

Our Ref: Walnut Branch Phase IV



4801 NW Loop 410,
Suite 910
San Antonio, TX 78229
T +1 210 736 0425

Date: November 8, 2021

Mr. Billy Hornung, PE
Project Engineer
City of Seguin
PO Box 591
Seguin, Texas 78156-0591

**Re: City of Seguin
Walnut Branch Phase IV
Design and Construction Phase Services**

Dear Mr. Hornung,

As requested, RPS Infrastructure, Inc. (RPS) is pleased to provide a scope and fee proposal for professional services associated with the above referenced project. Our scope of work is based on our understanding of the project per our multiple meetings with the City of Seguin (City) staff. A summary of our services is included in the attached Scope of Work.

RPS proposes to provide these services for a total lump sum fee of **\$279,846.00**. A copy of the fee schedule is attached for your reference. Fee breakdowns is as follows:

| PHASE | SUBTOTAL |
|--|---------------------|
| Basic Services - (Design, Bid, and Construction Phase) | \$247,055.00 |
| Supplemental Services – Subsurface Utility Engineering | \$6,500.00 |
| Supplemental Services – Geotechnical Engineering | \$26,291.00 |
| TOTAL | \$279,846.00 |

If there are any questions, please do not hesitate to notify me at your earliest convenience.

RPS Infrastructure, Inc.

Luis A. Cuellar, P.E.
Vice President
Luis.Cuellar@rpsgroup.com

Approved by: City of Seguin

Sign: _____

Name: _____

Title: _____

Date: _____

Attachments – A – Scope of Work, B – Fee Schedule, Exhibit I – Proposed Project Layout, Subconsultant Proposals – Softdig, Arias

ATTACHMENT A - SCOPE OF WORK

PROJECT DESCRIPTION

The Walnut Branch Phase IV Project (PROJECT) consists of rehabilitation of an existing 24" sanitary sewer main along Walnut Branch Creek (Pipe Bursting and Cured-in-Place Pipe (CIPP) as well as a proposed new 30" sanitary sewer pipe constructed via open cut construction and jacking and boring. The proposed improvements are based on the City approved preliminary 30% design plans submitted on June 2021. Please see Exhibit I – Proposed Project Layout for additional project details and limits.

1.0 – BASIC SERVICES

Task 1.1: Project Management

RPS Infrastructure Inc. (Engineer) will provide project management tasks which include:

- a. Development and monitoring of project tasks and schedule.
- b. A Quality Management Plan and QA/QC will be provided for the 60%, 90% and Bid design submittal.
- c. Contracting and monthly invoicing.

Task 1.2: 60% Design Phase

Activities under this task include:

- a. Meet with City of Seguin (Seguin) officials to discuss and define the scope and confirm the 30% wastewater alignment route.
- b. Walk Project Alignment with Seguin staff.
- c. Proposed design method
 - Open Cut Construction (Proposed Construction)
 - Jacking and Boring (Proposed Construction)
 - Cured in Place Pipe (Existing main to be rehabbed and remain active)
 - In-situ pipe bursting (Existing main to be rehabbed and remain active)
- d. Perform field reconnaissance to observe if any apparent changes to existing conditions changed from 30% design plans. During 60% design phase plans, additional potholing, survey, and measurements may be requested and will be addressed as supplemental services.
- e. Perform Utility Coordination. Coordinate Proposed Sewer design with known Utility companies.
- f. Prepare Utility Conflict Matrix and log conflicts and conflict resolution.
- g. Coordinate with USACE and begin Section 404/408 Permit Process
 - Coordination with City and USACE on Section 408 applicability
 - Delineation of Walnut Branch Creek
 - Determine Section 404 permit requirements

- h. Design and Develop 60% Design Plans.
- i. Develop 60% Opinion of Probable Cost (OPCC).
- j. Develop Front End Technical Specifications and Contract Documents.
- k. Develop Project Implementation Schedule from 60% design to Construction Closeout.
- l. Develop Preliminary Right of Entry (ROE) Exhibits. It is anticipated that metes and bounds preparation (if required) and ROE coordination with property owner will be performed by CITY staff.
- m. Meet with City Staff to review 60% Design Plans and conduct a workshop. RPS will document meeting notes and provide meeting minutes.
- n. Coordinate with TxDOT to provide 60% Design Plans and conduct meeting if necessary. Assist the CITY in assembling preliminary TxDOT permit documentation.
- o. Attend one (1) public meeting with Seguin Staff and document meeting minutes, which may consist of presenting to City Council

Task 1.3: 90% Design Phase

Activities under this task include:

- a. Subconsultant coordination
- b. Review and address all 60% review comments/redlines by City of Seguin.
- c. Prepare 90% Design Plans
- d. Prepare 90% construction documents.
- e. Prepare 90% Engineer's OPCC.
- f. Update Project Schedule from 90% Design to Construction Closeout.
- g. Meet with City Staff to review 90% Design Plans and conduct a workshop. RPS will document meeting notes and provide meeting minutes.
- h. Coordinate with TxDOT to provide 90% Design Plans and conduct meeting if necessary. Assist the CITY in assembling preliminary TxDOT permit documentation.
- i. Attend one (1) public meeting with Seguin Staff and document meeting minutes.
- j. Prepare and submit USACE Permit(s)

Task 1.4: Final Design and Bid Phase

Activities under this task include:

- a. Review and address all 90% review comments/redlines by City of Seguin.
- b. Provide Final signed and sealed Design Plans
- c. Provide Final signed and sealed construction documents.
- d. Provide Final signed and sealed Engineer's OPCC.
- e. Assist CITY staff to obtain approval of TxDOT ROW permit ([Up to 2 Meetings with TxDOT](#)).
- f. Provide Approval of USACE 404 Permit.
- g. Attend the pre-bid meeting to present the project and respond to questions
- h. If necessary, prepare signed and sealed addendums for project ([1 Addendum Response](#)).
- i. Attend bid opening, tabulate bids, and provide recommendations
- j. Evaluate Contractor Bids and qualifications and provide letter of recommendation for the lowest responsible bidder.

Task 1.5: Construction Phase and Closeout Services

Activities under this task will include:

- a. Attend a pre-construction meeting with the contractor and City of Seguin
- b. Attend monthly construction [virtual meetings scheduled by RPS using Microsoft TEAMS meetings](#)
- c. Review shop drawing submittals for conformance with ~~the~~ project documents and compatibility with the design intent.
- d. Respond [up to 2](#) to Request for Information (RFI) from the contractor in a timely manner
- e. Assist City of Seguin with the preparation of [up to 2](#) change orders, including a final change order covering recapitulations (over and under) of project bid quantities in support of the final request for payment from the contractor,
- f. Visit project site two (2) times a month and provide monthly site reports detailing construction progress. Approximately twenty-four (24) site visits are anticipated.
- g. Verify monthly application for payment provided by Contractor [and discuss during monthly meeting](#).
- h. Prepare ~~the~~ semi-final and final punch-list items for final project acceptance. [Up to 3 visits](#).
- i. Submit record drawings based on marked-up documents provided by the contractor in MicroStation V8i format.

Deliverables:

All mains and appurtenances work shall meet SAWS or City of Seguin Construction Specification criteria and shall be designed per SAWS, City of Seguin, and TxDOT (where applicable) Design Guidelines and Standards. RPS shall research the existing wastewater mains and appurtenances for any potential conflicts with other existing/proposed utilities as well as street reconstruction proposed by the City of Seguin. ~~In addition, RPS shall make recommendations to any other necessary adjustments as required.~~ Each platted lot presently not serviced by the City of Seguin shall be provided with a new wastewater service lateral to the property.

Deliverables are to be provided by electronic pdf files of the 60%, 90%, and Final Sign and Seal Documents. Deliverable documents to include the following.

- Geotechnical Report
- SUE Pothole Data
- Design Plans (22 x 34)
- Engineer's Opinion of Probable Cost (OPCC)
- Contract Documents
- Project Schedules
- ROE Exhibits
- Confirmation of Permits, Approval to be provided at Final Design Phase.
 - TxDOT ROW
 - USACE 404
- Design Workshop Meeting Minutes.

Assumptions and Exclusions:

The following assumptions and exclusions were made in preparing this fee proposal. Should any of these assumptions be incorrect or require change, the fee proposal will be updated to include effort.

- RPS Group to include SW3P measures where necessary to design.
- RPS Group to perform Right of Entry Exhibits only.
 - ROE letter and coordination with property owner to be performed by the City of Seguin.
- No Hydraulic and/or sewer modeling services to confirm new sanitary sewer size.
- No Work beyond the defined project limits.
- No Design efforts will incorporate drainage structures or systems.
- No Traffic Control Plan (TCP) design.
- No Roadway Plan and Profile Design, only trench repair design.
- No Bridge/culvert improvements.

2.0 – SUPPLEMENTAL SERVICES

Task 2.1: Geotechnical Engineering Services

Geotechnical Engineering Services will be performed to identify soil bores and recommendations to bedding and backfill. A Geotechnical Data Report and Geotechnical Design Memorandum will be included in this service. A proposal provided by Arias has been included in this scope of work.

Task 2.2: Subsurface Utility Exploration (SUE)

SUE is recommended to develop the 60% Design Phase plans, a budget for ASCE Quality Level A and Level B is included. RPS will utilize a SUE Subconsultant, SOFTDIG, to provide these services. Up to 4 SUE potholes will be collected. A proposal provided by SOFTDIG has been included in this scope of work.

3.0 – BASIS OF COMPENSATION

Refer to Attachment B for the RPS fee, as well as budgets for Supplemental Services.

4.0 – SCHEDULE

Anticipated Schedule

| | TASK | Days | Date |
|---|---------------------------------|------|------|
| - | Issue NTP | 0 | TBD |
| - | 60% Design Phase | 60 | TBD |
| - | 90% Design Phase | 45 | TBD |
| - | Final Design and Bidding Phase | 60 | TBD |
| - | Construction and Closeout Phase | 240 | TBD |

ATTACHMENT B

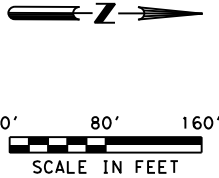
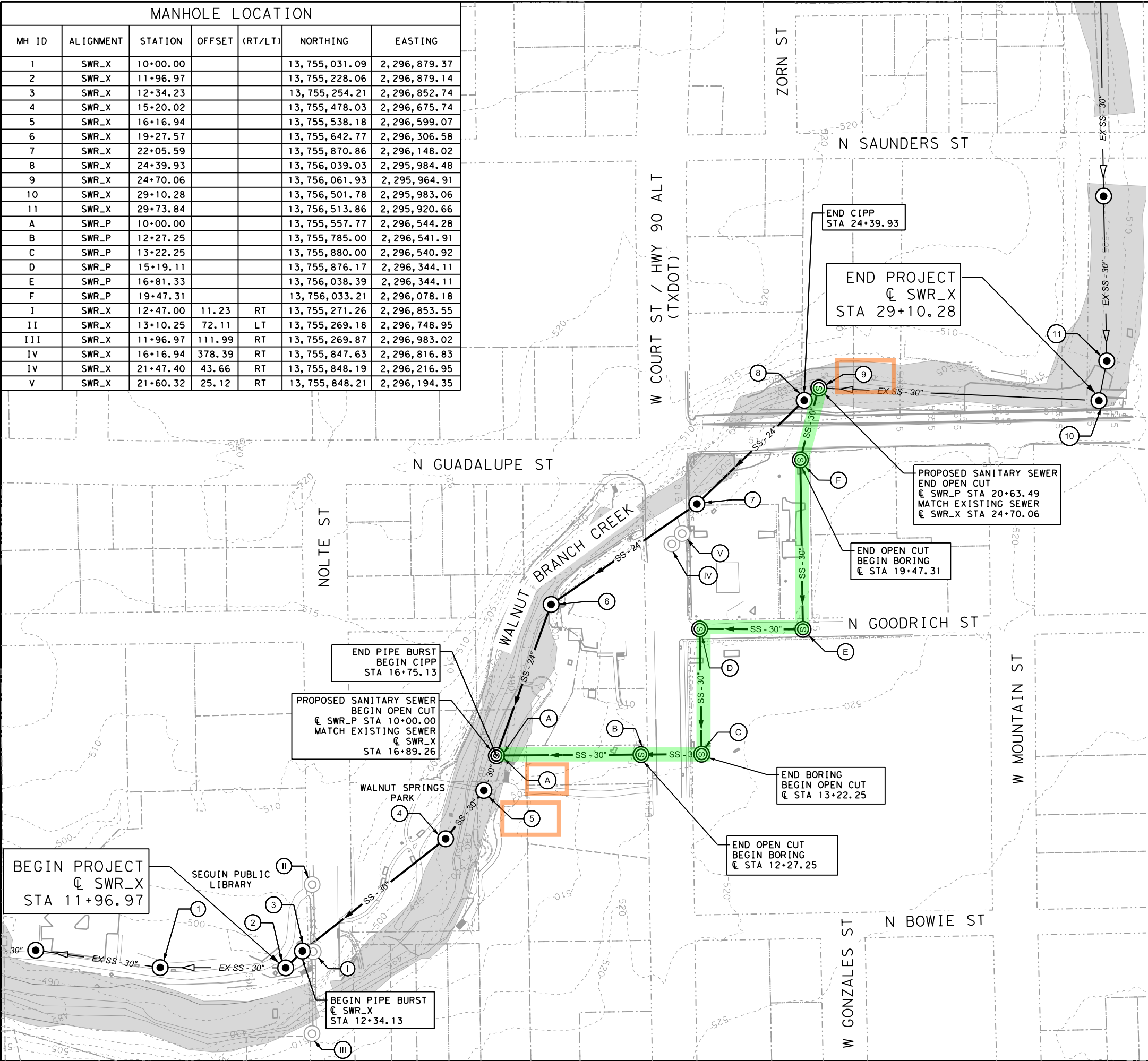
ATTACHMENT B - FEE SCHEDULE

| Task | | Fee |
|--------------------------------------|--|---------------|
| Task 1- Basic Services | | |
| 1.1 | Project Management | \$ 15,260.00 |
| 1.2 | 60% Design Phase | \$ 82,896.00 |
| 1.3 | 90% Design Phase | \$ 58,067.00 |
| 1.4 | Final Design and Bid Phase | \$ 28,162.00 |
| 1.4 | Construction Phase Services | \$ 58,330.00 |
| 1.6 | Closeout Phase | \$ 4,340.00 |
| Total Task 1 - Basic Services | | |
| | | \$ 247,055.00 |
| Supplemental Services | | |
| Task | | Fee |
| Task 2- Supplement Services | | |
| | Subsurface Utility Engineering (Level A & B) | \$ 6,500.00 |
| | Geotechnical Report | \$ 26,291.00 |
| Total Task 2 - Supplemental Services | | |
| | | \$ 32,791.00 |
| Total Fee Task 1 & 2 | | \$ 279,846.00 |

FEE ESTIMATE FOR BASIC ENGINEERING SERVICES

| ITEM NO | Project Name: Seguin - Walnut Branch Phase IV | | | | No. Sheets | Principal / QA/QC | Senior PM | Project Manager | EIT III | Clerical Admin | Sr. Env. Planner | Env. Planner | GIS Tech. | Task Budget |
|---------------------------------|---|--|--|--|------------|-------------------|-----------|-----------------|-----------|----------------|------------------|--------------|--------------|---------------|
| | Date: Pctober 7, 2021 | | | | | \$ 275.00 | \$ 220.00 | \$ 185.00 | \$ 110.00 | \$ 65.00 | \$ 166.00 | \$ 110.00 | \$ 110.00 | |
| | Prepared By: Juan Palacios, P.E. | | | | | | | | | | | | | |
| TASK | | | | | HOURS | | | | | | | | | TOTAL |
| Project Management | | | | | | | | | | | | | | |
| 1.1 | Project Management | | | | 6 | 4 | 44 | 24 | 30 | 0 | 0 | 0 | \$ 15,260.00 | |
| a. | Development and monitoring of project tasks and schedule, progress reports; | | | | | 4 | 24 | | 8 | | | | \$ 5,840.00 | |
| b. | Prepare QMP and provide QA/QC for each submittal | | | | 6 | | 12 | 24 | 6 | | | | \$ 6,900.00 | |
| c. | Monthly Invoicing | | | | | | 8 | | 16 | | | | \$ 2,520.00 | |
| | | | | | | | | | | | | | | |
| 60% Design Phase | | | | | | | | | | | | | | |
| 1.2 | 60% Design Phase | | | | 30 | 2 | 27 | 156 | 288 | 10 | 36 | 68 | 16 | \$ 82,896.00 |
| a | Project Kick Off Meeting | | | | | | 4 | 4 | 4 | | | | | \$ 2,060.00 |
| b | Walk Project Alignment with City of Seguin Staff | | | | | | | 8 | 8 | | | | | \$ 2,360.00 |
| c | Field Reconnaissance - Confirmation of Existing Conditions | | | | | | | 4 | 4 | | | | | \$ 1,180.00 |
| d | Subsurface Utility Engineering (SUE) Pothole Plan | | | | | | | 2 | 8 | | | | | \$ 1,250.00 |
| e | Perform Utility Coordination | | | | | | | 4 | 16 | | | | | \$ 2,500.00 |
| f | Prepare Utility Conflict Matrix | | | | | | | 6 | 12 | | | | | \$ 2,430.00 |
| g | USACE Section 404/408 Permits | | | | | | | | | | | | | |
| | - Coordinate with City and USACE on Section 408 applicability | | | | | | | | | 16 | 20 | | | \$ 4,856.00 |
| | - Delineation of Walnut Branch Creek | | | | | | | | | 12 | 32 | 16 | | \$ 7,272.00 |
| | - Determine Section 404 permit requirements | | | | | | | | | 8 | 16 | | | \$ 3,088.00 |
| h | Develop 60% Design Phase Plans | | | | | 2 | 4 | 80 | 160 | | | | | \$ 33,830.00 |
| i | Develop 60% Opinion of Probable Construction Cost (OPCC) | | | | | | 1 | 8 | 16 | | | | | \$ 3,460.00 |
| j | Develop 60% Technical Specifications | | | | | | 4 | 8 | 16 | 8 | | | | \$ 4,640.00 |
| k | Develop Project Implementation Schedule | | | | | | 1 | 8 | 8 | 2 | | | | \$ 2,710.00 |
| l | Prepare preliminary ROE's | | | | | | | 8 | 16 | | | | | \$ 3,240.00 |
| m | Conduct Project Workshop | | | | | | 1 | 4 | 8 | | | | | \$ 1,840.00 |
| n | Perform 60% Design Walk Through | | | | | | 8 | 8 | 8 | | | | | \$ 4,120.00 |
| o | Attend one (1) public meeting with City Staff | | | | | | 4 | 4 | 4 | | | | | \$ 2,060.00 |
| | | | | | | | | | | | | | | |
| 90% Design Phase | | | | | | | | | | | | | | |
| 1.3 | 90% Design Phase | | | | 24 | 1 | 35 | 116 | 120 | 16 | 32 | 96 | 24 | \$ 58,067.00 |
| a | Subconsultant Coordination | | | | | 1 | 2 | 16 | | | | | | \$ 3,675.00 |
| b | Incorporate City of Seguin Review Comments into 90% Package | | | | | | 2 | 8 | 8 | | | | | \$ 2,800.00 |
| c | Prepare 90% Design Plans | | | | | | 8 | 32 | 80 | | | | | \$ 16,480.00 |
| d | Prepare 90% Technical Specificaitons and Front End Construction Documents | | | | | | 4 | 32 | | 16 | | | | \$ 7,840.00 |
| e | Prepare 90% Opinion of Probable Construction Cost (OPCC) | | | | | | 1 | 4 | 8 | | | | | \$ 1,840.00 |
| f | Update Project Schedule | | | | | | 1 | 4 | 4 | | | | | \$ 1,400.00 |
| g | Perform 90% Design Workshop | | | | | | 8 | 8 | 8 | | | | | \$ 4,120.00 |
| h | Finalize and submit TxDOT Permit | | | | | | 1 | 4 | 4 | | | | | \$ 1,400.00 |
| i | Prepare and submit USACE Permit(s) | | | | | | | | | | | | | |
| | - Prepare and submit Section 408 permit (if required) | | | | | | | | | 16 | 32 | 8 | | \$ 7,056.00 |
| | - Prepare and submit Section 404 Nationwide Permit (if required) | | | | | | | | | 16 | 64 | 16 | | \$ 11,456.00 |
| k | Attend one (1) public meeting with City Staff | | | | | | 8 | 8 | 8 | | | | | \$ 4,120.00 |
| | | | | | | | | | | | | | | |
| Final Design and Bid Phase | | | | | | | | | | | | | | |
| 1.4 | Final Design and Bid Phase | | | | 24 | 2 | 14 | 80 | 74 | 16 | 2 | 2 | 0 | \$ 28,162.00 |
| a | Incorporate City of Seguin 90% Review Comments into Bid Package | | | | | | 2 | 8 | 8 | | | | | \$ 2,800.00 |
| b-d | Sign and Seal Design Drawings, Contract Documents, and OPCC | | | | | 2 | 4 | 40 | 40 | | | | | \$ 13,230.00 |
| e | Finalize TxDOT Permit | | | | | | | 4 | 2 | | | | | \$ 960.00 |
| f | Final coordination with USACE to provide approved permit | | | | | | | | | 2 | 2 | | | \$ 552.00 |
| g | Attend Prebid Meeting | | | | | | 4 | 4 | 4 | | | | | \$ 2,060.00 |
| h | Prepare Addendum | | | | | | 2 | 8 | 8 | 8 | | | | \$ 3,320.00 |
| i | Attend Bid Opening & Tabulate Bids | | | | | | 1 | 8 | 4 | 4 | | | | \$ 2,400.00 |
| g | Contractor Evaluation & Recommendation for Award | | | | | | 1 | 8 | 8 | 4 | | | | \$ 2,840.00 |
| | | | | | | | | | | | | | | |
| Construction Phase Services | | | | | | | | | | | | | | |
| 1.4 | Construction Phase Services | | | | 24 | 0 | 10 | 144 | 248 | 34 | 0 | 0 | 0 | \$ 58,330.00 |
| a | Attend Pre-Construction Conference & Minutes | | | | | | 1 | 4 | 8 | 4 | | | | \$ 2,100.00 |
| b | Construction Progress Meetings - 8 | | | | | | 3 | 24 | 24 | 8 | | | | \$ 8,260.00 |
| c | Submittal Review | | | | | | 3 | 24 | 40 | | | | | \$ 9,500.00 |
| d | Request for Information (RFI) | | | | | | 2 | 16 | 24 | 8 | | | | \$ 6,560.00 |
| e | Change Order Preparation | | | | | | | 12 | 8 | 2 | | | | \$ 3,230.00 |
| f | Attend Site Visits (2 per month) | | | | | | | 48 | 96 | | | | | \$ 19,440.00 |
| g | Review Monthly Pay Estimates | | | | | | | 8 | 24 | 8 | | | | \$ 4,640.00 |
| h | Conditional and Final Approvals | | | | | | 1 | 8 | 24 | 4 | | | | \$ 4,600.00 |
| | | | | | | | | | | | | | | |
| Closeout Phase | | | | | | | | | | | | | | |
| 1.6 | Closeout Phase | | | | 24 | 0 | 1 | 8 | 24 | 0 | 0 | 0 | 0 | \$ 4,340.00 |
| a | Record Drawings | | | | 24 | | 1 | 8 | 24 | | | | | \$ 4,340.00 |
| | | | | | | | | | | | | | | |
| Supplemental Services | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | \$ 32,791.00 |
| 2.1 | Subsurface Utility Engineering (Level A & B) | | | | | | | | | | | | | \$ 6,500.00 |
| 2.2 | Geotechnical Report | | | | | | | | | | | | | \$ 26,291.00 |
| | | | | | | | | | | | | | | |
| SEWER SUB-TOTAL | | | | | | 11 | 80 | 396 | 506 | 72 | 36 | 68 | 16 | \$ 247,055.00 |
| SUPPLEMENTAL SERVICES SUB-TOTAL | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | \$ 32,791.00 |
| TOTAL BASIC ENGINEERING FEE | | | | | | | | | | | | | | \$ 279,846.00 |

| MANHOLE LOCATION | | | | | | |
|------------------|-----------|----------|--------|---------|---------------|--------------|
| MH ID | ALIGNMENT | STATION | OFFSET | (RT/LT) | NORTHING | EASTING |
| 1 | SWR_X | 10+00.00 | | | 13,755,031.09 | 2,296,879.37 |
| 2 | SWR_X | 11+96.97 | | | 13,755,228.06 | 2,296,879.14 |
| 3 | SWR_X | 12+34.23 | | | 13,755,254.21 | 2,296,852.74 |
| 4 | SWR_X | 15+20.02 | | | 13,755,478.03 | 2,296,675.74 |
| 5 | SWR_X | 16+16.94 | | | 13,755,538.18 | 2,296,599.07 |
| 6 | SWR_X | 19+27.57 | | | 13,755,642.77 | 2,296,306.58 |
| 7 | SWR_X | 22+05.59 | | | 13,755,870.86 | 2,296,148.02 |
| 8 | SWR_X | 24+39.93 | | | 13,756,039.03 | 2,295,984.48 |
| 9 | SWR_X | 24+70.06 | | | 13,756,061.93 | 2,295,964.91 |
| 10 | SWR_X | 29+10.28 | | | 13,756,501.78 | 2,295,983.06 |
| 11 | SWR_X | 29+73.84 | | | 13,756,513.86 | 2,295,920.66 |
| A | SWR_P | 10+00.00 | | | 13,755,557.77 | 2,296,544.28 |
| B | SWR_P | 12+27.25 | | | 13,755,785.00 | 2,296,541.91 |
| C | SWR_P | 13+22.25 | | | 13,755,880.00 | 2,296,540.92 |
| D | SWR_P | 15+19.11 | | | 13,755,876.17 | 2,296,344.11 |
| E | SWR_P | 16+81.33 | | | 13,756,038.39 | 2,296,344.11 |
| F | SWR_P | 19+47.31 | | | 13,756,033.21 | 2,296,078.18 |
| I | SWR_X | 12+47.00 | 11.23 | RT | 13,755,271.26 | 2,296,853.55 |
| II | SWR_X | 13+10.25 | 72.11 | LT | 13,755,269.18 | 2,296,748.95 |
| III | SWR_X | 11+96.97 | 111.99 | RT | 13,755,269.87 | 2,296,983.02 |
| IV | SWR_X | 16+16.94 | 378.39 | RT | 13,755,847.63 | 2,296,816.83 |
| IV | SWR_X | 21+47.40 | 43.66 | RT | 13,755,848.19 | 2,296,216.95 |
| V | SWR_X | 21+60.32 | 25.12 | RT | 13,755,848.21 | 2,296,194.35 |



It's real.



Texas PE Firm Reg. #F-929

4801 NW Loop 410, Suite 910, San Antonio, Texas 78229
T +1 210 736 0425 E usinfrastructure@rpsgroup.com

LEGEND

- EXIST R.O.W. - - - - -
- 5FT CONTOURS - - - - -
- EXIST SANITARY SEWER - - - - -
- PROP SANITARY SEWER - - - - -
- FLOOD PLAIN 100 YR - - - - -
- EXIST SAN SEWER MANHOLE - - - - -
- PROJECT SAN SEWER MANHOLE - - - - -
- PROP SAN SEWER MANHOLE - - - - -

NOTES

- CONTRACTOR IS RESPONSIBLE TO VERIFY LOCATIONS OF UTILITIES AND COORDINATE WITH UTILITY COMPANIES TO RE-LOCATE OR ADJUST UTILITIES THAT INTERFERE WITH PROPOSED IMPROVEMENTS. CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT UTILITIES ARE IN OR OUT OF SERVICE.
- COORDINATES SHOWN ON THIS SHEET ARE BASED ON NAD 83(CORS 96) TEXAS STATE PLANE SOUTH CENTRAL ZONE (4204).
- CONTRACTOR SHALL ONLY REMOVE TREES REQUIRED FOR CONSTRUCTION AND SHALL REFER TO THE CITY OF SEGUIN. ALL TREES REMOVED SHALL BECOME PROPERTY OF THE CONTRACTOR WHO IS RESPONSIBLE FOR THEIR DISPOSAL PER CITY REGULATIONS.

30% PRELIMINARY SUBMITTAL

PRELIMINARY FOR REVIEW ONLY

THESE DOCUMENTS ARE PRELIMINARY AND SUBJECT TO CHANGE. THEY ARE NOT INTENDED FOR CONSTRUCTION OR PERMIT PURPOSES. THEY WERE PREPARED BY, OR UNDER THE SUPERVISION OF:

JUAN R. PALACIOS 137769 10/4/2021
NAME P.E. # DATE

SEGUIN TEXAS WALNUT BRANCH
SANITARY SEWER PHASE IV
PROPOSED PROJECT LAYOUT
EXHIBIT

| | |
|------------------------|------------------|
| RPS Project No: 008017 | |
| Drawn By : RCG | Checked By : JRP |
| Scale: | Date: 10/4/2021 |
| DWG No: | Sheet Of |



142 Chula Vista, San Antonio, Texas 78232 • Phone: (210) 308-5884 • Fax: (210) 308-5886

September 28, 2021
Arias Job No. 2021-1064

VIA Email: sylvester.ogidan@rpsgroup.com

Mr. Sylvester Ogidan, Ph.D., PE, PG, PMP
Water Team Leader
RPS | North America
4801 NW Loop 410, Suite 910
San Antonio, TX 78229, USA

RE: Proposal for Geotechnical Engineering Services
Walnut Branch Sanitary Sewer Phase IV
Seguin, Texas

Dear Mr. Ogidan:

Thank you for the opportunity to submit this proposal for the Geotechnical Study for the proposed project. We understand that Arias Geoprofessionals, Inc. (Arias) has been preselected for this project based on our qualifications.

Project Information

The scope of the overall project generally includes design and installation of about 1,713 LF of sanitary sewer line along the north and east sides of Walnut Branch Creek in Seguin, Texas. The proposed 30-inch diameter sanitary sewer will generally be installed using open cut method; however, trenchless method will be used for the sewer installation at West Court Street/Highway 90 Alternative and North Guadalupe Street crossings. The depths of the sewer pipes were not available to us during preparation of this proposal, and the boring depths and proposed locations were selected by RPS.

Proposal Assumptions

Our proposal and fee estimates are based on the following assumptions:

1. Rights-of-Entry (ROEs) will be required for drilling within City of Seguin Walnut Springs Park, Saegert Middle School campus, parking area of the existing business facility and private properties. Based on our discussion with RPS, we understand that RPS will contact the City of Seguin, Saegert Middle School, existing business facility and private landowner(s), and provide free access to Arias to perform site visit(s) and drilling of borings.
2. Based on our conversation with RPS, we understand that the borings will be drilled away from the pavement areas so that traffic control will not be required to perform borings. Accordingly, our scope of work does not include traffic control set up for the borings. Furthermore, our scope of work does not include drilling within TxDOT ROW, nor obtaining any type of street cut permits.
3. Our scope of work does not include performing site clearing of any kind to access and drill the borings. Any site clearing required to access the boring locations will be performed by the City of Seguin prior to drilling. If required by the City of Seguin, Arias can stake the boring(s) and mark the extent of site clearing required for drill rig access prior to site clearing.
4. Our scope of work does not include locating private utilities. We should be provided with the SUE map and as-built drawings prior to performing the geotechnical exploration.
5. Our proposal does not include any type of environmental protocol, including but not necessarily limited to environmental drilling and sampling, decontamination, characterization, testing, reporting, analysis,

and recommendations of any kind. If environmental contamination is encountered during drilling, Arias will stop drilling and will backfill immediately, and contact RPS for further directions.

6. Our proposal does not include preparation of Geotechnical Baseline Report (GBR), nor does it include providing pavement Restoration recommendations.

Proposed Scope of Services

1. Boring locations and depths were selected by RPS. As suggested, a total of seven (7) borings were planned to be drilled for this project. As per RPS, the borings are planned to be performed to depths ranging from approximately 20 to 40 feet below the existing ground surface.
2. Arias will locate the borings and contact Texas 811 One Call service in order to mark public utilities in the immediate vicinity of the proposed borings. We have assumed that the client will assist with the coordination and planning to avoid potential underground utilities and buried structures that may be located in the project areas.
3. Arias will retain a subcontract driller with a truck-mounted rig to perform the drilling and sampling; however, an Arias Senior Technician, working under the supervision of a Licensed Texas Professional Engineer, will field locate and mark the borings, and will direct the sampling efforts. Subsurface materials will be sampled with either a split barrel sampler while performing the Standard Penetration Test (ASTM D 1586), or with a thin-walled Shelby Tube Sampler (ASTM D 1587). Our scope does not include pavement and/or rock coring, nor does it include the use of any type of special ATV drill rig.
4. If groundwater is encountered, the groundwater levels within the open boreholes will be recorded immediately after drilling. The boreholes will be backfilled with drill cuttings after completion of the drilling.
5. Arias will provide to RPS the GPS coordinates at the as-drilled locations of the borings so that RPS can survey the locations and provide Arias with Texas State Plane Coordinates and elevations of the borings.
6. Laboratory testing will be performed on recovered samples selected by the geotechnical engineer to aid in soil classification and to measure engineering properties. Laboratory testing is expected to include moisture content, Atterberg limits, fines content and unconfined compressive strength. The actual laboratory program will depend upon the type of soils encountered.
7. An electronic copy (pdf format) of our Geotechnical Data Report (GDR) will be prepared by a Licensed Texas Professional Engineer that will include:
 - *Description of the field exploration program;*
 - *Description of the laboratory testing program;*
 - *Boring location plan that depicts borehole locations;*
 - *Boring logs with soil classifications based on the Unified Soil Classification System (ASTM D 2487) with a chart illustrating the soil classification criteria and the terminology and symbols used on the boring logs;*
 - *Description of site geology based on location of the site on the Geologic Atlas of Texas; and*
 - *Depths where groundwater was encountered during drilling.*
8. After submission of GDR, an electronic copy (pdf format) of our Geotechnical Design Memorandum (GDM) will be prepared by a Licensed Texas Professional Engineer that will include:
 - *Description of site geology based on location of the site on the Geologic Atlas of Texas;*
 - *Generalized site stratigraphy and engineering properties developed from field and laboratory data at the explored locations; and*
 - *Depths where groundwater was encountered during drilling.*
 - *Bedding and backfill recommendations;*
 - *OSHA soil/rock classifications and shear strength design parameters for temporary excavation and shoring considerations; and*
 - *General discussions of the anticipated subsurface conditions during proposed trenchless installations*

Our scope and fee do **NOT** include:

- locating private utilities,
- providing/conducting local or global stability analyses for retaining walls, shoring systems, or slopes,
- preparation of a Geotechnical Baseline Report,
- any type of pavement restoration recommendations,
- arranging traffic control setup to drill the borings and applying for TxDOT and Street Cut permit(s),
- performing site clearing to access the borings, and
- any type of environmental sampling, testing, analysis or consulting.

Proposed Fee for Scope of Services

Our estimated fee to perform the base scope of services for the Geotechnical Study for the proposed project is **\$26,291.00**. The work will be performed as outlined in the General Conditions included with this proposal. A Geotechnical Cost breakdown is included with this proposal. We will submit monthly progress billing during the course of our study in accordance with unit rates given in the attached Geotechnical Cost breakdown.

Additional Project Information

We have prepared our scope and fee with the understanding that the sites are accessible to a truck mounted drilling rig. ROEs and permission to access city park areas, school campus, private properties, and business facilities will be provided to Arias by RPS. Furthermore, private utility information should be provided to Arias.

Supplemental letters are not included in our work scope, and if required, they will be billed according to the unit rates given in the attached fee estimate.

Schedule

In general, the field exploration can begin about one (1) week after receiving written authorization (signed proposal), pending the review/approval and ROEs from the City of Seguin, School authority, and landowners. Field drilling and sampling is expected to take approximately three (3) days. Laboratory testing is expected to be completed within approximately ten (10) to fifteen (15) business days after completion of the soil borings. During this time, interim preliminary recommendations could be provided in order to assist the design team in moving forward. We anticipate that our Geotechnical Report(s) can be delivered within about seven (7) to eight (8) weeks after completion of laboratory testing.

Delays sometime occur due to adverse weather, utility clearance requirements, obtaining ROEs, permits and other factors outside of our control. In this event, we will communicate the nature of the delay with you and provide a revised schedule at the earliest possible date.

Proposal Acceptance

Please let us know if this proposal meets your expectations. If acceptable, the authorization table at the end of this proposal should be completed as applicable or a work authorization can be issued. We will begin work upon receipt of a signed copy of the proposal or work authorization by an authorized representative. Please return the entire signed proposal or work authorization to us by fax, mail or email to qkibria@ariasinc.com or cszymczak@ariasinc.com. If the billing address is different, please include that information as well.

Should you have any questions, please do not hesitate to contact me by email or on my cell phone at (817) 821-0801. We appreciate the opportunity provided and look forward to being an integral part of the Project Team.

Sincerely,

ARIAS & ASSOCIATES, INC.

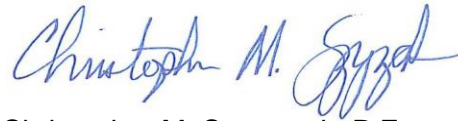
TBPE Registration No: F-32



Golam Kibria, Ph.D., P.E.

Senior Geotechnical Engineer

Attachment: Cost Estimate Table



Christopher M. Szymczak, P.E.

Senior Geotechnical Engineer

28. Statutes of Limitations. The Parties hereto agree that any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events no later than the date of substantial completion of ARIAS'S services hereunder.

ARIAS and CLIENT hereby agree to the terms and conditions of this Proposal and have caused this AGREEMENT to be executed by their duly authorized officers and made effective as of the day and year first written above.

Consultant: **ARIAS & ASSOCIATES, INC.**

By:  Date: September 28, 2021

Printed Name: Christopher M. Szymczak, P.E. Title: Senior Geotechnical Engineer

Address: 142 Chula Vista
San Antonio, Texas 78232

Phone: (210) 308-5884 Fax: (210) 308-5886

CLIENT: _____

By: _____ Date: _____

Printed Name: _____ Title: _____

Address: _____

Phone: _____ Fax: _____

Arias Geoprofessionals - Job No.: 2021-1064, Date: 9.28.2021

| | |
|------------------------|---------------------|
| Summary of Fees | |
| Direct Costs | \$ 13,793.00 |
| Labor Costs | \$ 12,498.00 |
| Total Fee | \$ 26,291.00 |

Juan Palacios
RPS Group
4801 NW Loop 410, Suite 910
San Antonio, TX 78230

September 28, 2021

USI Job #: 614170

RE: Sub-Surface Utility Locating (QL-A) 4 Test Holes
Walnut Branch Phase IV
W Court Street (US-90 Alt) & N Goodrich Street-Seguin

Dear Mr. Palacios,

We are pleased to provide following information regarding the referenced project. This letter and following exhibits constitute our proposal based on the scope of work outlined in Exhibit A on page 3. This agreement is valid for 90 (ninety) calendar days. Any cost estimates stated herein are subject to equitable adjustment in the event of differing site conditions, changes in applicable laws or the scope of services, unforeseeable delays or difficulties beyond the reasonable control of Underground Services, Inc.

Professional Services to be provided under this contract are as follows:

- ☒ Test Holes / Vacuum Excavation (Quality Level A)
- ☐ Utility Markouts / Designating (Quality Level B)
- ☐ Records, Research and Recon (Quality Level C & D)
- ☐ Surveying & Mapping
- ☐ Video Pipe Inspection (CCTV) / Hydro Jetting
- ☐ Concrete Slab Imaging
- ☐ Traffic Control
- ☐ Other:

For a description of the above professional services, please refer to Exhibit B on page 4 and for definitions refer to Exhibit C on Page 5.

Underground Services, Inc.



A Professional Corporation Specializing in Subsurface Utility Engineering

Design Accurately, Build Confidently

PERFORMANCE. Underground Services, Inc. will exercise reasonable skill and judgment in providing the Services. No other warranties (express or implied) or representations of performance are given. Underground Services, Inc. does not warrant any specific results of any kind.

INVOICE AND PAYMENT TERMS. Invoices will be submitted once a month or upon completion of services with payment due within thirty (30) days of the date of the invoice. Withholding retainage is not acceptable unless specifically negotiated with an officer of Underground Services, Inc. A late charge at the rate of one and one-half percent per month, or the highest rate allowed by applicable law, whichever is lowest, will be added to all amounts outstanding after said thirty (30) days. Client shall continue to be responsible for payment of Underground Services, Inc.'s charges along with Client's other obligations hereunder, even if Client requests the invoices to be sent to a third party. Client agrees to pay any and all attorneys fees and court costs should attorneys be utilized or court proceedings initiated to collect any past due amounts arising out of this Agreement. For Credit Card Payments, a service charge of 3.5% will be added to the invoice amount.

CLIENT RESPONSIBILITIES. It is recognized that Client has superior knowledge of the job site, the access routes to the location of the job site, surface and sub-surface conditions, utilities, etc. The Client is obligated to advise Underground Services, Inc. of all or any of the conditions that may affect Underground Services, Inc.'s performance hereunder. Client agrees to provide Underground Services, Inc. with such specifications, plans, studies, documents, or other information on surface and subsurface conditions and utilities as will be reasonably required by Underground Services, Inc. for proper and timely performance of the Services. Client shall procure all entry permits and right-of-ways and hold Underground Services, Inc. harmless for claims or trespass or damage to property required in carrying out the Services, except where Underground Services, Inc. is negligent or has violated Client's specific written instructions. If the Client will conducting its own excavations or borings to any depth on public or private property subsequent to mark-out work Underground Services, Inc. personnel, it is the Client's responsibility to notify the appropriate "811/One Call Center" so that utility owners will mark their utilities within the work zone. Underground Services, Inc. will not be liable for any claims resulting from damages to public utilities not field marked by the One Call representative because of non-notification by the Client.

SAFETY. Fieldwork will be performed only under safe conditions. Charges may be made for safety or security measures required by hazardous job conditions.

SUBPOENAS. The Client is responsible for payment of time charges and expenses, resulting from Underground Services, Inc.'s required response to subpoenas issued by any party in connection with Underground Services, Inc.'s provision of the Services hereunder. Charges will be determined in the manner set forth in Exhibit A at the rates in effect at the time the subpoena is served.

INDEMNIFICATION AND LIMITATION OF LIABILITY. Underground Services, Inc. agrees to indemnify and hold Client harmless from and against any and all claims, suits or liability of whatsoever kind or character arising, directly or indirectly, out of Underground Services, Inc.'s negligent provision of Services hereunder where such claims, suits or liability are asserted by any employee, agent, representative, supplier or subcontractor of Underground Services, Inc. employed or engaged in connection with Underground Services, Inc.'s performance hereunder; provided, however, that Underground Services, Inc. shall not be liable under the foregoing indemnity with respect to any loss or damage resulting from Client's negligence or willful misconduct. Client agrees that with respect to any other third party claims, suits or liability of whatsoever kind or nature asserted against Underground Services, Inc. as a result of or in connection with Underground Services, Inc.'s provision of Services hereunder, Client will indemnify and hold Underground Services, Inc. harmless from and against any and all costs (including reasonable attorneys' fees) and liability which Underground Services, Inc. might incur as a result thereof; provided, however, that Client shall not be liable under the foregoing indemnity with respect to any loss or damage resulting from Underground Services, Inc.'s negligence or willful misconduct. Underground Services, Inc. shall not be liable towards Client for any special, incidental or consequential damages, such as loss of use, loss of profits or revenue, claims of customers of Client, etc., whether based on contract or tort, including negligence or strict liability.

INFORMATION. Underground Services, Inc. may rely upon information supplied by Client, or its contractors or consultants, or information available from generally accepted reputable sources, without independent verification and assumes no responsibility for the accuracy thereof.

DELAYS. Underground Services, Inc. shall have no liability towards Client, or its contractors or consultants, for delays in the performance of the Services, or any part of the Services, caused by actions or occurrences, beyond Underground Services, Inc.'s reasonable control. The time of Underground Services, Inc.'s performance under this Agreement shall be enlarged to reflect such delays.

DOCUMENTS. Client may use any final reports of findings, plans, designs, engineering work, or other work performed or prepared by Underground Services, Inc. under this Agreement only in connection with project and/or location indicated on the front side hereof. Underground Services, Inc. does not warrant that the Services (or any reports or data based thereon) will be sufficient in form or substance to satisfy any required or desired regulatory agency approval. Client shall obtain proper written consent from Underground Services, Inc. for any other use of such reports or work results.

MISCELLANEOUS. The terms and conditions set forth herein constitute the entire understanding of the parties relating to the Services. All previous proposals, offers and other communications relative to the Services, oral or written, are hereby superseded, except to the extent that they have been expressly incorporated herein. Any modifications or revision of any provisions hereof or any additional provisions contained in any purchase order, acknowledgment, or other form of the Client is hereby expressly objected to by Underground Services, Inc. and shall not operate to modify this Agreement. This Agreement shall take effect upon acceptance and execution by Underground Services, Inc..

COMPLETE AGREEMENT. This Agreement, together with Exhibits A, B, C and any supplementary exhibits, drawings, specifications and documents incorporated by reference, constitute the entire contract for professional services between Underground Services, Inc. and Client.

FEES AND RATES. The Client is responsible for notifying SoftDig® (in writing) if fees and rates are to be based on Prevailing Wages. If Prevailing Wages are to apply, the fees and rates will be adjusted accordingly, and such increases will be borne by the Client, even if services are in progress or have been completed.

UTILITY HIT. Should a utility be damaged by CLIENT due to alleged erroneous reporting of QL-C/B and/or QL-A investigation by SoftDig® beyond reasonable standard of care, site conditions and equipment limitations as stated herein, the Client will: 1) notify SoftDig® Chief Operating Officer by email within 1-week of discovery 2) Follow with Time & Material estimate of repairs, name of party doing repairs, and date of repair for SoftDig® review. 3) submit detailed Time & Material invoice to SoftDig® for review within 1-week of repair.

UNDERGROUND SERVICES, INC. Corporate Headquarters:

24 Hagerty Blvd. | Suite 11 | West Chester, PA 19382 | P: 1-877-SOFTDIG (763-8344) | www.softdig.com

Operation Centers: Philadelphia | Baltimore | Boston | Houston | San Antonio

SoftDig® and SafeDig® are registered trademarks of Underground Services, Inc.

Exhibit A: Scope of Work and Fees

Underground Services, Inc.:

- A. Excavate by air/vacuum excavation at locations as directed.
- B. Provide field test hole data reports.
- C. Notify Texas 811 One-Call center.
- D. Secure all required permits. Permit fees will be invoiced to client.
- E. Provide M.O.T. as required by permit and/or traffic/roadway conditions. Fees will be invoiced to client.

RPS Group:

- A. Provide CAD file and field survey control points.
- B. Provide all available utility records.
- C. Provide base map showing work area(s), exact site address and site contact representative, if applicable, with phone number prior to SoftDig's mobilization.

Fees

| | |
|--|------------|
| Sub-Surface Utility Locating (QL-A) 4 Test Holes @ \$850.00 Per Test Hole..... | \$3,400.00 |
| City of Seguin Permit..... | \$100.00 |
| Traffic Control..... | \$2,500.00 |
| Mobilization..... | \$500.00 |

TOTAL.....\$6,500.00

Underground Services, Inc.:

Mike Mahaffy
Project Coordinator

September 28, 2021

Date

Client Accepted:

Signature

Date

Printed Name

Title

Exhibit B: Scope of Services

All work in conformance with ASCE Publication CI/ASCE 38-02, Common Ground Alliance (CGA) and American Public Works Assoc. / Utility Location and Coordination Council (APWA/ULCC)

Records Research and Reconnaissance: (Quality Level D & C)

- Meet with owner's Project Engineer to discuss specifics and requirements of the assignment.
- Research and retrieve all available utility records.
- Conduct a site reconnaissance to validate probable utilities.
- Verify the existence of survey control and plan operational procedures.
- Research permit and special insurance requirements with appropriate agencies.

Surface Locates: (Quality Level C & B)

- Designate, record and mark the approximate horizontal location (accurate within 12± in.) of existing utilities by geophysical prospecting techniques.
- SoftDig® will use its best professional expertise and geophysical prospecting techniques to designate subsurface utilities. SoftDig® does not guarantee that utilities marked constitute all utilities within the project area.
- SoftDig® uses electromagnetic equipment and GPR; however, there exists the possibility that due to circumstances beyond the control of the designating technicians utilities may be non-detectable, or the horizontal location mark is not directly over the center-line of the utility. The following factors may limit or exceed the capabilities, accuracy, and reliability of the geophysical equipment: composition of the utility structure (non-metallic), soil characteristics (mineral content, debris, rocks), the salinity of groundwater, depth of utility, surface covering, embedded structures (re-bar, wire mesh), confined spaces, and external interference (power lines, guard rails, traffic, rail lines).
- Utility depths obtained by instrument readings (only if requested by client) are not guaranteed and are not to be used for design or basis for construction. Clients relying on instrument reading of depths do so at their own risk. True depth is only obtained by exposing the utility.
- Data Management (Survey and CADD Mapping) is not included unless specifically requested and included in Exhibit A – Schedule of Fees.

Subsurface Locates: (Quality Level A)

- SoftDig® will provide routinely and normally carried cones and warning signs for Maintenance of Traffic. Traffic conditions, location of test holes in roadway and permit requirements may require other devices (T.M.A., arrowboards, etc.) and/or flaggers or police detail. Such costs will be invoiced as an expense, as stated in Exhibit A – Schedule of Fees.
- Coordinate with utility company inspectors as required by the resultant agreement and by law.
- Neatly cut and remove existing paving, with the cut area not exceeding 12 in. x 12 in. Excavate using the SoftDig® vacuum excavation system.
- Excavate test holes with care as to prevent damage to utilities, however, any damage resulting from the condition of the utility due to age, burial conditions, covering, etc. is not the responsibility of SoftDig®.
- Back-fill with excavated material and compact in 6 inch lifts.
- Furnish, install and color-code a permanent above-ground marker (e.g. P.K. nail, peg, steel pin, or hub) directly above the center-line of the structure, as well as "down the hole" color-coded plastic ribbon.
- Provide a bituminous cold patch of pavement within the limits of the original cut at the time of back-fill. Pavement restoration is guaranteed for 3 years. If the test hole is excavated in an area other than the roadway pavement, the area disturbed will be restored to the condition prior to excavation. Excluded from this provision would be any disturbance to sub soil and ground water conditions that may result in a "quick condition" or "bubbling" of water to the surface from hydro-static pressure release resulting from excavation and through no fault of SoftDig®. Also excluded is restoring pavement with hot mixed/hot laid bituminous pavement or key-holing operations.
- Provide the following test hole information:
 - Elevation of top and/or bottom of utility tied to vertical control provided, to within 0.01 ft. If control is not provided, control will be assumed.
 - Locate the test hole by swing ties to 3 physical objects.
 - Elevation of existing grade over utility at test hole to within 0.01 ft.
 - Outside diameter of pipe or width of duct banks and configuration of non-encased multi-conduit systems.
 - Utility structure material compositions, and condition when possible.
 - Pavement thickness, generalized soil type and unusual conditions.
- Should suspected hazardous material be encountered in the test hole, SoftDig® crews will immediately contact the client representative and our office. We will also comply with DOT Hazardous Material Regulation Procedures.
- Data Management (Survey and CADD Mapping) is not included unless specifically requested and included in Exhibit A – Schedule of Fees.

NOTE: Test holes shall be terminated if subsurface conditions (rock, boulders, groundwater, soil conditions, soil cave-in, trash / debris, or excessive depth) prevent advancement of excavation to expose the utility or to reach required depth.

UNDERGROUND SERVICES, INC. Corporate Headquarters:

24 Hagerty Blvd. | Suite 11 | West Chester, PA 19382 | P: 1-877-SOFTDIG (763-8344) | www.softdig.com

Operation Centers: Philadelphia | Baltimore | Boston | Houston | San Antonio

SoftDig® and SafeDig® are registered trademarks of Underground Services, Inc.

Exhibit C: Definitions

Underground Services Inc. SoftDig® provides "Subsurface Utility Engineering", (SUE), that can reduce unforeseen conflicts between construction and underground utilities. It provides accurate information on the horizontal and vertical location of the underground utility facilities during the early development of projects. Through the use of this technology, designers can identify conflict points and design to accommodate and avoid delays and/or re-design during construction. The three main components of subsurface utility engineering [as defined by The Federal Highway Administration] are Designation, Location, and Data Management.

Designation (QL-B): The process of using a surface geophysical method or methods such as electro-magnetics and GPR to interpret the presence of a subsurface utility. The approximate horizontal location of a designated utility is marked on the ground surface with paint or other marking devices surveyed, and CADD mapped (if requested). This phase of the process allows broad-scope engineering decisions to be made early in the project.

Location (QL-A): Designation alone does not provide the high accuracy required for the detailed design of a project. Locating is the process of exposing, surveying, and recording the precise vertical and horizontal location of a subsurface utility. Factors such as utility material and condition may influence specific techniques. The typical technique for utility exposures is the use of the minimally intrusive SoftDig® air-entrainment/vacuum excavation technology, which significantly reduces the potential for damage to the structure being uncovered. This allows technicians to measure and record a utility line's precise vertical depth and horizontal position through a hole that may be no larger than 203 x 203 mm (8 x 8 in), preserving both utility and surface integrity. Vacuum excavation may also be utilized for "pilot" holes to excavate below the probable zone of underground utilities (6'± depth) for soil test borings, wells, caissons, etc.

Data Management: The key phase is Data Management/Quality Assurance which involves incorporating, correlating and reviewing information on the location and quality level of utilities - integral to the process of designing a project. Depiction of utilities from subsurface utility engineering and survey sources is usually accomplished via computer-aided design and drafting onto electronic files or other appropriate documents. Written reports, test hole summary sheets, photographs, and other data may accompany and supplement plan sheets. The earlier the data is used, the better. A project's impact on underground utilities may be a critical factor in determining a cost-effective design.

*Quality Levels:

Work performed at a certain Quality Level is predicated on performing all lower-tiered Quality Levels. Example – for true Quality Level A work, Quality Level D through B as well as Quality Level A must be performed.

QL "D" -- Information derived from existing records or oral recollections.

QL "C" -- Information obtained by surveying and plotting visible above-ground utility features and by using professional judgment in correlating this information to Quality Level D information.

QL "B" -- Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities.

QL "A" -- Precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point.

*Source: ASCE Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, American Society of Civil Engineers, Publication No. CI/ASCE 38-02

UNDERGROUND SERVICES, INC. Corporate Headquarters:

24 Hagerty Blvd. | Suite 11 | West Chester, PA 19382 | P: 1-877-SOFTDIG (763-8344) | www.softdig.com

Operation Centers: Philadelphia | Baltimore | Boston | Houston | San Antonio

SoftDig® and SafeDig® are registered trademarks of Underground Services, Inc.