a preliminary list of drawings:

- Cover Sheet
- General Notes and Legend
- Summary of Quantities
- Summary of Verified Utilities
- Plan and Profiles
- Pavement Restoration Details
- Water Main Details
- Construction Phasing
- Maintenance of Traffic Notes
- Stormwater Pollution Prevention Plan (SWPPP)
- Boring Logs

Roadway Restoration: RJ Behar shall incorporate into the design all necessary components of roadway and swale restoration. The City of Hallandale Beach, Florida Department of Transportation (FDOT) and Broward County Minimum Standards will be used as guidelines.

### **5. Estimates of Probable Cost**

RJ Behar will provide an Engineer's Opinion of Probable Cost at 60%, 90% and another final one with the final signed and sealed plans to use for comparison with the bids from contractors. The cost estimate shall include a detailed tabulation of all portions of the project. A spreadsheet will be developed summarizing the results and identifying estimated quantities and anticipated unit prices.

### **6. Technical Specifications**

RJ Behar shall prepare technical specifications in relation to the final design components. Erosion and sediment control methods, pollution prevention precautions and road restoration construction will be included by standard specifications. The specifications package will follow the Construction Specifications Institute (CSI) format with reference to FDOT Standard Specifications with modifications necessary to convey requirements for the materials and products selected.

### **7. Utility Coordination and Utility Meeting**

- a. Utility Coordination: A design ticket will be requested from Sunshine One Call. All of the utilities identified on the ticket will be contacted and atlases for the utilities' facilities in the area will be solicited. The information from the utilities will be included in the drawings. This task includes follow up with the utility companies to coordinate and resolve any possible conflicts.
- b. Utility Meeting: Attend one utility coordination meeting, if necessary, with all utilities to go over conflicts and any relocations. This could also be done by phone.

### **8. Progress Meetings**

Two progress meetings are expected for the project to discuss scope, progress, and City comments. The meeting will be conducted by phone. Minutes will be prepared outlining the major items and decisions discussed at the meetings.

### **9. Permitting**

RJ Behar shall be responsible for preparing and processing documents for permitting and assisting in obtaining approval from agencies having jurisdiction. It is recognized by the City that the period for obtaining permits is beyond the control of RJ Behar except for issues concerning RJ Behar's ability to respond to permitting agency requests for information.

Permits expected include:

- FDEP - Notice of Intent to Use the General Permit for Construction of Water Main Extensions for PWSs- Alternate (DEP Form 62-555.900(7))
- SFWMD - Notice of Intent to Use an Environmental Resource and/or State 404 Program General Permit, (Form 62-330.402(1)) for crossing the DeSoto waterway.
- City of Hallandale Beach Engineering Permit

This task also includes follow up with the appropriate Agencies until obtaining the required permits. Coordination with Fire Department is also included.

### **10. Bidding Assistance**

RJ Behar shall provide plans and specifications to the City for distribution to contractors. The City will provide the front-end documents. These will be reviewed for consistency with the project specifications. RJ Behar shall respond to requests for information (RFI's).

- a. Meetings: Attend Pre-bid meeting(s).
- b. Addendums: RJ Behar shall prepare all necessary responses to RFI's to answer questions posed by contractors.

### **11. Survey**

The survey will be completed by Marlin Engineering. They had completed topographic survey from US-1 to the west of the DeSoto Waterway. See attached proposal from Marlin Engineering.

### **12. Subsurface Utility Engineering (SUE)**

See attached proposal from Inframap, Inc. This task will be on an as needed basis.

### **13. Geotechnical**

See attached proposal from Geosol, Inc.

### **14. Post Design Engineering Services**

- a. During the construction there may be a need to attend the following meetings:
  - i. Pre-Construction Meeting
  - ii. Construction Progress meetings

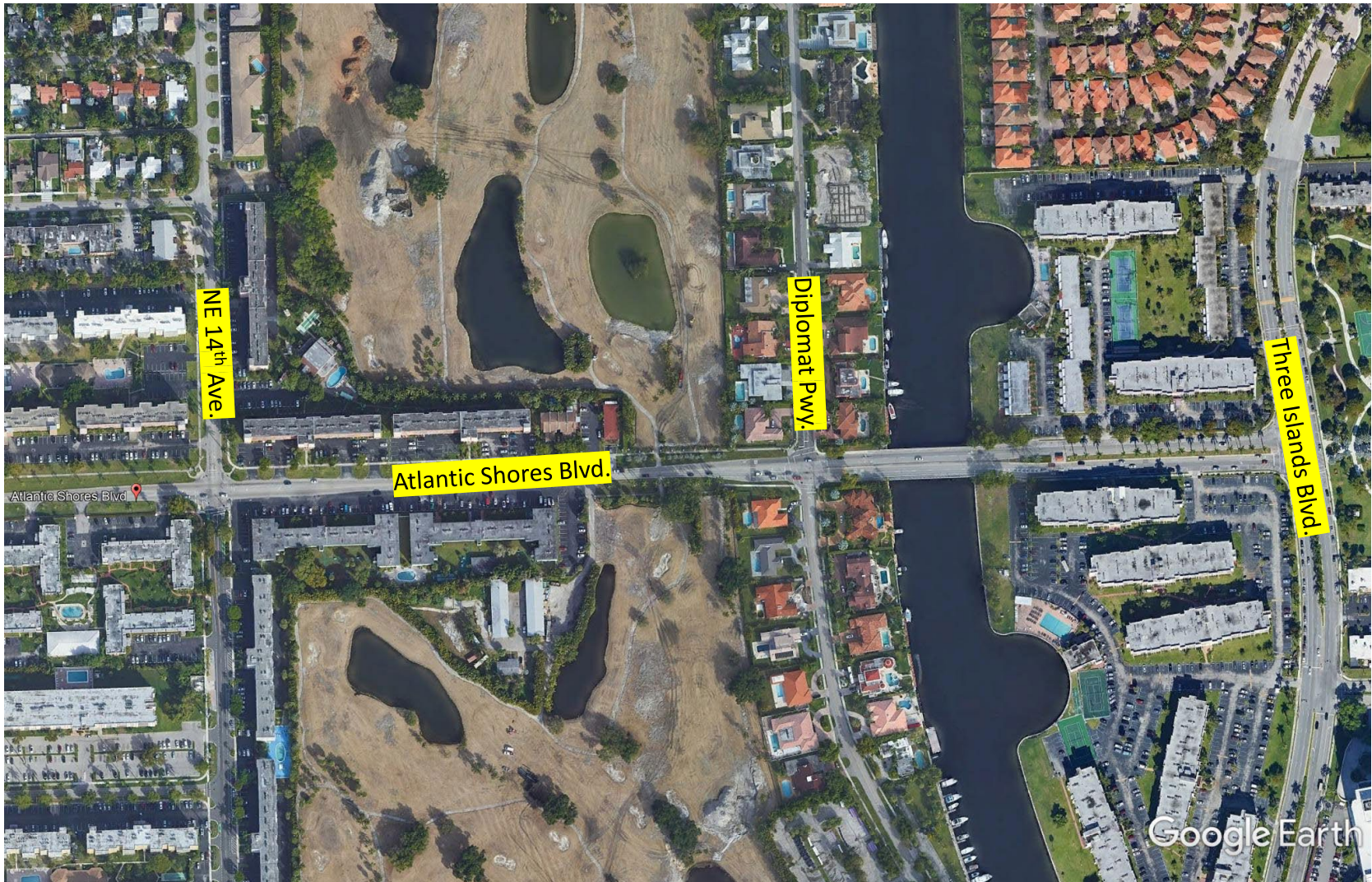
- b. During the construction there may be a need to perform field reviews by the Engineer of Record. RJ Behar shall attend field reviews as requested by the City, and to witness pressure and other testing. Six (6) inspections and one final inspection have been considered.
- c. Throughout the duration of the construction there may be a need to review shop drawings and submittals, provide clarifications, respond to request for information (RFI) and review change orders. RJ Behar will create a log, review the shop drawings and will determine whether these are acceptable for construction or whether a re-submittal is required. Thirty (30) shop drawings/material submittals, and sixteen (16) RFI's have been considered.
- d. During the construction there may be a need to perform plan revisions. RJ Behar shall perform plan revisions as required by the Project to include Quality Control and supervision. One plan revision has been considered.
- e. At the end of the project RJ Behar will review the As-built plans prepared by the contractor, prepare Record Drawings based on the As-built from the contractor and prepare the final certification.

**Notes:**

The City will provide the location of City owned existing utilities and available as-builts.

The City will pay for the required permit fees.





12in Watermain Replacement on Atlantic Shores Blvd.  
Between NE 14<sup>th</sup> Ave and Tree Island Blvd.  
**Location Map**



**Between NE 14th Ave and Tree Island Blvd.**

ACTIVITY	PRINCIPAL		PROJECT MANAGER		ENGINEER		JR ENGINEER				MANHOURS BY ACTIVITY	TOTAL COST BY ACTIVITY
	MAN HOURS	\$ 246.00 HOURLY RATE	MAN HOURS	\$ 223.00 HOURLY RATE	MAN HOURS	\$ 146.00 HOURLY RATE	MAN HOURS	\$ 105.00 HOURLY RATE	MAN HOURS	HOURLY RATE		
DESIGN SERVICES	12	\$ 2,952.00	83	\$ 18,509.00	104	\$ 15,184.00	216	\$ 22,680.00	0	\$ -	415	\$ 59,325.00
BIDDING ASSISTANCE	0	\$ -	4	\$ 892.00	4	\$ 584.00	8	\$ 840.00	0	\$ -	16	\$ 2,316.00
CONTRUCTION ASSISTANCE	10	\$ 2,460.00	25	\$ 5,575.00	20	\$ 2,920.00	190	\$ 19,950.00	0	\$ -	245	\$ 30,905.00
TOTAL	22	\$ 5,412.00	112	\$ 24,976.00	128	\$ 18,688.00	414	\$ 43,470.00	0	\$ -	676	\$ 92,546.00
											LABOR FEE	\$ 92,546.00
											DIRECT REIMBURSABLES (2%):	\$ 1,850.92
											SUBCONSULTANTS:	
											Survey (Marlin)	\$ 15,730.00
											SUE (Inframap)	\$ 15,780.89
											Geotech (Geosol)	\$ 15,211.68
											TOTAL:	\$ 141,119.49



**DESIGN SERVICES**  
**R.J. BEHAR & COMPANY**

**12in Watermain Replacement on Atlantic Shores Blvd.**

TASK	BASIS OF ESTIMATE	NO. OF UNITS	HRS/ UNIT	TOTAL HOURS	REMARKS
<b>Design</b>					
Field Review	LS	2	6	12	
Route Analysis	LS	1	16	16	
Connection to Existing Systems	LS	1	8	8	Including details
<b>Plans</b>					
Cover Sheet	SHEET	1	6	6	
General Notes	SHEET	1	12	12	
Summary of Quantities	SHEET	1	8	8	
Summary of Verified Utilities	SHEET	1	8	8	
Plan and Profile Sheets	SHEET	5	24	120	2,600 ft, Based on 40 scale = 5 sheets
Pavement Restoration Details	SHEET	1	6	6	
Watermain Details	SHEET	2	12	24	
Construction Phasing/Traffic Control Notes	SHEET	1	12	12	
Stormwater Pollution Prevention Plan	SHEET	1	14	14	
Boring Logs	SHEET	1	4	4	Incorporate into set
Cost Estimate	LS	1	16	16	
Technical Specifications	LS	1	40	40	
Utility Coordination	LS	1	32	32	
Progress Meetings/Phase Reviews	EA	2	4	8	Including Minutes
Quality Control	L.S.	1	15	15	5%
<b>Permits</b>					
FDEP Notice of Intent to use General Permit for Construction of Water Main Extensions for PWSs	LS	1	16	16	Waterline permit
SFWMD NOI to use General Permit for for Installation, Maintenance, Repair, and Removal of Utility Lines	LS	1	16	16	For crossing DeSoto waterway
City of Hallandale Beach Engineering Permit	LS	1	16	16	
Fire Department Coordination	LS	1	6	6	
SUBTOTAL				<b>415</b>	

**BIDDING ASSISTANCE****R.J. BEHAR & COMPANY****12in Watermain Replacement on Atlantic Shores Blvd.**

TASK	BASIS OF ESTIMATE	NO. OF UNITS	HRS/ UNIT	TOTAL HOURS	REMARKS
Pre-Bid Meeting	LS	1	4	4	
Respond to RFI's and Addendums	EA	1	12	12	
SUBTOTAL				<b>16</b>	

**CONSTRUCTION ASSISTANCE  
FEE PROPOSAL SUMMARY  
Between NE 14th Ave and Tree Island Blvd.**

TASK	BASIS OF ESTIMATE	NO. OF UNITS	HRS/ UNIT	NO. OF SHEETS	TOTAL HOURS	REMARKS
Respond to Request For Information (RFI)	EA	16	4		64	2 per month
Site Visits	EA	6	4		24	By Engineer
Progress Meetings	EA	8	4		32	Includes Travel Time and minutes
Shop Drawings Reviews	EA	30	2.5		75	
Plan Revisions	EA	1	8		8	
Construction Inspections	DAYS	0	0		0	Not included
Project Closeout and Certification	LS	1	20		20	
Final Inspection	EA	1	6		6	
Attend Pre-con Meeting	LS	1	4		4	
Prepare Record Drawings	LS	1	12		12	
<b>SUBTOTAL</b>					<b>245</b>	

The above hours are estimated based on a construction duration not to exceed 240 days (8 months)

**December 15, 2021**

Juan H. Vázquez, PE, PH, BCEE  
Vice President  
R J Behar & Company, Inc.  
6861 SW 196th Avenue, Suite 302  
Pembroke Pines, FL 33332

[JVazquez@RJBehar.com](mailto:JVazquez@RJBehar.com)

**Re: Topographic Survey  
Atlantic Shores Boulevard  
Hallandale Beach, FL**

### **PROPOSED SCOPE OF SERVICES:**

As per your request, Marlin Engineering Inc. will provide the following Professional Surveying Services for the above captioned project:

Prepare a Topographic Survey pursuant to the Standards of Practice for Surveying and Mapping defined in Chapter 5J-17, Florida Administrative Code, based on the following:

#### **Project Limits:**

- North right of way line to South right of way line along Atlantic Shores Boulevard from Diplomat Parkway extending to the East right of way of Three Islands Boulevard. (Approximately 1,200 linear feet)

#### **Topographic Survey:**

- Provide Topographic data along Atlantic Shores Boulevard from North to South right of way lines. There will be no additional distances into the adjacent properties.
- Locate trees 4" and larger, measured at breast height.
- Locate all improvements and visible, above ground utilities.

#### **Right of Way:**

- Right of Way monumentation Recon
- Right of Way Research based on the Public Records of Broward County.
- Show Right of Way information on Survey (Cadd Work)

#### **Drainage Survey:**

- Locate Drainage Structures (Approximately 4 Structures)
- As-Built Drainage Structures

#### **Hydrographic Survey:**

- Obtain hydrographic data in an area 100'x 200' within the waterway.
- Depict the hydrographic data (bottom of channel elevations) on the topographic survey.

**Not included within our scope:**

- Locate underground Utilities.
- Tree Identification Survey.
- Preparation of a Digital Terrain Model (DTM).

**SPECIFICATIONS:**

All field data with the exception of electronic data will be recorded in field books.

Additions or modifications to the scope, as well as resulting CAD and Project Management time, will be invoiced per hourly fees listed below.

**QUALIFICATIONS:**

- 1- All Procedures in connection with this project will be performed in strict accordance with the applicable provisions of the "Standards of Practice for Land Surveying in the State of Florida" pursuant to **Rule 5J-17** of the Florida Administrative Code.
- 2- This estimate is a **Lump Sum Amount** price payment.
- 3- The final deliverable will be a digitally signed pdf of the Topographic survey as well as an AutoCAD Civil 3D file containing the referenced survey data.

**CHANGES:**

Please note that this proposal is based on the information that was provided and is intended to be used as a base budget. Should additional equipment or services be required additional charges may apply. Client, without mollifying this Agreement, may direct in writing to make changes to the Work. Adjustments, if any, in the contract price or contract time resulting from such changes shall be set forth in a Change Order.

**ESTIMATED FEES:**

Our estimated fee to perform the services as requested by Horsepower Electric, Inc. shall be a **Lump Sum Amount** of **\$15,730.00**. As always, Marlin Engineering Inc. is prepared to commence upon receipt of your written Task Work Order.

**Field:**

3 person Survey Crew	\$1,080.00/day	<b>Estimated</b> 6.5 days	\$ 7,020.00
Hydrographic Crew	\$1,080.00/day	<b>Estimated</b> 1 day	\$ 1,080.00
<b>Sub Total:</b>			<b>\$ 8,100.00</b>

**Office:**

Senior Surveyor	\$155.00/hr.	<b>Estimated</b> 6 Hrs.	\$ 930.00
Survey/ CADD Technician	\$ 90.00/hr.	<b>Estimated</b> 67 Hrs.	<u>\$ 6,700.00</u>
<b>Sub Total:</b>			<b>\$ 7,630.00</b>
<b>Total:</b>			<b><u>\$15,730.00</u></b>




**ACCEPTANCE:**

The return of an executed copy of this proposal constitutes authorization to proceed. Marlin Engineering Inc. appreciates the opportunity to submit this proposal and we look forward to being of service. If you have any questions with respect to this proposal, do not hesitate to contact us. On behalf of MARLIN ENGINEERING Inc. I thank you again, for the opportunity to work with you on this important project.

**APPROVED BY:**

The above agreement is hereby acknowledged and Marlin Engineering, Inc. is authorized to proceed with the above requested services.

\_\_\_\_\_  
**CLIENT** **DATE:** \_\_\_\_\_

  
\_\_\_\_\_  
**MARLIN ENGINEERING INC.** **DATE:** December 17, 2021

Sincerely,  
Marlin Engineering, Inc.  
**Kevin M. Beck, P.S.M.**  
**V.P./Director of Surveying**

R J Behar & Company, Inc.  
6861 SW 196th Avenue, Suite 302  
Pembroke Pines, FL 33332

December 1, 2021

Attention: Juan H. Vázquez, PE, PH, BCEE – Vice President

Re: **Proposal for Geotechnical Services**  
Design Services for Proposed  
12-inch Watermain Replacement  
Along Atlantic Shores Boulevard  
Between NE 14th Avenue and Tree Island Boulevard  
City of Hallandale Beach, Broward County, Florida  
GEOSOL Proposal No. P-221212

Dear Mr. Vázquez:

In accordance with your request on November 30, 2021, Geosol, Inc. (GEOSOL) is pleased to submit this proposal pertaining to geotechnical services for the above-referenced project. The enclosed proposal includes an estimate of the work effort and our anticipated approach, based on our understanding of the project.

### **PROJECT INFORMATION**

As we understand it, City of Hallandale Beach Public Works (CHBPWD) plans to replace the existing 12-inch watermain along Atlantic Shores Boulevard between NE 14<sup>th</sup> Avenue and Tree Island Boulevard with a total length of about 2,400 feet. At this point, we have not been provided information regarding the depths or the installation method of the proposed watermain. However, we understand that an open-cut method of installation will be used for the majority of the watermain alignment, except that horizontal directional drilling will likely be utilized under DeSoto Waterway.

As requested, Standard Penetration Test (SPT) borings will be required for use in the design of the proposed watermain replacement.

### **SCOPE OF SERVICES**

#### **General**

The geotechnical scope of services includes the performance of SPT borings for the proposed watermain replacement. The following section provides a discussion regarding the proposed geotechnical investigation program.



5795-A N.W. 151<sup>st</sup> Street  
Miami Lakes, FL 33014  
Phone (305) 828-4367; Fax (305) 828-4235  
E-mail: [geosolusa@bellsouth.net](mailto:geosolusa@bellsouth.net)

### **Field Exploration and Laboratory Testing Programs**

1. Perform site reconnaissance, locate and coordinate for existing utilities that may interfere with the drilling operations.
2. Provide traffic control in accordance with the Index 600 series of the FDOT Roadway and Traffic Design Standards.
3. Perform four (4) Standard Penetration Test (SPT) borings to depths of 20 feet below existing grades for the proposed 12-inch watermain replacement along Atlantic Shores Boulevard at a general spacing of about 500 feet center to center.
4. Perform two (2) Standard Penetration Test (SPT) borings to depths of 40 feet below existing grades for the proposed 12-inch watermain crossing under DeSoto Waterway.
5. Measure the groundwater levels at the test boring locations.
6. Backfill the boreholes using cement grout mix.
7. Visually examine all recovered soil/rock samples in the laboratory. A geotechnical engineer will examine all recovered soil and rock samples. The laboratory testing will include natural moisture content, grain-size analysis, percent passing the #200 sieve, organic content determination, and corrosion testing. The tests will be conducted in accordance with applicable ASTM and FDOT standards.

We understand that the test locations are accessible to a truck-mounted drill rig. Samples of the in-place materials will be recovered with a standard split barrel drive with 140-pound hammer falling 30 inches (the Standard Penetration Test after ASTM D1586). The boring will be advanced with rotary drilling methods and the borehole fully supported by temporary NX size steel casing in order to prevent loss of drilling fluids and borehole collapse. For location of our tests, we will use the aerials and a Digital Terrain Model (DTM) that will be provided to us by Marlin Engineering. We will use the aerials, existing landmarks and standard taping procedures to locate the borings in the field.

### **Traffic Control**

The work will be coordinated to minimize the amount of traffic disruption. Flagmen, barricades, signs, cones and off-duty police officers will be used in accordance with Index 600 Series of the FDOT Roadway and Traffic Design Standards to allow for continuous traffic flow. Based on our site review, many test locations will need to be performed adjacent to on-going traffic and/or lane closure. We are anticipating that many test borings will require MOT.

### **REPORTING**

The data will be used in performing geotechnical engineering evaluations and developing foundation recommendations in the following areas:



1. General location and description of potential deleterious materials encountered in the borings, which may interfere with construction progress and structures performance, including existing fill materials, organic soils, and plastic soils.
2. Discussion of some critical design or construction considerations based on the subsurface and groundwater conditions developed from the test borings.
3. Derivation of soil/rock parameters for the design of the temporary ground support system for the proposed watermain replacement.

### **Geotechnical Report**

A geotechnical report will be prepared for this study to summarize the course of the study pursued and for support of the design plans. The report will contain the field and laboratory data generated, and subsurface conditions encountered. The report will be prepared using the results of the field investigations, laboratory testing and will contain geotechnical recommendations for the proposed roadway improvements and geotechnical recommendations for design and construction of the proposed signalization structures. The report will also provide soil/rock parameters for use in the analyses and design of the proposed watermain replacement. QA/QC checklist and report limitations will also be included as part of the report.

### **SCHEDULE**

Our work can begin immediately upon your notice to proceed. We will begin with our services by coordinating utility clearances at the boring locations. The utility clearances process typically takes up to five (5) working days. Given the scope described herein, we can complete the field study for the site within two (2) working days. The laboratory testing can be completed within a period of five (5) working days. The geotechnical reports can be completed in ten (10) working days after completion of the laboratory testing program. Therefore, we can complete the requested services in about a five (5)-week period upon receiving Notice to Proceed. However, we will try to expedite our services as much as possible.

### **FEES**

Based on our general knowledge and an interpretation of your requirements, we are willing to complete the subsurface exploration and report preparation for the subject site for a total sum of \$15,211.68. We have enclosed a detailed Fee Proposal for your review in Attachment 1. Also, our revised man-hour forecast is presented in Attachment 2.



Proposal for Geotechnical Services  
Design Services for Proposed  
12-inch Watermain Replacement  
Along Atlantic Shores Boulevard  
Between NE 14th Avenue and Tree Island Boulevard  
City of Hallandale Beach, Broward County, Florida  
GEOSOL Proposal No. P-221212

GEOSOL appreciates your consideration of our firm to undertake this project. If you have any questions, please do not hesitate to contact us.

Sincerely,  
**GEOSOL, INC.**



Oracio Riccobono, P.E.  
Senior Geotechnical Engineer/President

Attachment 1 - Fee Proposal  
Attachment 2 - Man-Hour Forecast





**ATTACHMENT 1**

FEE PROPOSAL



**GEOSOL, INC.**  
**FEE PROPOSAL FOR GEOTECHNICAL SERVICES**  
**Design Services for Proposed 12-inch Watermain Replacement**  
**Along Atlantic Shores Boulevard Between NE 14th Avenue and Tree Island Boulevard**  
**City of Hallandale Beach, Broward County, FL**

**GEOSOL PROPOSAL No. P- 221212**

<u>DESCRIPTION</u>	UNITS	# OF UNITS	UNIT RATE (\$)	TOTAL \$
--------------------	-------	---------------	-------------------	-------------

**1. FIELD INVESTIGATION**

**1A) FIELD ACTIVITIES**

SPT Borings (0 ft to 20 ft) with casing, Land: 4 SPTs to 20 ft. deep for proposed 12-inch watermain replacement along Atlantic Shores Blvd	FEET	80.0	\$16.00	\$1,280.00
SPT Borings (0 ft to 40 ft) with casing, Land: 2 borings to 40 feet for the proposed 12-inch watermain crossing at the DeSoto Waterway	FEET	80.0	\$16.00	\$1,280.00
Closing Holes = (total depth of SPT boring and percolation tests)	FEET	160.0	\$8.65	\$1,384.00
Engineering Technician	HOURL	12	\$68.14	\$817.68

**SUB-TOTAL (for FIELD INVESTIGATION)**

**\$4,761.68**

**1B) MOBILIZATION/DEMOBILIZATION & MOT COORDINATION**

Mobilization of truck mounted rig (Rate is 1 per 100 feet of SPT Boring)	EACH	2.0	\$350.00	\$700.00
Traffic Control - Off Duty Policeman (assume 2 day @ 8 Hrs. for SPT on the Road)	HOURL	16.0	\$45.00	\$720.00
Cones, Sign, Flags, Barricades, Arrow Board	DAY	2.0	\$210.00	\$420.00
Mobile Variable Message Board	DAY	2.0	\$150.00	\$300.00

**SUB-TOTAL (MOB/DEMOB, & MOT COORDINATION)**

**\$2,140.00**

**TOTAL FIELD INVESTIGATION**

**\$6,901.68**

**2. LABORATORY PROGRAM**

Moisture Test	EACH	6	\$15.00	\$90.00
Grain Size per AASHTO T-27 including -200 wash	EACH	4	\$50.00	\$200.00
Material Finer than 200 Sieve per ASTM C-117	EACH	4	\$30.00	\$120.00
Organic Content Test/Limerock per AASHTO T-267	EACH	4	\$40.00	\$160.00
Corrosion Testing including resistivity, chlorides, pH & sulfates per FDOT 5-550 to FM 5-553	EACH	1	\$150.00	\$150.00

**TOTAL LABORATORY PROGRAM**

**\$720.00**

**TOTAL FIELD AND LABORATORY PROGRAM**

**\$7,621.68**

**3. ENGINEERING SERVICES**

Senior Engineer	HOURL	15	\$170.00	\$2,550.00
Professional Engineer	HOURL	28	\$140.00	\$3,920.00
Staff Engineer	HOURL	6	\$95.00	\$570.00
C.A.D. Operator	HOURL	6	\$75.00	\$450.00
Clerical/Administrative	HOURL	2	\$50.00	\$100.00

**TOTAL ENGINEERING SERVICES**

**\$7,590.00**

**TOTAL GEOTECHNICAL FEES FOR PROJECT**

**\$15,211.68**

**ATTACHMENT 2**

MAN-HOUR FORECAST



### 35. Geotechnical

Estimator: O.Riccobono, P.E.  
Date Prepared: 12/01/2021

Design Services for Proposed 12-inch Watermain Replacement  
Along Atlantic Shores Boulevard Between NE 14th Avenue and Tree Island Boulevard  
City of Hallandale Beach, Broward County, FL

Representing	Print Name	Signature / Date
Consultant Name	Geosol, Inc.	

Task No.	Task	Units	No of Units	Hours/ Unit	Total Hours	Comments
	<b>Roadway</b>					
35.1	Document Collection and Review	LS	1	2	2	Professional Engineer
35.2	Develop Detailed Boring Location Plan	LS	0	0	0	
35.3	Stake Borings/Utility Clearance	Boring	0	0	0	
35.4	Muck Probing	Crew Day	0	0	0	
35.5	Coordinate and Develop MOT Plans for Field Investigation	EA	0	0	0	
35.6	Drilling Access Permits	Location	0	0	0	
35.7	Property Clearances	EA	0	0	0	
35.8	Groundwater Monitoring	EA	0	0	0	
35.9	Resilient Modulus/LBR Sampling	EA	0	0	0	
35.10	Coordination of Field Work	100 lf of boring	0	0	0	
35.11	Soil and Rock Classification - Roadway	100 lf of boring	0	0	0	
35.12	Design LBR	LS	0	0	0	
35.13	Laboratory Data	100 lf of boring	0	0	0	
35.14	Seasonal High Water Table	Boring	0	0	0	
35.15	Parameters for Water Retention Areas	EA	0	0	0	
35.16	Delineate Limits of Unsuitable Material	Cross-section	0	0	0	
35.17	Electronic Files for Cross-Sections	100 lf of boring	0	0	0	
35.18	Embankment Settlement and Stability	Embankment Boring	0	0	0	
35.19	Monitor Existing Structures	LS	1	4	4	Professional Engineer. For existing structures in close proximity of Construction.
35.20	Stormwater Volume Recovery and/or Background Seepage Analysis	EA	0	0	0	
35.21	Geotechnical Recommendations	LS	0	0	0	

### 35. Geotechnical

Task No.	Task	Units	No of Units	Hours/ Unit	Total Hours	Comments
35.22	Pavement Condition Survey and Pavement Evaluation Report	LS	0	0	0	
35.23	Preliminary Roadway Report	LS	0	0	0	
35.24	Final Report	EA	0	0	0	
35.24	Final Report	EA	0	0	0	
35.25	Auger Boring Drafting	100 lf boring	0	0	0	
35.26	SPT Boring Drafting	100 lf boring	0	0	0	
<b>Roadway Geotechnical Subtotal</b>					<b>6</b>	
	<b>Structures</b>					
35.27	Develop Detailed Boring Location Plan	LS	1	2	2	Professional Engineer
35.28	Stake Borings/Utility Clearance	Boring	6	0.5	3	Engineering Technician - 4 Boring to depths of 20 feet for proposed 12-inch watermain replacement along Atlantic Shores Blvd and 2 borings to 40 feet for the proposed 12-inch watermain crossing at the DeSoto Waterway
35.29	Coordinate and Develop MOT Plans for Field Investigation	EA	1	2	2	Staff Engineer
35.30	Drilling Access Permits	Location	0	0	0	
35.31	Property Clearances	EA	0	0	0	
35.32	Collection of Corrosion Samples	EA	1	1	1	Engineering Technician
35.33	Coordination of Field Work	100 lf of boring	1.6	1	2	Professional Engineer
35.34	Soil and Rock Classification - Structures	100 lf of boring	1.6	1.5	2	Staff Engineer
35.35	Tabulation of Laboratory Data	100 lf of boring	1.6	1	2	Staff Engineer
35.36	Estimate Design Groundwater Level for Structures	EA	6	0.15	1	Professional Engineer
35.37	Selection of Foundation Alternatives (BDR)	Bridge boring	0	0	0	
35.38	Detailed Analysis of Selected Foundation Alternate(s)	Bridge boring	0	0	0	
35.39	Bridge Construction and Testing Recommendations	Bridge boring	0	0	0	
35.40	Lateral Load Analysis	Bridge boring	0	0	0	
35.41	Walls	Wall Boring	0	0	0	
35.42	Sheet Pile Wall Analysis	Wall Boring	0	0	0	
35.43	Design Soil Parameters for Signs, Signals, High Mast Lights, and Strain Poles and Geotechnical Recommendations	Boring	6	0.75	5	Professional Engineer
35.44	Box Culvert Analysis	EA	0	0	0	
35.45	Preliminary Report	EA	0	0	0	
35.46	Final Report - Bridge and Associated Walls	EA	0	0	0	
35.47	Final Reports - Signs, Signals, Box Culvert, Walls and High Mast Lights	EA	1	12	12	Professional Engineer



### 35. Geotechnical

Task No.	Task	Units	No of Units	Hours/ Unit	Total Hours	Comments
35.47	Final Reports - Signs, Signals, Box Culvert, Walls and High Mast Lights	EA	1	2	2	Clerical/Administrative. For Report Preparation
35.48	SPT Boring Drafting	100 lf of boring	1.6	4	6	CADD Operator
35.49	Other Geotechnical	LS	1	8	8	Engineering Technician. MOT set-up/pick-up for 2 days @ 4 hrs/day
<b>Structural Geotechnical Subtotal</b>					<b>48</b>	
<b>Geotechnical Technical Subtotal</b>					<b>54</b>	
35.50	Technical Special Provisions	EA	0	0	0	
35.51	Field Reviews	LS	1	4	4	Senior Engineer
35.52	Technical Meetings	LS	1	4	4	Meetings listed below. Senior Engineer
35.53	Quality Assurance/Quality Control	LS	%	5%	3	Senior Engineer
35.54	Supervision	LS	%	5%	3	Senior Engineer
<b>Geotechnical Nontechnical Subtotal</b>					<b>14</b>	
35.55	Coordination	LS	%	2%	1	Senior Engineer
<b>35. Geotechnical Total</b>					<b>69</b>	

Technical Meetings	Units	No of Units	Hours/ Unit	Total Hours	PM Attendance at Meeting Required?	Number
Kickoff Meeting	EA	0	0	0		0
Boring Layout Approval	EA	0	0	0		0
Attend in BDR Review Meeting	EA	0	0	0		0
30/60/90% Submittal Review	EA	1	4	4		0
Other Meetings	EA	0	0	0		0
<b>Subtotal Technical Meetings</b>				<b>4</b>	<b>Subtotal Project Manager Meetings</b>	0
Progress Meetings (if required by FDOT)	EA	0	0	0	PM attendance at Progress Meetings is manually entered on General Task 3	--
Phase Review Meetings	EA	0	0	0	PM attendance at Phase Review Meetings is manually entered on General Task 3	--
<b>Total Meetings</b>				<b>4</b>	<b>Total Project Manager Meetings (carries to Tab 3)</b>	<b>0</b>

Carries to 33.18

Carries to Tab 3

Summary of Staff/Eng man-hours:

	Hours
Senior Engineer	15
Professional Engineer	28
Staff Engineer	6
Engineering Technician	12
CADD Operator	6
Clerical/Administrative	2
<b>Total</b>	<b>69</b>

**Date:** December 7, 2021

**Presented To:** RJ Behar & Company, Inc.  
6861 S.W. 196 Avenue, Suite 302  
Pembroke Pines, FL 33332

**Attention:** Juan H. Vazquez, PE  
E: [jvazquez@rjbehar.com](mailto:jvazquez@rjbehar.com)  
O: 954.680.7771

**Project:** WM Replacement Atlantic Shores Blvd. – Hallandale Beach, FL  
SUE Services

Dear Mr. Vazquez:

We have prepared this proposal for subsurface utility engineering services to perform air vacuum excavation test holes for the above referenced project. We have received the following files attached identifying the project locations:

- Location Map.pdf
- CITY HALLANDALE MAP WATER 2019-09-27.pdf
- CITY HALLANDALE MAP STORM DRAIN 2017-11-22.pdf

Our scope of work shall be performed in accordance with the Procedures, Exclusions and Assumptions identified below and will include the following:

1. **Air Vacuum Excavation Test Holes** – Air vacuum excavation test holes will be performed at the proposed test hole locations.

#### **Air Vacuum Excavation Test Holes Scope of Services**

During utility locating by air / vacuum test holes InfraMap will complete the following tasks:

1. **Agency Coordination** – InfraMap will comply with laws and regulations concerning excavation by coordinating with utility inspectors, property owners, "ONE CALL" and others as required.
2. **Coordination with Client** – Throughout the Test Hole process InfraMap will communicate with the Client with updates on the status of the Test Holes. If utilities are not where the records maps indicate, or a utility is discovered that is not shown on any records and is not detectable during the electronic sweep, InfraMap will contact the client and discuss strategies to address the unpredictable field conditions. InfraMap will work with the client in the identification of additional test holes or removal of test holes from future scope of work.
3. **Test Hole** – InfraMap will perform the following for the Test Hole task:
  - a. Field locate the proposed Test Hole based on information provided by the client.
  - b. Excavate a Test Hole using air/ vacuum excavation. Provide all measures necessary to perform the work safely and to cause no damage to the utility structure. The Test Hole will be of the minimum size required to expose the utility of interest and record the following information:

- i. Depth below grade (cover).
  - ii. Utility material, shape, and overall condition.
  - iii. Approximate diameter of pipes, cables, conduits, and the configuration of multiple conduit systems.
  - iv. The general directional trend of the utility.
  - v. Thickness, type, and condition of paving material.
  - vi. General soil conditions.
- c. Install a survey marker directly over the centerline of pipes or edge of concrete structures or conduit banks at grade. Ribbon of appropriate APWA / ULCC color will be installed in the backfill from utility to grade. Indicate on the Test Hole Form the placement of the marker relative to the utility cross section. Record the location of the marker with a minimum of three (3) swing tie measurements to convenient existing permanent structures on site.
- d. Backfill Test Hole with excavated material in 6" lifts by air pneumatic tamping. Soil placed within one (1) foot of the exposed utility will be clean and tamped carefully. Restore Test Hole area to original condition.
- e. Repair and restore all pavement cuts to ensure a long-lasting repair utilizing asphalt cold patch.
4. **CADD** - The test hole data will be processed into a Test Hole Inventory and individual Test Hole Reports using AutoCAD software.
5. **Office Review** - Office review of the test hole reports will be completed to compare the findings of the test hole to the utility information on the records. InfraMap will evaluate any discrepancies with designators, test hole technicians, surveyors, CADD operators and utilities.
6. **Deliverables** - Deliverables will include a Test Hole Inventory table and individual Test Hole Reports.

#### **Exclusions and Assumptions:**

1. InfraMap is not responsible for any permitting required prior to excavation.
2. At this time, geotechnical borings or subgrade information have not been provided. Large stones, shale, construction debris, or other subsurface conditions including a high groundwater table may limit the ability of our equipment to excavate to the utility and or make it very difficult to visually verify the utility condition and material.
3. This proposal assumes test holes will be repaired consistent with the cold patch specifications above. Depending upon test holes locations and/or local, county and state permit requirements, permanent asphalt patch repairs either using hot mix asphalt, asphalt infrared services or cement subbase, are out of the scope of these services. If required, an out-of-scope proposal or supplemental agreement will be prepared before proceeding further.
4. Maintenance and Protection of Traffic in local jurisdiction will be provided in accordance with the *Manual on Uniform Traffic Control Devices (MUTCD)*, latest edition or other applicable requirements.
5. Recoverable and accurate survey control will be provided by client that can be accessed during our test hole mobilization. In the event the survey control is not near the utility designating or test holes, we anticipate utilizing GPS equipment which may affect horizontal and vertical accuracies. If GPS cannot be utilized as a result of tree cover or satellite loss, a survey traverse will be required. This proposal does not include survey services including a survey traverse to bring control to the test hole locations, same will be included on a time and materials basis if it cannot be absorbed into the existing budget



6. This service will be provided with due diligence and in a manner consistent with standards of the subsurface utility mapping industry. Every reasonable effort will be made to locate all systems of interest whether indicated on records available to us or not. However, we do not guarantee that all existing utility systems can or will be detected. It may not be possible to detect utilities that we do not have prior knowledge of, such as systems that are not depicted on records available to us. Further, this service is not intended to detect non-utility structures such as but not limited to foundations, buried tanks, septic systems, wells, tunnels, concrete or metal structures, or the true size and limits of subsurface utility vaults and manholes.
7. In order to provide a cost-effective service that causes minimal disturbance to site amenities and utilities, and is acceptable to permitting agencies, the size of the Test Hole excavation is kept to a minimum. The diameter of most pipes greater than 24" cannot be recovered directly from one test hole and it may be necessary to perform additional holes.
8. Encased systems and non-encased conduit banks are typically exposed on one edge. This allows the test hole to be excavated down the side of the utility until a discernable bottom edge can be evaluated. Although it is usually possible to determine the bottom edge of these systems, it is not possible to determine conditions under these or other utility systems, such as concrete over pour and other utilities. It is important for the designer to remember that the bottom edge of an encased system or unencased conduit bank may not represent its lowest point, and that the shape of the system may not be the same on both sides.

#### **FEE SCHEDULE**

<b><u>UTILITY TEST HOLE SERVICES</u></b>			
<b><u>Resource</u></b>	<b><u>Rate</u></b>	<b><u>Units (Hrs)</u></b>	<b><u>Fee</u></b>
<i>Project Manager, PLS</i>	\$ 155.10	7	\$ 1,085.70
<i>Utility Location Manager</i>	\$ 101.74	7	\$ 712.18
<i>CAD Technician</i>	\$ 80.67	12	\$ 968.04
<i>Administrative</i>	\$ 60.00	2	\$ 120.00
<i>Test Hole 0'-6' (\$Total if Qty = 3+)</i>	\$ 450.89	25	\$ 11,272.25
<i>Contingent Feet (\$/ft beyond 6' in depth)</i>	\$ 112.00	3	\$ 336.00
<b><u>Direct Expenses</u></b>	<b><u>Rate</u></b>	<b><u>Units</u></b>	
<i>Mileage (\$/mi.)</i>	\$ 0.560	112	\$ 62.72
<i>Flaggers</i>	\$ 76.50	16	\$ 1,224.00
	<b><i>TOTAL FEE ESTIMATE</i></b>		<b>\$ 15,780.89</b>

Our total estimated cost for this project is **\$15,780.89**. If you have any questions or concerns regarding this proposal, please do not hesitate to call at (561)586-0790 or email [leumann@inframap.net](mailto:leumann@inframap.net). We look forward to working with RJ Behar & Company on this project.

Regards,

Lee Reumann  
Survey Manager