CCNA2018 WORK ORDER 3

West Wabasso Septic to Sewer Phase 3

This Work Order Number _3_ is entered into as of this ___ day of _____, 2020, pursuant to that certain Continuing Consulting Engineering Services Agreement for Professional Services entered into as of this 17th day of April, 2018 (collectively referred to as the "Agreement"), by and between INDIAN RIVER COUNTY, a political subdivision of the State of Florida ("COUNTY") and Bowman Consulting Group,Ltd. ("Consultant").

The COUNTY has selected the Consultant to perform the professional services set forth on Exhibit A (Scope of Work), attached to this Work Order and made part hereof by this reference. The professional services will be performed by the Consultant for the fee schedule set forth in Exhibit B (Fee Schedule), attached to this Work Order and made a part hereof by this reference. The Consultant will perform the professional services within the timeframe more particularly set forth in Exhibit C (Time Schedule), attached to this Work Order and made a part hereof by this reference all in accordance with the terms and provisions set forth in the Agreement. Pursuant to paragraph 1.4 of the Agreement, nothing contained in any Work Order shall conflict with the terms of the Agreement and the terms of the Agreement shall be deemed to be incorporated in each individual Work Order as if fully set forth herein.

IN WITNESS WHEREOF, the parties hereto have executed this Work Order as of the date first written above.

CONSULTANT:
Bowman Consulting Group, Ltd.

By: _____

Print Name: Erik Juliano, P.E.

Title: Branch Manager

BOARD OF COUNTY COMMISSIONERS OF INDIAN RIVER COUNTY

By: _____
, Chairman

BCC Approved Date: _____

Attest: Jeffrey R. Smith, Clerk of Court and Comptroller

By: _____
Deputy Clerk

Approved: _____
Jason E. Brown, County Administrator

Approved as to form and legal sufficiency: _____
Dylan T. Reingold, County Attorney

EXHIBIT A -SCOPE OF WORK

Bowman Consulting Group Ltd. is pleased to submit this proposal for professional engineering services to Indian River County Utility Department for engineering services to design and permit a septic to sewer project located in West Wabasso.

PROJECT BACKGROUND & UNDERSTANDING

We had several discussions with Mr. John Boyer to discuss the West Wabasso septic to sewer project and the work is summarized below:

The project consists of two sites that together are identified as Phase 3. Phase 3A consists of 61st Drive from CR 510 to the end of the road. The work would include a gravity collection system and lift station design and there is no expansion potential anticipated for this location. The County has provided survey and a preliminary design that can be used by consultants. Phase 3B consists of 59th Avenue and 58th Court from CR 510 to the end of the road. The work would include a gravity collection system and lift station and there is expansion potential to the south of the project down to the canal crossing with 58th Avenue. No previous work has been performed on this site.

County will provide topo mapping and site survey, including clean outs, septic tank(s) and drain field(s) for each dwelling for the 61st Drive Site (Phase 3A) for consultants to use for the design of proposed improvements. Consultants will provide topo mapping and site survey, including location clean outs, septic tank(s) and drain field(s) for each existing dwelling for the 59th Drive and 58th Court Site (Phase 3B) for the limits of the waterline loop and nothing to the south of the waterline.

The work for both sites will be included in one set of drawings. One bid schedule will be prepared that will tabulate each site separately with one total. Specifications prepared by consultant will consist of bid schedule, bid descriptions, and technical specifications. County will provide front end documents including general provisions. The design is anticipated to include the connection to each dwelling and abandonment of existing located septic tanks. The design will include gravity sewer and lift station. The lift station for the 61st Drive Site (Phase 3A) will be designed for the current number of existing dwellings and for build out of the existing lots only. The lift station for the 59th Drive and 58th Court Site (Phase 3B) will be designed for the current number of existing dwellings and build out of all lots including those south to the junction of the canal with 58th Avenue. Those two conditions will be calculated so the County will know what changes to the lift stations will be required full build out.

All roads will be designed for reconstruction (pavement, base and subbase or equivalent) after the construction of sewer in 61st Drive, 59th Avenue, 58th Court.

Permitting is anticipated to include FDEP for the gravity sewer and lift stations and IRC right of way permits for 61st Drive, 59th Avenue, 58th Court and crossing 58th Avenue. We will also need to obtain a “No permit Required” determination from SJRWMD for the proposed road work.

SCOPE OF SERVICES

We propose to provide the following services:

Task 1 - Civil Design Services (Bowman Consulting)

System Evaluation and Design

1. Prepare report that includes evaluation and determination of gravity sewer build out control grades for each site. Estimate current wastewater flows and build out wastewater flows for each site. Summarize lift station components that will be required to change between current design and build out for each site.

2. Utility Research: contact utility companies and obtain record information and transfer information to design drawings.

Prepare Bidding Documents

3. Attend and prepare summary meeting notes for up to two (2) meetings, anticipated to be at beginning, and 50% complete milestones of the project.

4. Prepare 24" x 36" drawings anticipated to be:

Sheet	Description
G-1 thru 2	Cover Sheet, Construction Notes Sheet
D-1 thru 3	Details (Site, sewer, road and drainage)
SP-1 thru 6	SWPPP Sheets (both sites)
PA-1 thru 8	Phase 3A Site: 1 - Overall Site Plan, 4 - 30 scale Plan & Profile, 3- L.S. Plan, Sections and Details
PB-1 thru 10	Phase 3B Site: 1 - Overall Site Plan, 6 - 30 scale Plan & Profile, 3- L.S. Plan, Sections and Details

5. Coordinate with FPL for service and service voltage available.

6. Multiple site visits and coordination with the residents for identification of design issues.

7. Utilize the IRCDUS Utility Construction Standards and supplement with specifications as necessary for the design.

8. Provide two (2) engineer's opinion of estimated construction cost and design plans at 50% and after 90% design milestone. Final estimate will match bid schedule.

9. Field review design/plans at 90% complete milestone to compare with site conditions. In-house plan checking and respond to Utility comments and prepare final drawings and specifications.

Task 2 - Permitting Services (Bowman Consulting)

Project Permitting

14. Prepare and submit FDEP permit the project (both Phases), including fees of $250. Respond to comments and follow through to final clearance.

15. Prepare and submit IRC right of way permits for 61st Drive, 59th Avenue, 58th Court and crossing 58th Avenue. These will be no cost permits.

Task 3 - Bidding Services (Bowman Consulting)

Bidding Services

16. Bidding Services are comprised of attending a pre-bid conference, respond to contractor's bid questions and assist with preparation of addenda.

Task 4 - Survey Services (ISS Survey)

17. Site Survey including rights of way, property lines, easements, topographic mapping, trees, existing improvements, buildings, driveways and utilities.

18. This work will include a subconsultant to locate septic system facilities for each dwelling and survey locate those existing improvements for the design.

Task 5 – Utility Locates (Blood Hound)

19. Utility locates in 58th Avenue along the proposed forcemain route. See proposal by Blood Hound attached hereto.

Task 6 – Utility Locates (Blood Hound)

20. Utility locates in 85th / CR510 Drive along the proposed forcemain route. See proposal by Blood Hound attached hereto.

SERVICES AND/OR INFORMATION TO BE PROVIDED BY OTHERS

Client or others will provide the following services and/or information:

A. County will provide the specification frontend documents and general provisions.

B. County will provide all CEI and Certification, only design, permitting and assisting with bidding will be provided by Consultants.

C. County will handle all aspects of public meetings.

D. County will pothole water, forcemain and reclaimed water in 58th Avenue so they can be surveyed.

E. County will provide all topographic mapping for the 61st Street Site (Phase 3A).

F. Provide record-drawings and information of existing improvements and utility-owned facilities and other substructures.

G. Easement acquisition if required.

SPECIFIC EXCLUSIONS

Specifically not included in the above Scope of Services/Compensation are the following:

A. Any geotechnical services.

EXHIBIT B – FEE SCHEDULE

COMPENSATION

We will provide the requested services on a Lump Sum Cost, with estimated task breakdown below:

Design Services:

Task	Design Services	Fee
1.	Civil Design Services (Bowman)	$99,835
2.	Permitting	$4,767
3.	Bidding Services	$4,210
	Sub Total	**$108,812**
4.	Survey Services (ISS Survey)	*$37,895
5.	Utility Locates in 58th Avenue (Blood Hound)	*$4,647
6.	Utility Locates in 61st Avenue (Blood Hound)	*4,208
	Grand Total	**$155,562**

* Subconsultant fee includes 10% markup, see subconsultant proposal attached.

EXHIBIT C – TIME SCHEDULE

This Task Order shall commence upon Notice to Proceed with the work to be completed as follows:

Kick off meeting	(NTP)
Topo Mapping	4 weeks
Design Report	4 weeks
Design to 50% & Meeting	6 weeks
Permitting, Design to 95% & Submit	6 weeks
County Review	4 weeks
Respond to Comments	2 weeks
Final Bid Docs and Deliver	2 weeks
Total	28 Weeks

196 Calendar Days

11/16/20

Estimated Staff Loading For:
Indian River Co. Utilities - West Wabasso Septic to sewer

TASK	Sr Proj Mg	Sr Engr	Proj Engr	Engr	Sr Dsgnr	Clerical	TOTAL
Task 1 - Design Services							0
1. Meetings	4	4	4				12
2. Design Criteria	1	2	4				7
3. Utility Research & Coordination	2	4	8		8	4	26
4. Probable Const. Cost	1	2	8				11
5. Field Review Recon		8	12		8		28
							0
Final Design							0
6. Meetings	4	4	4				12
7. Septic to Sewer Plans (29 shts)	16	87	174		348		625
8. Specifications	4	16	24			4	48
9. Probable Const. Cost	1	2	8				11
10. Field Review		8	12		16		36
							0
							0
Staff By Category Totals	33	137	258	0	380	8	816
Billing Rate ($/hr)	$165	$150	$130	$100	$105	$50	
Total Personnel Cost ($)	$5,445	$20,550	$33,540	$0	$39,900	$400	**$99,835**
Staffing Ratio (% of total hrs)	4.0	16.8	31.6	0.0	46.6	1.0	
Average Personnel Cost ($/hr)						122.35	

Description of Other Project Costs	VALUE ($)
Total of other costs ($)	**$0**
Total Estimated Project Cost ($)	**$99,835**

4/30/18

Estimated Staff Loading For:
Indian River Co. Utilities - West Wabasso Septic to sewer

TASK	Sr Proj Mg	Sr Engr	Proj Engr	Engr	Sr Dsgnr	Clerical	TOTAL
Task - Permitting							0
1. FDEP Permit 59th & 58th	2	4	8				14
2. FDEP Permit 61st	2	4	8				14
3. Permit Fee ($500)				5		2	7
							0
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							0
Staff By Category Totals	4	8	16	5	0	2	35
Billing Rate ($/hr)	$165	$150	$130	$100	$105	$50	
Total Personnel Cost ($)	$660	$1,200	$2,080	$500	$0	$100	**$4,540**
Staffing Ratio (% of total hrs)	11.4	22.9	45.7	14.3	0.0	5.7	
Average Personnel Cost ($/hr)						129.71	

Description of Other Project Costs	VALUE ($)
Repro/Misc @ 5%	$227
Total of other costs ($)	**$227**
Total Estimated Project Cost ($)	**$4,767**

4/30/18

Estimated Staff Loading For:
Indian River Co. Utilities - West Wabasso Septic to sewer

TASK	Sr Proj Mg	Sr Engr	Proj Engr	Engr	Sr Dsgnr	Clerical	TOTAL
Task 3 - Bidding Services							0
							0
1. Respond to RFIs	1	4	4		4		13
2. Assist with Addenda	1	2	6		6		15
3. Attend Pre-Bid Meeting	2	2					4
							0
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Staff By Category Totals	4	8	10	0	10	0	32
Billing Rate ($/hr)	$165	$150	$130	$100	$105	$50	
Total Personnel Cost ($)	$660	$1,200	$1,300	$0	$1,050	$0	**$4,210**
Staffing Ratio (% of total hrs)	12.5	25.0	31.3	0.0	31.3	0.0	
Average Personnel Cost ($/hr)						131.56	

Description of Other Project Costs	VALUE ($)
Total of other costs ($)	**$0**
Total Estimated Project Cost ($)	**$4,210**

October 19, 2020 Project No. BWM002

Mr. Eric Flavell, P.E., F-ASCE
Bowman Consulting Group
4450 W. Eau Gallie Blvd.
Suite 232
Melbourne, FL 32934

RE: IRC West Wabasso Septic to Sewer Phase 3 (The "Project")
Proposal to Provide Surveying Services (The "Proposal")

Dear Mr. Flavell,

Infrastructure Solution Services (ISS) is pleased to provide this proposal for surveying services for the Indian River County West Wabasso Septic to Sewer Project Phase 3, in Wabasso Florida, for Bowman Consulting Group (BCG).

Section I. BACKGROUND

After speaking with Mr. Eric Flavell (BCG) and reviewing the provided scope and limits, it is our understanding that the project consists of a topographic route survey of approximately 1,400' of residential roads and 200' of a main road, that includes approximately 700' of 59th Avenue, 700' of 58th Court and 200' of 58th Avenue to be used as basis of design of a gravity sewer system with a lift station that is to be tied into an existing sanitary force main. All roads will be surveyed from right of way to right of way line with the addition of any pertinent data on each lot that will help with design. It is our understanding that the project will include establishing all right of way lines and approximate lot lines per plat and property appraiser information to be utilized for the purpose of designing a gravity sewer system and lift station. The ISS team will coordinate the location of all accessible existing septic tanks and cleanouts for the 14 homes that will be connected to the new system. All finished floor elevations will be established for said homes as accurately as possible for the purpose of calculating slope on gravity laterals along with general grade of the lot. All house basic footprints and permanent features will be collected and shown to aid in design of service connections. In addition to the location of the permanent features, any major semi-permanent features which may exist will be located. The survey will also include a full topo of the vacant lot at address 8475 on the east side of 58th Court and 20' platted alley on the Plat of Hillside Subdivision. The location of any underground utilities, that are marked by others, will be collected within the project area. Trees of all species and size along the south side of the project shall be collected. Mr. Flavell (BCG) has requested a high resolution, georeferenced drone image to be used as a background in the survey.

Section II. SCOPE OF SERVICES

TASK 1 – Topographic Survey (As defined in chapter 5J-17 administrative code)

a. Using the nearest published horizontal and vertical control, ISS will establish a minimum of five site control points with North American Datum of 1983 (NAD 1983) Florida State Plane, East Zone, coordinate values and North American

Vertical Datum of 1988 (NAVD 88) vertical values for the collection of data and to be used as site benchmarks.

b. Establish all of the of the right of way lines and approximate lot lines for the Plat of Hillside Subdivision and 200' of unplatted 58th Avenue per the record information available through the Indian River County records and the Florida Department of Transportation (FDOT).
c. Map all visible above ground existing conditions utilizing conventional survey and GPS real-time kinematic (RTK) methods along the route. Collect any marked underground utilities. (This scope assumes that any underground utilities that need to be mapped will be identified by others prior to commencement of the existing conditions survey.)
c. Fly a predefined route in accordance with all FAA part 107 regulations with a DJI Phantom 4 Pro drone to obtain aerial images. Aerial images will be processed via Pix4D photogrammetry software for image only.
d. Draw the existing conditions utilizing Autocad Civil 3D in State Plane Coordinates. Plot the existing conditions on a signed and sealed survey map.

Section III. SUBCONSULTANTS

TBD for septic tank locations at time of survey (Subconsultants fee covered under Fee Schedule task 2)

Section IV. CLIENT'S RESPONSIBILITY

a. Access to the project site and upfront communication with homeowners
b. Identification and marking of underground utilities

Section V. DELIVERABLES

ISS will provide the following deliverables.

a. **Task 1 - Existing Conditions Map**
Three copies of signed and sealed survey maps and one digital copy delivered on CD or thumb drive.

Section VI. SCHEDULE

ISS will begin survey field work for each task within one week of receiving the signed proposal from BCG. Field work and drafting will be complete within five weeks of commencement. Survey map deliverables will be provided to BCG within five days thereafter.

Section VII. COMPENSATION

BCG shall compensate ISS a lump sum fee of Thirty-Four Thousand Four Hundred Fifty Dollars. ($34,450.00) for the scope of services specified in this task order.

Any additional unforeseen expenses will be identified for approval from BCG before incurring and billed with the final invoice.

Exhibit 1: Fee Schedule

TASK #	TASK	FEE
1	Establish survey control: 20hrs @ 2-man crew rate $140	$2,800
2	Locate septic tanks and cleanouts by septic company and ISS crew: 40hrs @ 2-man crew rate $140	$5,600
	Locate property control: 20hrs @ 2-man crew rate $140	$2,800
4	Topo, Finished Floor Elevations, building footprints, improvements etc.: 80hrs @ 2-man crew rate $140	$11,200
5	Survey drafting: 80hrs @ Draftsmen Tech II rate $90	$7,200
6	Drone flight field operations: 10hrs @ 2-man crew rate $140	$1,400
7	Drone data processing: 5hrs @ Draftsmen Tech II rate $90	$450
8	Sr. Professional Surveyor & Manager: 20hrs @ rate $150	$3,000
	TOTAL FEE	**$34,450**

SECTION VIII. ACCEPTANCE

If the above scope and fees meet your approval, please indicate by returning one signed copy to ISS which will constitute an "Agreement and Notice to Proceed" for the accomplishment of this work.

Infrastructure Solution Services, Inc.

Brian Stahl

10/19/20
Date

Bowman Consulting Group.

_____

_____
Date

Blood Hound
750 Patricks Place
Brownsburg, IN 46112

ESTIMATE

Created Date 10/19/2020

Estimate Number 56955

Customer	Bowman Consulting Group	Name	Zachary Komninos
Billing Phone	(321) 255-5434	Phone	(321) 270-8982
Billing Address	12355 Sunvalley Drive Suite 520 Reston, VA 20191 US	Email	zkomninos@bowmanconsulting.com
Job Site Location	Wabasso SUE project, 85th St. & 58th Ave., Sebastian, Florida, 32958		

Product	Quantity	Sales Price	Total Price
Advantage Locate (hourly)	7.00	$200.00	$1,400.00
Mob - Vac Ex (Hrly)	4.00	$200.00	$800.00
Vacuum Excavation (Hourly)	9.00	$225.00	$2,025.00
		Grand Total	$4,225.00

Scope of Work

Customer SOW Design engineering

BHUG SOW **Client has requested an estimate for the following Scope of Work:**

- **The following work is being performed to Quality Level B standards in accordance with CI/ASCE 38-02**.
- **Client has requested an estimate to horizontally locate detectable underground utilities within the Yellow Hi-lighted area, more specifically, "100’ north and south of the Red center line at Station 593+20.00, to include full ROW".**
- **A BHUG generated image is attached for reference. If incorrect please advise.**
- **EM and Real-Time GPR Locating equipment will both be utilized to locate and mark the utility lines. A not to scale digital field sketch will be provided of our discoveries for surveying purposes. We will also provide pictures and the raw GPR data for review.**
- **Customer is advised the horizontal portion of this estimate is based on a 2-hour minimum. Any additional time required on site to complete the task beyond the 2-hour minimum will be invoiced in 15-minute increments @ $50 per increment, upon customer approval. Mobilization for this portion has been waived.**
- Customer is advised that Blood Hound utilizes water-based paint and flags to identify any discoveries onsite. If this is an issue, Blood Hound must be made aware of this when scheduling. All discoveries will be painted and flagged for surveying purposes.
- All findings will be marked according to APWA standard.
- Any available as-builts, engineered or other record drawings, if available, should be supplied to BHUG prior to commencement of field work.
- Estimate does not include any camera or surveying services.

Blood Hound
750 Patricks Place
Brownsburg, IN 46112

ESTIMATE

Created Date 10/19/2020

Estimate Number 56955

- BHUG is not responsible for, moved, altered, obliterated or maintaining marks. BHUG will impose an additional fee to relocate/remark facilities.
- The performance of BHUG's services is limited to full and unobstructed access to include but not limited to: mechanical rooms, manholes, hand holes, vaults, meter rooms, telecom rooms, fixtures (plumbing, electrical, communication), dispensers, fenced compounds, tanks and structures. Full cooperation from the on site personnel is necessary to perform a complete survey.
- Results are dependent upon field conditions at the time of locating services. It may be necessary to have parked vehicles or machinery moved to allow for a full scan and to access structures.
- Estimate DOES NOT include the use of Robotic or Push/Pull Cameras for assistance in locating Sewer Lines or Laterals. These lines would attempt to be marked by EM / Rodder if possible or GPR. If lines are not able to be completely located, Blood Hound will arrow the direction of each line leaving a manhole.
- CUSTOMER IS ADVISED THAT LIMITATIONS EXIST IN LOCATING PLASTIC MATERIALS WITHOUT TRACEABLE WIRES ATTACHED.
-
- **The following work is being performed to Quality Level A standards in accordance with CI/ASCE 38-02.**
- **Vacuum Excavation will be utilized to provide the precise vertical position of the conflict or connection point utilities within the specific areas as shown on the provided image. Based on this exhibit it is assumed that up to six (6) soft surface excavations may be required.**
- **Customer is advised the vertical portion of this estimate is based on a 4-hour minimum. Any additional time required on site to complete the task beyond the 4-hour minimum will be invoiced in 15-minute increments @ $56.25 per increment, upon customer approval. Mobilization fees will apply for the VAC portion of this estimate.**
- Test hole data forms will be provided with pertinent information to include size, function, depth, material (of pipes if known) and provide the precise horizontal and vertical position of any discoveries. Offsets will be provided to existing above ground features as well and all discoveries will be painted and flagged with all verification's staked with a semi-permanent marker for surveying purposes. A digital field sketch will be provided along with pictures of the areas in question.
- Cavities will be refilled with dry, native spoils (compacted in 6" lifts).
- Estimate does not include any final restoration such as hot mix asphalt, milling / resurfacing or special back fill requirements (flowable fill.) If final restoration is required by end client, city, state, or any other entity, that restoration will be the responsibility of the client. Blood Hound does not perform final concrete or asphalt surfacing. BHUG will not perform any excavations thru sidewalk without prior permission. *Test holes performed under the roadway will be repaired with an asphalt cold patch and any concrete surfaces will be repaired with a Quikrete type product.*
- Customer understands any fees required for permits and MOT services are not provided and included in this estimate.
- No VAC work will take place under the existing roadway.
- All Survey work will be completed by others.

Blood Hound
750 Patricks Place
Brownsburg, IN 46112

ESTIMATE

Created Date 10/19/2020

Estimate Number 56955

If the Scope of Work should change, or is different than listed on the estimate, please call our office for a revised estimate.

Quoted rates are exclusive to this estimate only. Rates quoted by Call Center Representatives are in effect unless otherwise stipulated within a formal estimate.

Please note estimate is valid for 90 days from the quote created date.

Blood Hound will use electromagnetic (EM) and ground-penetrating-radar (GPR) equipment to locate private underground utilities at site indicated by client. All findings will be marked according to APWA standard. Customer is responsible for calling 811 for locates of any public utilities. If the scope of work should change or is different than that listed on estimate, please call our office for a revised estimate.
Unless expressly noted, Vacuum Excavation estimates do not include any of the following services: Permitting, Traffic Control, Restoration, Special Restoration, Special Backfill or Waste Disposal. If you need any of those services please call our office for a revised estimate.
Blood Hound is not responsible for the condition of the pipes or structures before or after jetting/clearing service is performed. Unsatisfactory conditions could be present within the structure and any services may bring those deficiencies to light.
In the event of inclement weather, if the client still requests for crew to arrive on site, then the client will be responsible for minimum charges even if no work is performed.

Payment is due at the time of service, unless you already have an account with us. If you do have an account with us, payment terms are Net 30 days, unless otherwise stated in a pre-approved contract. To learn more, please call the office at 888-858-9830.

PRICE MAY VARY BASED ON ACTUAL TIME ON SITE. The above pricing is based only on the information supplied by the customer. If a site walk through has not been conducted, this may affect the price.

If this is a prevailing wage job, please contact our office for a revised quote as this pricing does not reflect prevailing wage rates. If at some later date a project is determined to be a prevailing wage job, then any extra expense incurred by Blood Hound will be billed to the client.

The project estimate outlined in this specific proposal is valid for 90 days from the date of the proposal. Blood Hound reserves the right to review and adjust this estimate if client does not approve of the proposal within 90 days.

We look forward to working with you.

By signing this Estimate the client acknowledges that they accept the scope of work listed on the estimate, as well as the service rates provided and are providing Blood Hound with a Notice To Proceed (NTP) for the listed Project. If the scope of work should change while the work is in progress, any changes will be documented on the technician's field notes and signed off on by the client. Signing this estimate also acknowledges that the client agrees to the terms and conditions as they relate to payment for services rendered.

Signature: _____

Printed Name: _____

Date Signed: _____

Blood Hound
750 Patricks Place
Brownsburg, IN 46112

ESTIMATE

Created Date 10/30/2020

Estimate Number 57177

Customer	Bowman Consulting Group	Name	Zachary Komninos
Billing Phone	(321) 255-5434	Phone	(321) 270-8982
Billing Address	12355 Sunvalley Drive Suite 520 Reston, VA 20191 US	Email	zkomninos@bowmanconsulting.com
Job Site Location	Wabasso SUE project (2), 85th St. & 61st Dr., Sebastian, Florida, 32958, Sebastian, Florida, 32958		

Product	Quantity	Sales Price	Total Price
Advantage Locate (hourly)	5.00	$200.00	$1,000.00
Mob - Vac Ex (Hrly)	4.00	$200.00	$800.00
Vacuum Excavation (Hourly)	9.00	$225.00	$2,025.00
		Grand Total	$3,825.00

Scope of Work

Customer SOW Design engineering / survey

BHUG SOW Client has requested an estimate for the following Scope of Work:

- The following work is being performed to Quality Level B standards in accordance with CI/ASCE 38-02.
- Client has requested an estimate to horizontally locate detectable underground utilities within the Red outlined areas as shown on the provided exhibit, approximately 25' x 400'.
- A BHUG generated image is attached for reference. If incorrect please advise.
- EM and Real-Time GPR Locating equipment will both be utilized to locate and mark the utility lines. A not to scale digital field sketch will be provided of our discoveries for surveying purposes. We will also provide pictures and the raw GPR data for review.
- Customer is advised the horizontal portion of this estimate is based on a 2-hour minimum. Any additional time required on site to complete the task beyond the 2-hour minimum will be invoiced in 15-minute increments @ $50 per increment, upon customer approval. Mobilization for this portion has been waived.
- Customer is advised that Blood Hound utilizes water-based paint and flags to identify any discoveries onsite. If this is an issue, Blood Hound must be made aware of this when scheduling. All discoveries will be painted and flagged for surveying purposes.
- All findings will be marked according to APWA standard.
- Any available as-builts, engineered or other record drawings, if available, should be supplied to BHUG prior to commencement of field work.
- Estimate does not include any camera or surveying services.
- BHUG is not responsible for, moved, altered, obliterated or maintaining marks. BHUG will impose an additional fee to relocate/remark facilities.
- The performance of BHUG's services is limited to full and unobstructed access to include but not limited to: mechanical rooms, manholes, hand holes, vaults, meter rooms, telecom rooms, fixtures (plumbing, electrical, communication), dispensers, fenced compounds, tanks and structures. Full cooperation from the on site personnel is necessary to perform a complete survey.
- Results are dependent upon field conditions at the time of locating services. It may be necessary to have parked vehicles or machinery moved to allow for a full scan and to access structures.

Blood Hound
750 Patricks Place
Brownsburg, IN 46112

ESTIMATE

Created Date 10/30/2020

Estimate Number 57177

- Estimate DOES NOT include the use of Robotic or Push/Pull Cameras for assistance in locating Sewer Lines or Laterals. These lines would attempt to be marked by EM / Rodder if possible or GPR. If lines are not able to be completely located, Blood Hound will arrow the direction of each line leaving a manhole.
- CUSTOMER IS ADVISED THAT LIMITATIONS EXIST IN LOCATING PLASTIC MATERIALS WITHOUT TRACEABLE WIRES ATTACHED.
-
- The following work is being performed to Quality Level A standards in accordance with CI/ASCE 38-02.
- Vacuum Excavation will be utilized to provide the precise vertical position of the conflict or connection point utilities within the specific areas as shown on the provided image. Based on Google Street maps it is assumed that up to six (6) soft surface excavations may be required.
- Customer is advised the vertical portion of this estimate is based on a 4-hour minimum. Any additional time required on site to complete the task beyond the 4-hour minimum will be invoiced in 15-minute increments @ $56.25 per increment, upon customer approval. Mobilization fees will apply for the VAC portion of this estimate.
- Test hole data forms will be provided with pertinent information to include size, function, depth, material (of pipes if known) and provide the precise horizontal and vertical position of any discoveries. Offsets will be provided to existing above ground features as well and all discoveries will be painted and flagged with all verification's staked with a semi-permanent marker for surveying purposes. A digital field sketch will be provided along with pictures of the areas in question.
- Cavities will be refilled with dry, native spoils (compacted in 6” lifts).
- Estimate does not include any final restoration such as hot mix asphalt, milling / resurfacing or special back fill requirements (flowable fill.) If final restoration is required by end client, city, state, or any other entity, that restoration will be the responsibility of the client. Blood Hound does not perform final concrete or asphalt surfacing. BHUG will not perform any excavations thru sidewalk without prior permission. Test holes performed under the roadway will be repaired with an asphalt cold patch and any concrete surfaces will be repaired with a Quikrete type product.
- Customer understands any fees required for permits and MOT services are not provided and included in this estimate.
- No VAC work will take place under the existing roadway.
- All Survey work will be completed by others.

If the Scope of Work should change, or is different than listed on the estimate, please call our office for a revised estimate.

Quoted rates are exclusive to this estimate only. Rates quoted by Call Center Representatives are in effect unless otherwise stipulated within a formal estimate.

Please note estimate is valid for 90 days from the quote created date.

Blood Hound will use electromagnetic (EM) and ground-penetrating-radar (GPR) equipment to locate private underground utilities at site indicated by client. All findings will be marked according to APWA standard. Customer is responsible for calling 811 for locates of any public utilities. If the scope of work should change or is different than that listed on estimate, please call our office for a revised estimate.
Unless expressly noted, Vacuum Excavation estimates do not include any of the following services: Permitting, Traffic Control, Restoration, Special Restoration, Special Backfill or Waste Disposal. If you need any of those services please call our office for a revised estimate.
Blood Hound is not responsible for the condition of the pipes or structures before or after jetting/clearing service is performed. Unsatisfactory conditions could be present within the structure and any services may bring those deficiencies to light.
In the event of inclement weather, if the client still requests for crew to arrive on site, then the client will be responsible for minimum charges even if no work is performed.

Payment is due at the time of service, unless you already have an account with us. If you do have an account with us, payment terms are Net 30 days, unless otherwise stated in a pre-approved contract. To learn more, please call the office at 888-858-9830.

PRICE MAY VARY BASED ON ACTUAL TIME ON SITE. The above pricing is based only on the information supplied by the customer. If a site walk through has not been conducted, this may affect the price.

Blood Hound
750 Patricks Place
Brownsburg, IN 46112

ESTIMATE

Created Date 10/30/2020

Estimate Number 57177

If this is a prevailing wage job, please contact our office for a revised quote as this pricing does not reflect prevailing wage rates. If at some later date a project is determined to be a prevailing wage job, then any extra expense incurred by Blood Hound will be billed to the client.

The project estimate outlined in this specific proposal is valid for 90 days from the date of the proposal. Blood Hound reserves the right to review and adjust this estimate if client does not approve of the proposal within 90 days.

We look forward to working with you.

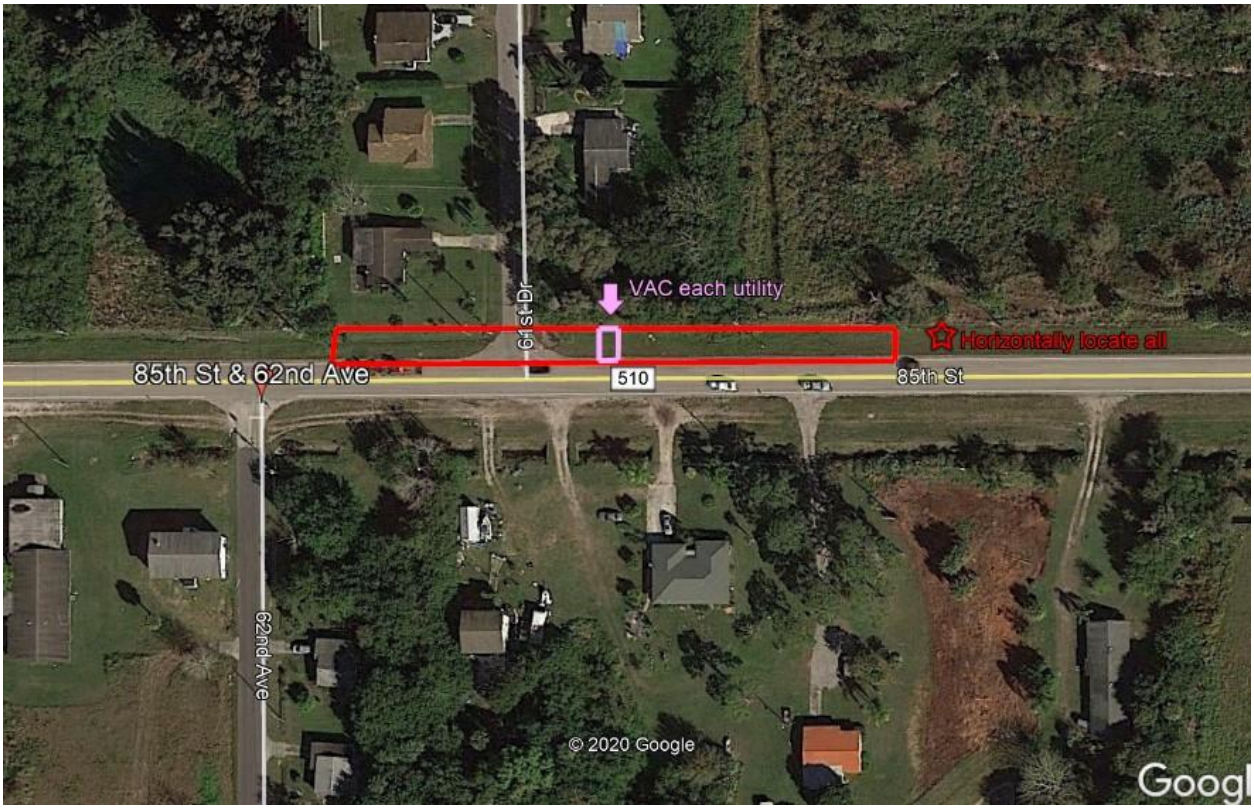
By signing this Estimate the client acknowledges that they accept the scope of work listed on the estimate, as well as the service rates provided and are providing Blood Hound with a Notice To Proceed (NTP) for the listed Project. If the scope of work should change while the work is in progress, any changes will be documented on the technician's field notes and signed off on by the client. Signing this estimate also acknowledges that the client agrees to the terms and conditions as they relate to payment for services rendered.

Signature: _____

Printed Name: _____

Date Signed: _____

SUE 58th AVE. Limits of work



SUE 85th / CR510 Limits of Work

Equipment Report

Equipment Operations and Limitations

Corporate Location:
750 Patrick's Place
Brownsburg, IN 46112

Office # 888-858-9830
Fax # 888-858-9829

http://www.BHUG.com

Equipment Description –

Blood Hound uses a variety of equipment to identify and locate subsurface structures, such as direct connect and inductive utility location transmitters and receivers with multi-frequency broadcasts and reception capabilities, ground penetrating radar, sewer cameras (both robotic and fiber optic push/pull), and other equipment, to locate the lateral position of buried structures, as well as to provide estimates on the depths of subsurface structures.

Traditional EM equipment is used as the primary tool to determine the location of all conductive subsurface structures, as well as any utilities that have locating wires (i.e. gas lines) buried with the non-conductive utility to facilitate location. This equipment operates using frequencies ranging from 512 Hz up to and including 480 kHz. The frequency that is selected is dependent on the type of utility to be located, operator preference, estimated depth of the target utility, and distance for which the target utility must be marked. Frequencies are often changed during operations to improve the quality of the signal, decrease interference, and/or increase the range for the transmitted signal.

EM locating operates by conducting an AC electric current through the target utility at a specific frequency. This causes the target utility to radiate a radio signal at the desired frequency. This radiated radio signal is then detected using the receiver, which is tuned to detect radio fields at the desired frequency. By measuring peak or null signal measurements, the lateral line location can be determined.

Blood Hound uses a variety of Ground Penetrating Radar (GPR) units from multiple manufacturers. Blood Hound employs antenna frequencies ranging from 250 MHz up to 1.6 GHz, depending on the specific needs of the survey. Data can be analyzed in real-time, or collected for post-processing analysis, including the development of subsurface response maps.

The most commonly used antennae operate in a frequency range of 250 to 350 MHz,, which provides the greatest balance of resolution and effective depth penetration. Frequency ranges higher than this provide greater resolution and better penetration through more conductive or signal absorbing materials (i.e. clay soils, concrete, etc). However, this increased resolution comes at the cost of significantly reduced depth penetration.

GPR operates by radiating a radio band frequency into the soil from the transmitter contained within the antenna assembly. This signal is reflected to the receiver contained in the antenna unit, and this received signal is then converted into visual patterns based on the intensity of the reflected signal. The depth of the target reflection pattern is determined based on the time elapsed from the transmission until the reception of the reflected signal, and is then projected by making assumptions regarding the transmission rate of the signal through the medium. If the signal velocity assumptions are not accurate, then the depth estimates will not be accurate.

Blood Hound also performs Electromagnetic soil conductivity analysis (EM Induction Survey). This method uses a Fisher TW-6 "Split Box" locator mounted on an inductive sweep bar. The bar places the transmitter and receiver four feet apart, with the inductive transmitted field oriented in an opposing orientation from the receiving antenna. This opposing orientation allows for the receiver to not register the presence of the transmitting field. When the transmitting field encounters a conductive object (metal), the field is bent, which results in the detection of the field by the receiving antenna. This equipment allows for the detection of conductive objects, and is not limited to the detection of ferrous metals as is the case with many magnetometers.

Factors Effecting Performance of Equipment –

There are several factors that can impact the effectiveness of the EM Locating equipment:

- **Target Utility Composition** – EM locating is only effective if the target utility is composed of continuous conductive material. Plastic, concrete, clay, or other non-conductive materials cannot be located using EM locating techniques. In addition, some metals are not highly conductive, which makes locating using EM techniques difficult. For example, cast iron is a poor conductor and cast iron lines can often be difficult to locate using standard EM techniques. Additionally, many pipes are composed of individual sections which may be gasketed . This can impede the current at each pipe joint.
- **Shielding of Target Utility**– Since EM locating uses an electronic signal, unshielded lines that are directly buried in the soil (i.e. water lines) can be difficult to locate for significant distances. This is due to the continuous loss of transmitted signal directly to the ground. As the signal travels along the utility, a significant portion of the signal is lost to ground, resulting is decreased signal quality. The greater the distance between the transmitter and the location point on an unshielded line, the more degraded the signal will be.
- **Conductive Pathway to Ground** – Locating is accomplished by creating a complete circuit, and the transmitted signal must be able to return to the ground in some form. An open circuit is generally much more difficult to locate since the circuit is not complete, and the emitted signal cannot return to ground. Thus, the signal may not travel along the desired pathway. Additionally, soil conditions can affect the pathway to ground. For example, in highly conductive soils, a signal can inductively find a pathway to ground even in an open circuit.
- **Depth** – The signal induced onto the target path must have sufficient strength to be detectable at the surface. Utility lines deeper than 15 feet are often difficult to locate due to the inability of the radio frequency being radiated from the target line to effectively radiate through the soil to the receiver at the surface. Similarly, shielding between the target utility and the receiver can affect the signal reception and create a loss of signal.

Equipment Report

Equipment Operations and Limitations

Corporate Location:
750 Patrick's Place **Office # 888-858-9830**
Brownsburg, IN 46112 **Fax # 888-858-9829**
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Similarly there are several factors that can impact the effectiveness of GPR surveys:

- **Subsurface Material / Soil Composition** – Soil composition and subsurface material is the most important factor impacting the effectiveness of GPR. The more conductive the subsurface material, the less effective the GPR survey will be. GPR works best in sandy soils, and is least effective in heavy clay soils or where the subsurface material contains a large volume of highly conductive backfilled debris or material (i.e. metal scraps or slag sand). Midwestern soils generally have a high clay content and create significant challenges to completing an effective GPR survey. As a general rule, the smaller the particulate matter that the subsurface material is composed of, the greater the inhibiting effect on the GPR signal.
- **Composition of the Subsurface Target** – The inherent electrostatic reflectivity of a target will impact the effective identification of the target. Lightweight subsurface material, such as PVC, are generally more transparent to radio waves and will reflect a substantially smaller percentage of the radiated signal. This will result in a smaller and more minor reflection signature, making effective interpretation more difficult. Some materials are completely transparent to radio waves and can only be identified if a reflective material (i.e. water) is contained within the target pipe.
- **Moisture Content of the Subsurface Material** – Water, when combined with dissolved ions (salt) has an inhibiting effect on GPR signals, and signals can often not effectively penetrate saturated soil material, when the soil is slightly conductive. The addition of more water increases the conductivity of the soil and more significantly inhibits the effective signal penetration.
- **Depth** – The GPR signals have a finite effective penetration depth. The deeper the target, the less likely it will be effectively identified. As the signal penetrates the subsurface material it loses strength as the depth increases. Effective signal penetration can be defined as the depth at which the reflected signal no longer has sufficient power to reach the receiver antenna of the GPR. In other words, the effective survey depth is the depth at which the penetrating signal reaches a maximum of 50% of its emitted strength, although it should be noted that at this range only a 100% reflective target (i.e. metal) would have the potential to be detectable.
- **Target Size** – The smaller the diameter of the target structure, the lower the probability of successful identification of the target during a GPR survey. The smaller the target, the less of a signal that will be reflected, decreasing the probability of a positive identification of the subsurface target. As a general (but not absolute) rule of thumb, for every 1 foot of depth you must have 1 inch in diameter in order to be observable. For example, a 3" diameter pipe must be less than 3 feet below grade in order to be observable during a GPR survey.

EM Inductive Surveys can also be impacted by environmental factors.

- **Surface and Subsurface Material / Soil Composition** – Highly conductive soils can prevent the identification of other conductive structures with this methodology. The presence of surface metal, including vehicles, fences, and debris, can swamp other readings and prevent the identification of subsurface targets. In addition, the presence of rebar reinforcement within concrete can have a similar effect and prevent identification of other structures.
- **Target Size** – Small metallic targets may not be detected, since the mass of the target object must be large enough to impact the shape of the transmission field. Small objects may not have sufficient mass to cause a field distortion significant enough to be detected.
- **Target Depth** – Deeper targets may not sufficiently distort the transmitted signal to allow for detection by the receiver. However, large high-mass targets are more likely to be detectable at significantly deeper depths, than lower mass targets.

Summary of Equipment and Survey Effectiveness –

EM locating is generally very effective in locating most subsurface utility lines. Electric, Telephone, and Cable TV can almost always be located using standard EM locating techniques. Also, many water lines can also be located. However, due to the continuous contact with the soil, and the common use of cast and ductile iron in water line construction, water lines can often prove difficult to locate. Additionally, water lines constructed of plastic are becoming more common and cannot be located using standard locating methodologies. Sewer lines (storm and sanitary) are very rarely locatable with standard techniques, unless a conductive tool can be introduced into the line (i.e. locating a sanitary lateral by running a rod containing metal through the line from a clean-out access point). All Blood Hound technicians carry a Jameson rodder for this specific purpose.

GPR surveys are an effective way of locating and identifying subsurface obstructions prior to drilling or excavating activity. However, these surveys cannot and will not identify all subsurface utilities or other obstructions, in all circumstances. Midwestern soils in particular, present significant challenges to an effective GPR survey, and should not be relied upon as the only means of protecting underground utilities. EM Induction surveys provide another level of investigation, which when combined with traditional EM locating and GPR provide the most complete non-destructive process available for the protection of subsurface utilities and other structures. When Vacuum Excavation is employed, the possibility of a damaged utility is further minimized.

In general, private utility locating surveys conducted by Blood Hound technicians are highly accurate and effective. However, there are numerous factors that can result in a line being mis-marked or left unmarked by our technicians, that are beyond the control of Blood Hound or its technicians. This includes, but is not limited to, a lack of adequate prints or available site knowledge, a lack of access to utilities (i.e. cleanouts, interior communications rooms, vaults, etc), a lack of visual indications of the utility's presence, a disruption of a conductive pathway (i.e. repair in a metal water line made with plastic), and commonly bonded lines creating undesired signal conduction pathways. While Blood Hound provides its employees with extensive training on ways to mitigate these and other issues, there are unfortunately occasions where these factors cannot be effectively eliminated.