





**J-U-B ENGINEERS, Inc.  
AGREEMENT FOR PROFESSIONAL SERVICES**

**Attachment 1 – Scope of Services, Basis of Fee, and Schedule**

**PROJECT NAME:** Santaquin Main Street Widening - 300 East to 100 West

**CLIENT:** Santaquin City

**J-U-B PROJECT NUMBER:** 50-21-017

**CLIENT PROJECT NUMBER:**

**ATTACHMENT TO:**

☐ **AGREEMENT DATED:**     ; or

☒ **AUTHORIZATION FOR ADDITIONAL SERVICES #2021-1; DATED: 5/4/2021**

The referenced Agreement for Professional Services executed between J-U-B ENGINEERS, Inc. (J-U-B) and the CLIENT is amended and supplemented to include the following provisions regarding the Scope of Services, Basis of Fee, and/or Schedule:

**PART 1 - PROJECT UNDERSTANDING**

J-U-B's understanding of this project's history and CLIENT's general intent and scope of the project are described as follows:

Design Main Street Improvements from 300 East to 100 West; assist with bidding support; some construction engineering support services will be added later.

**PART 2 - SCOPE OF SERVICES BY J-U-B**

A summary of J-U-B's Services under this Agreement is shown below. A detailed scope of work is contained in Exhibit 1-E – Detailed Scope of Services and is hereby incorporated by reference into PART 2. J-U-B's Services under this Agreement are limited to the tasks in Exhibit 1-E. Any other items necessary to plan and implement the project, including but not limited to those specifically listed in PART 3, are the responsibility of CLIENT.

**A. Task 001: Project Management (Preconstruction)**

1. Set up Project in J-U-B systems
2. Project execution planning
3. Risk assessment and management
4. Coordinate QA/QC processes
5. Internal kickoff and progress meetings
6. Coordination with subconsultants
7. Regularly monitor project status, budget, schedule, scope
8. Provide report on project status, budget, and schedule
9. Status review meeting with client
10. Provide monthly invoice
11. Provide ongoing document handling and filing

**B. Task 002: Initial Scoping and Mapping**

1. Prepare for and conduct project kickoff meeting
2. Initial Corridor Walk
3. Prepare CAD files set up for project
4. Gather materials from previous projects
5. Conduct geotechnical investigation
6. Gather utility data from utility companies and prepare existing utility CAD file
7. Obtain signal, interconnect, other plans from UDOT

8. Establish design criteria and standards
9. Conduct topographic survey
10. Identify right-of-way, property boundaries, easements
11. Add existing features to CAD mapping
12. Quality control review of mapping
13. Coordination with stakeholders during initial scoping and mapping

**C. Task 003 Prepare 30% Design**

1. Establish initial cross sections and alignments
2. Perform site walkthrough to verify survey and existing conditions
3. Perform subsurface utility evaluation
4. Document known vertical utility locations in CAD
5. Coordinate with utility owners on replacements they plan
6. Establish initial storm drain concept
7. Establish initial street light layout
8. Identify and map possible conflicts with utility or private infrastructure
9. Prepare online GIS of utilities and provide link to utility companies
10. Identify possible right-of-way needs
11. Establish conceptual opinion of probable costs vs. funding
12. Quality control review of 30% design materials
13. Complete and compile 30% design materials
14. 30% Design Review Meeting (walk site with City)
15. Coordination with stakeholders during 30% design

**D. Task 004 Prepare 60% Design**

1. Update mapping, alignments, layouts based on 30% Design Review Meeting
2. Create CAD plan sheet files; convert from dgn to dwg
3. Prepare survey control sheet; QC
4. Prepare roadway design, draft plans and profiles, cross sections; QC
5. Perform storm drainage calculations; prepare design, draft plans and profiles; QC
6. Identify private infrastructure impacts
7. Preliminarily design proposed work on private property; QC
8. Field review with City of proposed work on private properties
9. Modify preliminary design of private property work per review comments; QC
10. Prepare draft plans showing work on private property; QC
11. Discuss and address private property impacts with owners
12. Negotiate compensation to property owners/residents (by City)
13. Prepare descriptions for purchase of necessary right-of-way; QC
14. Prepare utility design and draft plans; QC
15. Prepare street lighting design and draft plans; QC
16. Prepare power undergrounding design and draft plans; QC
17. Prepare user power meter/panel changes design and draft plans; QC
18. Prepare planting design and draft plans; QC
19. Prepare irrigation design and draft plans; QC
20. Prepare roadway signing and striping design and draft plans; QC
21. Prepare removal and relocation draft plans; QC
22. Add planned utility replacements by others to design files; QC
23. Site walkthrough with utility companies to review relocation needs
24. Identify major bid items and approximate quantities; QC
25. Establish preliminary opinion of probable costs vs. funding; QC
26. Quality control review of 60% design materials
27. Complete and compile 60% design materials
28. 60% Design Review Meeting with City, UDOT
29. Coordination with stakeholders during 60% design

**E. Task 005: 90% Design**

1. Update designs and draft plans based on 60% Design Review Meeting
2. Complete general sheets; QC
3. Complete roadway plan and profile sheets, details, specs; QC
4. Complete storm water and utility plans, details, specs; QC
5. Complete street lighting and power plans, details, specs; QC
6. Modify design of private property work to address owner concerns; QC
7. Complete plans showing work on private property, details, specs; QC
8. Prepare opinion of probable costs of work on private property
9. Prepare permits to enter and construct on private properties; QC
10. Prepare easement descriptions; QC
11. Obtain owner signatures on permits to enter and construct
12. Complete planting plans, details, specs; QC
13. Complete irrigation plans, details, specs; QC
14. Complete roadway signing and striping plans, details, specs; QC
15. Complete removal and relocation plans, details, specs; QC
16. Compile needed Santaquin and UDOT standard drawings; QC
17. Identify bid items and perform quantity takeoff by block; QC
18. Prepare spreadsheet to assist contractors in preparing bids; QC
19. Prepare general project requirements and measurement and payment portions of specifications; QC
20. Prepare contract documents; QC
21. Establish opinion of probable costs vs. funding; QC
22. Quality control review of 90% design materials
23. Complete and compile 90% design materials
24. 90% Design Review Meeting with City, UDOT
25. Coordination with stakeholders during 90% design

**F. Task 006: Prepare Advertising Package**

1. Update plans, specs and contract docs based on 90% Design Review Meeting
2. Prepare duplicate sheets at end of additive locations; QC
3. Refine quantities to reflect end of additive locations; QC
4. Update bid form; QC
5. Update opinion of probable costs vs. funding; QC
6. Quality control review of advertising package materials
7. Complete, compile, and deliver advertising package
8. Provide CAD files to City
9. Coordination with stakeholders

**G. Task 007: Assistance During Bidding**

1. Prepare agenda for and conduct pre-bid meeting
2. Compile minutes from pre-bid meeting and provide in addendum 1; QC
3. Address contractor questions during advertising
4. Prepare two additional addenda; QC
5. Prepare documents for bid opening and bid tabulation
6. Conduct bid opening
7. Prepare bid tabulation spreadsheet; tabulate and evaluate bids; QC
8. Prepare recommendation of award letter and document; QC
9. Coordination with stakeholders

**H. Task 008: Construction Engineering**

1. Scope is yet to be determined

**I. Task 100: Out-of-Scope Work**

1. This is a placeholder for any out-of-scope work

**J. Contingency Fund**

1. The Contingency Fund establishes a pre-authorized budget for additional tasks that may be requested by CLIENT's Authorized Representative and performed by J-U-B upon mutual agreement of scope, budget, and schedule.
2. The Contingency Fund is immediately available for promptly proceeding with additional tasks upon written request by CLIENT's Authorized Representative.
3. J-U-B will not exceed the pre-authorized amount without CLIENT approval.

**PART 3 - CLIENT-PROVIDED WORK AND ADDITIONAL SERVICES**

- A. **CLIENT-Provided Work** - CLIENT is responsible for completing, or authorizing others to complete, all tasks not specifically included above in PART 2 that may be required for the project including, but not limited to:
1. Those activities referred to in PART 2 as city responsibilities
- B. **Additional Services** - CLIENT reserves the right to add future tasks for subsequent phases or related work to the scope of services upon mutual agreement of scope, additional fees, and schedule. These future tasks, to be added by amendment at a later date as Additional Services, may include:
1. Work needed that is not in the existing scope
  2. Construction engineering services (scope TBD)
  3. Work to accommodate UTA interests
  4. Work to present aesthetic options to City staff or adjacent property owners/occupants
  5. Work to include optional utility company items in this project
  6. Work to design relocation of utilities not owned by the City
  7. Other work that may be requested/required

**PART 4 - BASIS OF FEE AND SCHEDULE OF SERVICES**

- A. CLIENT shall pay J-U-B for the identified Services in PART 2 as follows:
1. Time and Materials:
    - a. For all services performed on the project, Client shall pay J-U-B an amount equal to the cumulative hours charged to the Project by each class of J-U-B's personnel times J-U-B's standard billing rates.
    - b. Client shall pay J-U-B for Reimbursable Expenses (including mileage) times a multiplier of 1.1
    - c. Client shall pay J-U-B for J-U-B's Consultants' charges times a multiplier of 1.1.
  2. J-U-B may alter the distribution of compensation between individual tasks to be consistent with services actually rendered while not exceeding the total project amount.
- B. **Period of Service:** If the period of service for the task identified above is extended beyond the end of a calendar year, the compensation amount for J-U-B's services may be appropriately adjusted to account for salary adjustments and extended duration of project management and administrative services.
- C. CLIENT acknowledges that J-U-B will not be responsible for impacts to the schedule by actions of others over which J-U-B has no control.
- D. The following table summarizes the fees and anticipated schedule for the services identified in PART 2.

Task Number	Task Name	Fee Type	Amount	Anticipated Schedule
001	Project Management (Preconstruction)	Time and Materials (Estimated Amount Shown)	\$53,167	See Exhibit 1-B Anticipated Schedule
002	Initial Scoping and Mapping	Time and Materials (Estimated Amount Shown)	\$97,577	See Exhibit 1-B Anticipated Schedule
003	Prepare 30% Design	Time and Materials (Estimated Amount Shown)	\$44,668	See Exhibit 1-B Anticipated Schedule
004	Prepare 60% Design	Time and Materials (Estimated Amount Shown)	\$102,017	See Exhibit 1-B Anticipated Schedule
005	Prepare 90% Design	Time and Materials (Estimated Amount Shown)	\$93,124	See Exhibit 1-B Anticipated Schedule
006	Prepare Advertising Package	Time and Materials (Estimated Amount Shown)	\$27,411	See Exhibit 1-B Anticipated Schedule
007	Assistance During Bidding	Time and Materials (Estimated Amount Shown)	\$7,928	See Exhibit 1-B Anticipated Schedule
008	Construction Engineering	Time and Materials (Amount TBD)	TBD	TBD
<b>Sub-Total</b>			<b>\$425,892</b>	
N/A	Contingency Fund (12%)	N/A	\$51,000	N/A
<b>Total:</b>			<b>\$476,892</b>	

**NOTE on Coronavirus and Schedule:** J-U-B is committed to meeting your project schedule commitments as delineated above. As our response to the COVID-19 pandemic, J-U-B is engaging in safety procedures in help to protect clients, staff, their families, and the public. Our staff or offices may be subject to quarantine or other interruptions. Since COVID-19 impacts are beyond J-U-B's control, we are not responsible for the force majeure impacts to delivery timelines, or subsequent project delays and related claims, costs, or damages. Should circumstances related to the COVID-19 issue arise with J-U-B staff or in a J-U-B office that will impact our delivery schedule, we will notify you of the circumstances and mutually agree to a schedule adjustment.

E. The above fees were developed from the Work Breakdown Structure (WBS) attached as Exhibit 1-A.

**Exhibit(s):**

- Exhibit 1-A: Work Breakdown Structure
- Exhibit 1-B: Anticipated Schedule
- Exhibit 1-C: UMS Proposal dated April 15, 2021
- Exhibit 1-D: RB&G Proposal dated April 15, 2021
- Exhibit 1-E: Detailed Scope of Work

Last Updated 04/29/2021

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Santaquin 2021 Main Street Improvements

Work Breakdown Structure

Last Updated 04/29/2021

Description	Jason Jones	Eduardo Hernandez	Mark Christensen	Craig Friant	Marcos Hernandez	Cody Alberts	Matthew Gore	Jeremy Burns	Jason Willes	Terry Rusby	Tanner Beck	Seth Bockholt	Jenna Meyers	Jaynie Wilkinson	Christina McCulloch	Eliza Gillespie	Dianne Olson	Allison Adams	Ava Pecora	Jaime Hemmert	Mileage	Survey Equipment	RB&G	UMS	Total	Total	
	Project Manager	Project Management Assistant	Quality Manager	Project Engineer	Roadway Engineer	Utility & Drainage Engineer	Designer	Designer	Surveyor	Surveyor	Survey Technician	Landscape Architect	Landscape Architect	Landscape Designer	GIS Analyst	GIS Technician	Public Facilitator	Public Facilitator Assistant	Public Facilitator Assistant	Project Finances	Direct Expenses	Direct Expenses	Geotech. Engineer	Subsurface Utility Engineer			
	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(hrs)	(\$)	(\$)	(\$)	(\$)			(hrs)
013 - Complete irrigation plans, details, specs; QC				1	8		1					2	12	12											27	\$2,846	
014 - Complete roadway signing and striping plans, details, specs; QC				1	8	16	12																		21	\$2,769	
015 - Complete removal and relocation plans, details, specs; QC				1	8		16																		41	\$5,657	
016 - Compile needed Santaquin and UDOT standard drawings; QC					4																				14	\$1,808	
017 - Identify bid items and perform quantity takeoff by block; QC				1	8	4	12																		25	\$3,361	
018 - Prepare spreadsheet to assist contractors in preparing bids; QC			2	1	2																				5	\$847	
019 - Prepare general requirements and M&P portions of specifications; QC				4	12	4							4												24	\$3,388	
020 - Prepare contract documents; QC				2	4								2												8	\$1,144	
021 - Establish opinion of probable costs vs. funding; QC				2	8								4												14	\$1,902	
022 - Quality control review of 90% design materials			4	6	6	6	6					2	4												34	\$5,168	
023 - Complete and compile 90% design materials				6	12	12	30						4												64	\$8,858	
024 - 90% Design Review Meeting with City, UDOT	4			4	4	4							4								\$237				20	\$3,381	
025 - Coordination with stakeholders during 90% design	4																								4	\$772	
Task 006 - Prepare Advertising Package																									209	\$27,411	
001 - Update plans, specs and contract docs based on 90% Design Review Meeting					8	12	30						4	8											62	\$7,816	
002 - Prepare duplicate sheets at end of additive locations; QC	2				6		24						12	12											56	\$6,704	
003 - Refine quantities to reflect end of additive locations; QC					4	4	8						4												20	\$2,640	
004 - Update bid form; QC				2	6								4												12	\$1,648	
005 - Update opinion of probable costs vs. funding; QC				2	4								4												10	\$1,394	
006 - Quality control review of advertising package materials			2	4	4	2	8					2													22	\$3,296	
007 - Complete, compile, and deliver advertising package	1			2	4		8						4												19	\$2,627	
008 - Provide CAD files to City							2																		2	\$260	
009 - Coordination with stakeholders	4				2																				6	\$1,026	
Task 007 - Assistance During Bidding																									46	\$7,928	
001 - Prepare agenda for and conduct pre-bid meeting	2			4	2																\$78				8	\$1,490	
002 - Compile minutes from pre-bid meeting and provide in addendum 1; QC				1	1																				2	\$320	
003 - Address contractor questions during advertising	1			6	2	2	2						2												15	\$2,411	
004 - Prepare two additional addenda; QC				2	2									1											5	\$718	
005 - Prepare documents for bid opening and bid tabulation			2	2																					4	\$786	
006 - Conduct bid opening				1	1																\$78				2	\$398	
007 - Prepare bid tabulation spreadsheet; tabulate and evaluate bids; QC			1	4	1																				6	\$1,099	
008 - Prepare recommendation of award letter and document; QC				1	1																				2	\$320	
009 - Coordination with stakeholders	2																								2	\$386	
Task 008 - Construction Engineering																											
001 - Scope is yet to be determined																											
Project Total (hrs)	109	67	91	180	290	220	641		108	8	82	16	136	77	12	20	175	94	53	14					2393		
Project Total	###	\$7,035	\$18,200	###	\$36,830	###	\$83,330		\$19,980	\$1,136	\$6,150	\$2,240	\$17,000	\$6,006	\$1,620	\$1,440	\$28,000	\$11,092	\$4,134	\$1,190	##	\$1,440	###	\$76,300		\$425,892	





**THE  
LANGDON  
GROUP**  
*a J-U-B Company*



**GATEWAY  
MAPPING  
INC.**  
*a J-U-B Company*

### OTHER J-U-B COMPANIES

## Santaquin 2021 Main Street Improvements

## Anticipated Schedule

Last Updated 04/29/2021

### Exhibit 1-B

	Project Management
	Roadway
	Utilities, Power, Drainage
	Private Property Tie-Ins
	Landscaping, Irrigation
	Other

Description	Week Ending																																																			
	15-May-21	22-May-21	29-May-21	05-Jun-21	12-Jun-21	19-Jun-21	26-Jun-21	03-Jul-21	10-Jul-21	17-Jul-21	24-Jul-21	31-Jul-21	07-Aug-21	14-Aug-21	21-Aug-21	28-Aug-21	04-Sep-21	11-Sep-21	18-Sep-21	25-Sep-21	02-Oct-21	09-Oct-21	16-Oct-21	23-Oct-21	30-Oct-21	06-Nov-21	13-Nov-21	20-Nov-21	27-Nov-21	04-Dec-21	11-Dec-21	18-Dec-21	25-Dec-21	01-Jan-22	08-Jan-22	15-Jan-22	22-Jan-22	29-Jan-22	05-Feb-22	12-Feb-22	19-Feb-22	26-Feb-22	05-Mar-22									
Santaquin 2021 Main Street Improvements																																																				
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[illegible]

Description	Week Ending																																														
	15-May-21	22-May-21	29-May-21	05-Jun-21	12-Jun-21	19-Jun-21	26-Jun-21	03-Jul-21	10-Jul-21	17-Jul-21	24-Jul-21	31-Jul-21	07-Aug-21	14-Aug-21	21-Aug-21	28-Aug-21	04-Sep-21	11-Sep-21	18-Sep-21	25-Sep-21	02-Oct-21	09-Oct-21	16-Oct-21	23-Oct-21	30-Oct-21	06-Nov-21	13-Nov-21	20-Nov-21	27-Nov-21	04-Dec-21	11-Dec-21	18-Dec-21	25-Dec-21	01-Jan-22	08-Jan-22	15-Jan-22	22-Jan-22	29-Jan-22	05-Feb-22	12-Feb-22	19-Feb-22	26-Feb-22	05-Mar-22				
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009 - Coordination with stakeholders																																															



April 15<sup>th</sup>, 2021

## DETAILED WORK PLAN FOR UTILITY ENGINEERING

### Phase 1 – Utility Designating

### Phase 2 – Utility Locating (Vacuum Excavations)

**Santaquin Main St-100 W to 300 E**

**Santaquin, UT**

*Submitted to:*



**J-U-B Engineers, Inc.**  
240 West Center St Suite 200  
Orem, UT 84057  
p. 801.319.8267

*Submitted by:*

**Utility Mapping Services, Inc.**



[www.umsi.us](http://www.umsi.us)  
2724 South 3600 West Suite K  
West Valley City, UT 84119  
p. 801.310.9347



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## **DETAILED WORK PLAN FOR UTILITY ENGINEERING**

### **Phase 1 – Project Corridor Utility Investigation, 2-D QL B Utility Designating**

### **Phase 2 – Utility Locating (Vacuum Excavations)**

## **Santaquin Main Street, from 600 West to 300 East Santaquin, Utah**

### **Executive Summary**

Utility Mapping Services (UMS) scope of work is to perform utility engineering (UE, a.k.a. subsurface utility engineering or SUE) services as a sub-consultant for J-U-B Engineers, Inc. (a.k.a. “Client”) which is the prime consultant under contract with Santaquin City (a.k.a. “Owner”). A utility investigation will be executed in accordance with ASCE standards to designate and depict existing infrastructure for integration within the conflict analytic process and design.

**Note: Refer to Section 7 for the proposed project schedule, which is the basis for the associated SUE cost estimate. A revised or expedited schedule will result in additional costs which have not been included with this proposal.**

### **Section 1 - Statement of Scope of Work**

This work will be performed in accordance with the American Society of Civil Engineers Construction Institute Standard 38-02 (ASCE/CI 38-02), and includes the following activities:

- Compilation of utility data (i.e. records and as-built information) acquired by UMS and others.
- Creating a schematic existing utility map based solely on record information.
- Preparation of field books, log sheets, and crew scheduling and logistics for the initial utility designating field campaign.
- Phase 1: 2D QL B data acquisition (using electromagnetic (EM) induction, acoustic, and/or other geophysical technologies), characterization, and 2D depiction (CAD file) of existing utility infrastructure data to develop a reliably qualified base map and data set from which to develop and support future design, coordination, and construction decisions.
- Phase 2: Vacuum Excavations at specific utility target locations to be determined by the project design team and utility coordination staff.
- Populating utility data management system GEOfeature™ with hydraulic structure and test hole information from the field investigation.

*\*Note: QL refers to the quality level as described in ASCE/CI 38-02 Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data.*

*\*\*Note: GEOfeature™ is a 3-D digital utility data repository designed to manage existing and new infrastructure as-built data in accordance with the new ASCE “As-Built” standard. The repository includes a tablet and Web-GIS application for in-the-field utility data acquisition and viewing.*

### **Phase 1 Designating**

Although Phase 1 utility designating of buried infrastructure will have goal of QL B (i.e., position is determined via a combination of geophysical, survey and engineering methods) some facilities such as



non-conductive water are pragmatically designated to a mixture of QL C (i.e., based on surveyed surface features and record data), B, and A (i.e., exposed survey grade observations such as possible at manholes) during the Phase 1 field effort. Likewise, some non-conductive piping and/or ducts lacking tracer wire may be designated to QL D (i.e., based on evidence consisting of available record information and/or verbal accounts) during the Phase 1 effort. Data quality is improved as and where required during subsequent project utility engineering phases. Any utilities designated to QL C and/or QL D quality levels will be explained and described in the Phase 1 SUE existing utility report as to why a quality level below QL B has been used.

All work is intended to incorporate and stem from previous efforts performed by the Owner, Client and their consultants, and will be performed in compliance with applicable project design standards, procedures, and accepted engineering principles. Information contained within this SOW and corresponding labor and cost estimate is based on: project standards and deliverables; Federal Highway Administration (FHWA) *Avoiding Utility Relocations* (DTFH61-01-C-00024); FHWA guidelines for SUE; the American Society of Civil Engineers (ASCE) *Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data* (ASCE/CI 38-02); and the ASCE/CI framework for the new *Standard for Recording and Exchanging Utility Infrastructure Data* (draft).

### Phase 2 Locating

The Phase 2 investigation primarily consists of utility locating (discrete QL A vacuum excavated test holes). UMS and a vac truck contractor will perform excavation operations and the engineering survey of each test hole location. The test hole locations will need to be coordinated between UMS and project team based on identified utility conflicts and areas where more detailed data, including three-dimensional coordinates, are required to complete designs and mitigate/accommodate conflicts. For the purpose of this work, “locate” means to establish by engineering, surveying, drafting, and vacuum excavation practices the accurate horizontal and vertical position of subsurface utilities with vertical tolerances of generally 0.1 feet based on referenced benchmarks. Written logs for all test holes are utilized, derived elevations are transcribed onto CAD reference files, and “locate” points are mapped to Quality Level A on the plans.

## **Section 2 - Recommendations**

Although not specifically requested by the Client, UMS strongly recommends the following locate methods be included with the utility mapping effort for this project:

- Ground penetrating radar (GPR) sweep of the project area. UMS employs state-of-the-art IDS GeoRadar Stream C multi-channel GPR with RTK GPS navigation and 3D time slice data processing software. This combined technology enables grossly enhanced investigative measures for searching for buried unknowns and provides useful depth information.
- A project area sweep using a Geonics EM61-MK2 high sensitivity metal detector. This equipment is suitable for the detection of both ferrous and non-ferrous metal.

Note: Both of these sweeps can be completed during either Phase 1 or 2 field operations.

Additional work products the Client may wish UMS adapt into the work scope include:

- Continuous 3-D profile data in lieu of vacuum excavations. UMS uses the Vivax-Metrotech Spar 300 electromagnetic induction system which derives 3D alignment data for conductive utilities. This tool can provide highly valuable, continuous 3D profile data, reducing the number of excavated test holes and Phase 2 costs.

- CAD 3D modeling of the identified existing utilities for improved design, conflict analytics, and advanced resolution engineering

### Section 3 - Project Limits

The project limits include a QL B field investigation and corresponding designating of existing utilities within the project area along Main Street, between 600 West and 300 East in Santaquin, Utah County, Utah. The project area can be seen in Figure 1 below.

The designating of some individual utilities may extend beyond the noted SUE project limits to include surface features or structures which are necessary to complete QL C alignments. Table 1 presents the utility owners listed by Blue Stakes of Utah as being present within or nearby the project area, along with the estimated lineal footages which are the basis for the Phase 1 cost estimate. Table 2 presents the proposed utility designating quality levels for the various facilities that are anticipated.

Figure 1-Overview of project limits. Project limits are along Main Street 100 West and 300 East.

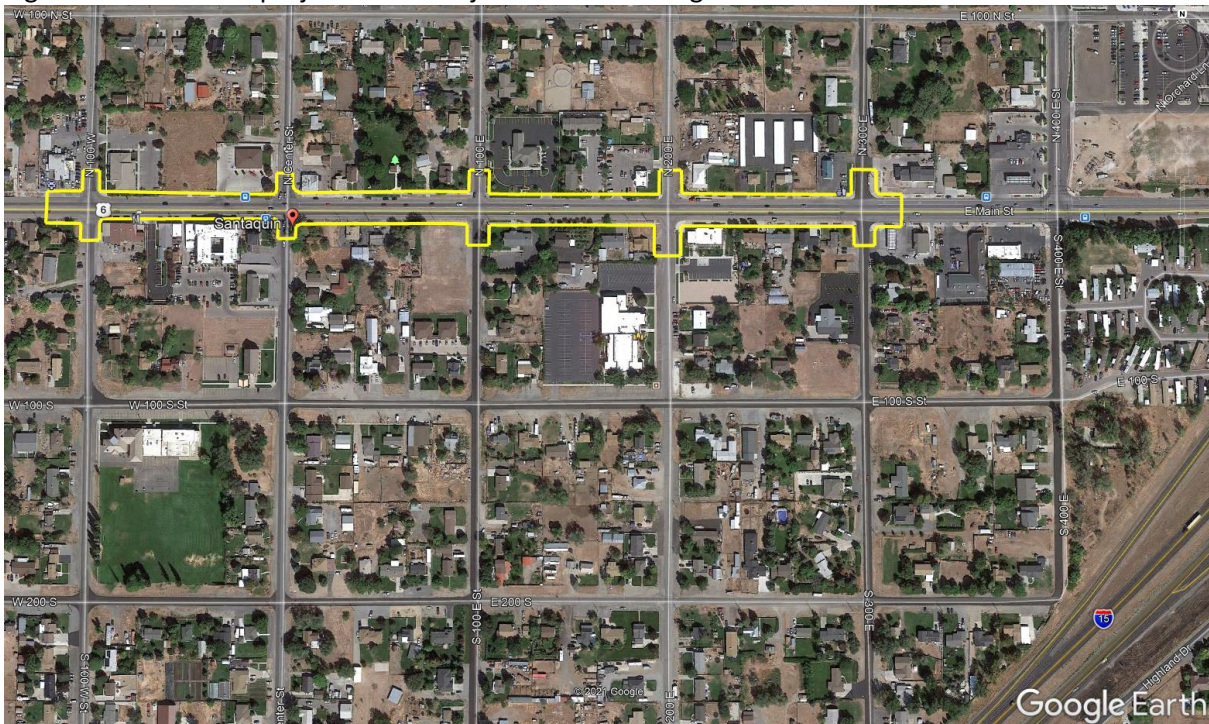




Table 1. Utility Owners and Estimated Lineal Footages for the QL B Phase 1 Utility Designating Area, based on Blue Stakes of Utah for the project area.

Owner	Utility	Estimated Lineal Footage
AT&T*	Fiber Optics	2,700
CentraCom*	CATV, Phone	2,900
CenturyLink*	Phone, Fiber	11,800
Dominion Energy*	Gas	4,800
Nephi City*	Power, Gas, Water	8,100
Rocky Mountain Power*	Electric	1,700
Santaquin City*	Storm, Sewer, Water	10,800
UDOT*	Fiber, Traffic	5,700
	<b>Total</b>	<b>48,500</b>

\*Record information not available at the time of estimate.

Table 2. Proposed designation of utilities for the subject project Phase I SUE investigation.

Utility Type (Buried)	Mains & Primary Laterals	Services / Secondary Laterals
Storm Drain	QL A at accessible inlets/outlets; QL C between accessible features	N/A
Sanitary Sewer	QL A at accessible inlets/outlets; QL C between accessible features;	QL D (based on available records from Santaquin City)
Culverts	QL A at accessible inlets/outlets; QL C between accessible features	N/A
Telecommunication	QL B	QL B
Cable TV	QL B	QL B
Natural Gas	QL B	QL B
Traffic Signals	QL B	N/A
ATMS	QL B	N/A
Lighting	QL B	N/A
Water Mains	QL B	QL B
Buried Power	QL B	QL B
Private sprinklers	Not included in this scope of work;	N/A
Petroleum	None anticipated	
Military Comm.	None anticipated	N/A
Wells (Water, Crude Oil, Natural Gas)	Presently not included in this scope of work; however, wells encountered incidental to the field work will be noted.	N/A

Note: QL refers to the quality level as described in ASCE/CI 38-02 Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data.

## Section 4 - Project Deliverables

Utility Engineering deliverables include digital and hardcopy submittals of the following:

- CAD utility reference file based on Phase 1 findings.
- Hydraulics summary report (pdf format).
- Vacuum excavation (test hole) summary report (pdf format).
- A P.E. sealed SUE existing utility plan set with quality level designations.
- A P.E. sealed submittal report summarizing this investigation with highlights of unusual findings.

In addition, UMS will provide ongoing interpretive support to assist design engineers and utility coordinators with subsequent findings and ensure submitted data is properly understood and utilized.

## Section 5 - Project Assumptions

Phase 1 Assumptions:

- UMS utility research will stem from previous records investigation work performed by the Client. UMS requests all previously obtained records be provided upon Notice to Proceed. Reasonable efforts will be made to obtain supplemental utility records to produce the deliverables within the project schedule. The timely cooperation of utility owners may be necessary to develop the utility inventory map for facilities within the project area.
- All field work will be completed while the project corridor is clear of snow and ice.
- Labor to complete line of sight surveying is currently not included within this scope of work. UMS assumes RTK GPS/GNSS survey operations will be sufficient to map all utilities.
- Sufficient project survey control exists along the project corridor for RTK GPS survey operations; consequently, labor for establishing survey control is currently not included within this scope of work and the associated cost estimate.
- A maximum of 2 days of traffic control will be required for Phase I operations. Traffic control measures are not expected to require flagging operations.
- Confined space entry will not be required for this effort. All storm drainage, sanitary sewer, and any other measurements within confined spaces will be taken from the surface without entry into the confined space.
- Aerial clearance measurements will not be required for the Phase 1 effort. The locations of aerial wires, however, can be noted for clearance observations by others or during subsequent Phase 2 operations but are not included in this work scope and estimate.
- Vertical (depth and elevation) QL A observations will be tied to project control to an average accuracy of +/- 0.1 feet.
- UMS assumes all work will be completed during regular working hours (8:00 AM to 5:00 PM) and without start/stop time restrictions.
- Field crews will use paint to mark out the utility alignments and assume no paint removal will be required.

Client and / or Owner will:

- **Obtain all necessary right-of-entries, security clearances, etc. (including private land access) to allow UMS field personnel to work outside the roadway right-of-way.**
- Provide information showing the project limits, alignment, profile, survey control points, benchmark data, coordinate data, relevant design and topographic CAD files, aerial photographs, and any other applicable information.

- Provide survey control information **prior** to UMS field crews arriving on-site.
- Provide any record or relevant survey or LIDAR information previously obtained by others.
- Assist UMS as necessary with obtaining permissions for access to private utility facilities.

Phase 2 assumptions:

- Vacuum excavations which fail to expose the target utility after attaining a reasonable depth (6-7') will still be considered a completed excavation.
- A maximum of three days of traffic control will be required for Phase 2 operations. Traffic control measures are not expected to require flagging operations.
- Each excavation is accessible to the vac truck and crew.
- Up to 8 excavations in asphalt/concrete pavement which will require concrete/asphalt coring. Flowable fill will be used as backfill and perma-patch for surface restoration to repair the concrete/asphalt plug.
- The remaining 6 test holes are assumed to be located in the dirt, outside of the pavement areas.
- T-patch and/or Hot patch repair is not included with this proposal.

UMS will perform the following coordination activities:

- Work closely with the Client and Owner to facilitate the orderly progress and timely completion of the approved tasks.
- Coordinate the work effort with the Client to discuss progress and resolve problems.
- Upon request provide the Client copies of logs and/or correspondence that document work-related communications between utility owners, outside agencies, and/or private landowners.
- Coordinate operations with private and public utility infrastructure owners.
- Obtain required One Call (Call 811) tickets.
- Provide all necessary equipment, supplies, and support personnel to secure data outlined in this section.

Associated labor and costs may increase if actual conditions deviate significantly from those assumed for this estimate. UMS will work with the Client in good faith to complete operations in a timely manner and will negotiate new pricing if conditions encountered significantly deviate from those assumed.

The results of the Phase 1 efforts will be pertinent at the time in which field investigation operations are completed and are subject to change. Subsequent SUE investigations may be necessary to account for any new or changed utility installations

## **Section 6 - Project Coordination**

The UMS project management team will consist of:

- Project Engineer, Cameron Greer, cgreer@umsi.us, 801.910.5366
- Project Geologist, Matthew Palmer, mpalmer@umsi.us, 801.310.9347
- Principal Engineer, Phil Meis, P.E., pjmeis@umsi.us, 406.552.0883

If required, a monthly progress report will be prepared by the project manager and submitted via email to Client project management to document the SUE investigation. During the project time frame UMS

project management staff members can be available to meet in person with Client project management for any urgent reason. Cell phone numbers for all of the UMS project management team members will be available to the Client should immediate communication be desired.

## Section 7 - Project Schedule

UMS can typically begin work within two weeks of receiving notice-to-proceed (NTP). Based on assumed conditions identified in this scope of work, the following is the estimated project schedule:

- The initial effort will consist of requesting record information from each utility owner in the area. Depending on utility owner response time, it may take **up to two weeks** to gather all the record prints and as-built information.
- Utility designating field operations are estimated to require approximately **10 days** for a 2-person field designating crew, with an **additional 5 days** required to complete the location survey. Field operations will generally begin shortly after the utility record information has been compiled. However, the **actual start date will be dependent on the field crew schedule and availability at the time of NTP is provided.**
- Final submittals will require **two to three weeks** after the field work has been completed to include the QL B CAD drawing, utility database preparation, along with completion of QA review and discrepancy resolution efforts.
- The Phase 2 schedule will be developed after completion of the Phase 1 effort.

UMS, at its own discretion, may assign different personnel to perform tasks specified within the work scope and estimate based on staff availability and project schedule.

UMS is prepared to add crew members as necessary to ensure necessary production levels are met and submittals are timely for utility coordination and design development.

## Appendix A

### SUE and the ASCE/CI 38-02 Standard Guidelines

Data collection activities will follow ASCE/CI *Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data* (Standard ASCE/CI 38-02, Construction Institute of the American Society of Civil Engineers, Reston, VA, 2002, 20 p). Perhaps the most significant contribution of the ASCE/CI standard is the development of a formalized procedure for qualifying and designating the general quality of the depicted individual facilities. Table below summarizes the four quality level (QL) definitions included in the ASCE/CI standard. Included with the definitions are comments on the relative positional accuracy for the corresponding quality levels.

Adherence to ASCE/CI depiction standards along with the use of records research, geophysical methods, vacuum excavation, and engineering survey combined in a phased approach and guided by professional judgment, has often been referred to as Subsurface Utility Engineering (SUE). In proper context, SUE, or more recently simply referred to as “Utility Engineering”, is a rather complex and important series of engineering tasks, procedures and associated responsibilities established to manage risk, promote efficiency, and reduce costs; the utility mapping and designation of quality levels, in fact, provides the data set with which the utility engineering process begins. In a broader sense, utility engineering involves utilizing the qualified utility data sets to conduct the following engineering activities:

- systematically identify, itemize, and define apparent conflicts between proposed designs and existing utilities;
- optimize design development and mitigate utility conflicts;
- identify and accommodate other infrastructure, planned betterments and new installations;
- conduct effective utility coordination in which resolutions to conflicts are derived that serve the best interests of the public and all stakeholders involved;
- develop construction plans and bid documents which concisely identify and provide details of outstanding conflicts for construction planning, bidding, and execution; and
- encourage value engineering and mitigation of cost implications to all infrastructure systems which provide service to commerce, government, and the general public.

Protocols for SUE / utility engineering as established by the Federal Highway Administration (FHWA) and the applicable state DOT will be followed for this project. The SUE process utilizing the ASCE/CI 38-02 standard guideline for acquiring and depicting existing utilities provides a framework to obtain and represent the requested utility information in a pragmatic and cost effective manner.

ASCE quality levels (QLs) for depicting facilities in accordance with SUE protocol.

QL	Description	Resulting Positional Accuracy and Data Completeness
D	Information derived from existing records or oral recollections.	Data may be completely erroneous. Only the records indicate the utility is somewhere.
C	Information obtained by surveying and plotting visible above ground utility features and by using professional judgment in correlating this information to available records and QL D information. QL C is usually used to map non-conductive pipes, deep utilities, or when EM signal interference and distortion is too significant.	Positional accuracy of surface features is to within 0.1 feet; however, alignments between surface features is to schematic levels, providing general direction of alignment. Typically, according to FHWA studies, 15% to 30% of the utility data may be erroneous or missing.
B	<p>Information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities. QL B data should be reproducible at any point of their depiction using surface geophysical methods. This information is surveyed to applicable tolerances defined by the project and reduced onto plan documents.</p> <p>However, only the point of peak signal is mapped; consequently, while a QL B point can be reproducible using geophysics, the signal can be distorted due to the superposition of EM fields from adjacent conductors and not lie horizontally above the target. Experienced SUE operators help identify and mitigate these issues. However, QL A data is recommended for design / construction work to be performed in the immediate proximity of QL B depicted utilities to provide definitive positional accuracy.</p>	<p>Positional accuracy statement with confidence level is <b>not feasible</b> unless electromagnetic (EM) fields are completely mapped and statistical analysis is used to derive alignments from the linear anomalies; in addition, sufficient ground truth sampling (e.g., test holes) is required. This level of geophysical survey and analysis effort required is often not practical or cost effective. In practice, experienced SUE designators can determine utility alignments reasonably well. Professional judgment is exercised to distinguish incidents of “bleed-over” and when apparent alignments don’t make sense. Available utility records are compared with field findings to confirm completeness of the QL B data. QL B rating, as a rule of thumb, is generally estimated to +/- 1 foot horizontally for utilities less than 5 feet deep. Inductive electromagnetic signals diverge spherically, which is to say deeper targets have broader and weaker peak inductive signals; consequently horizontal accuracy degrades with depth. Utilities over 10 feet deep are very difficult to position horizontally using standard inductive equipment. Vertical accuracy cannot be reliably derived using EM inductive methods as computed depths are often inconsistent and can be highly misleading unless regular ground truth (i.e. test holes) are available to confirm accuracy.</p>
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. Minimally intrusive excavation equipment is typically used to minimize the potential for utility damage. With QL A observations, a relatively precise horizontal and vertical depiction, as well as other utility attribute data, are shown on plan documents. Accuracy is typically about 0.1 feet vertical, and to applicable horizontal survey and mapping accuracy as defined or expected by the project owner and as limited by the survey equipment and methodology used to perform the measurement.	<p>This is the only QL to which a positional accuracy statement might be made. QL A is as accurate as the reference horizontal and vertical control accuracy will permit and the methodology used to make the measurement and derive the coordinates. Note that in some cases involving inverts, direct measurements may not possible; consequently, QL A designation can only indicate that a relatively accurate position has been determined on the subject facility at that discrete location.</p> <p><i>In some cases an <b>apparent</b> minimum depth of clearance is provided. This is not QL A data as the utility has not been exposed. The utility apparently lies in line with the test hole, but is deeper than can be reached via vacuum excavation based on the detected geophysical signal. However, the minimum depth data is provided for informational purposes for planning consideration.</i></p>

By ASCE/CI 38-02 definition, utility record data is classified as quality level (QL) D and will cause inconsistent and erroneous interpretation due to the following: 1) utilities are inaccurately positioned and in reality may or may not pose as an issue for proposed construction; 2) utility installations may vary due to recent improvements or changes and may not be properly documented; 3) some existing facilities may not be reported or identified and are missing from the data set; and 4) incomplete or inaccurate records can likewise cause misleading and erroneous field markings by third party contract locators or utility owner field personnel. In addition, buried unknowns can cause deceptive geophysical phenomena and interference which severely alter induced current flow and distort corresponding electromagnetic fields; these issues commonly occur, are difficult to detect and decipher, and greatly complicate detection and interpretive efforts. Consequently, ASCE/CI 38-02 standard guidelines were developed to overcome these problems and permit systematic upgrading of utility data designation to QL C, B, and A to facilitate subsequent design, conflict resolution engineering, and utility coordination work. The ASCE/CI 38-02 guidelines require:

- calibrated geophysical prospecting methods performed by qualified, experienced field personnel;
- methodical field investigation and verification practices;
- research and field identification of installation type, size, and material;
- land survey methods to accurately tie data to project coordinates;
- supplemental field and records investigation to prevent overlooked facilities;
- quality assurance review that includes owner written confirmation of depicted facilities; and
- a qualified registered professional engineer of record who thoroughly understands geophysical theory, has experience with all issues and pitfalls associated with mapping buried infrastructure, directly oversees the effort, and is directly accountable for all aspects of the work product.

### Limitations

Professional subsurface utility engineering services are to be performed in accordance with generally accepted engineering principles and practices at this time. Adherence to ASCE/CI 38-02 standards and good practices by experienced utility engineering personnel typically ensures development of a very good data set; practical restrictions in budget, schedule, access and equipment, however, can limit acquisition and interpretation efforts. The Phase 1 effort retraces detectable utility alignments within the project area to obtain QL B data wherever possible, collating information from records obtained from the utility owners, and relating records with observable surface features. A possibility will always exist that abandoned, forgotten, non-detectable or undocumented utilities are not mapped using standard SUE procedures previously described. Utilities possessing characteristics mentioned below can be overlooked while following standard SUE investigative procedures:

1. Utilities without apparent records available, without apparent surface features, and not detected through standard search procedures.
2. Utilities with records which are illegible or incomplete.
3. Utilities that are inaccurately reported or inaccurately represented by the owner as lying a significant distance from the true position.

4. Abandoned utilities lacking records and apparent surface features, and are not detected through standard search procedures.
5. Utilities buried excessively deep (as a rule of thumb, utilities located deeper than 10 feet), beyond detection limits of standard designating equipment and standard vacuum excavation equipment.
6. Non-conductive utilities buried in clay soil and lacking apparent surface features.
7. Facilities installed subsequent to the utility designating field investigation effort.
8. Individual utilities in a common trench. Designating of common trench utilities can be difficult due to EM signal bleed over and difficulties in separating EM signals. Cathodic Protection connections between individual pipelines also increases the difficulty of determining individual pipe alignments.

A pragmatic effort will be made to systematically designate and depict buried utilities within the corridor to the extent practical for the authorized project budget and schedule. UMS must be kept advised throughout the design process to: 1) assess subsequent verbal accounts or record evidence on infrastructure which do not agree with or contradict the submitted data set; 2) evaluate designer evaluation and usage of the qualified and depicted utility data, especially QL C and D data; and 3) provide recommendations for further utility investigations as deemed prudent.

Final utility plans are for design purposes only and reflect subsurface utility conditions at the time surveyed. Existing utility locations depicted on the plans do not supersede statutory mandates including Utah 811 notification; the contractor shall call 811 two business days prior to construction and obey mandates as required by law. The Client and UMS should be notified of any discrepancies between the utility designating results and Utah 811 notification markings, and caution shall be used by the contractor until discrepancies are resolved.

**Contractor shall call the utility notification service (Utah 811) before excavating as required by Law.**



R3.19.19CO

**Utility Mapping Services, Inc.**

**Cost Proposal for Utility Designating**

**Project Name:** Santaquin Main St 100 W to 300 E

UMS Project No: 11697

Date: April 15, 2021

Owner: Santaquin City

Contact: Craig Friant, P.E.

Address: 240 West Center Street, Suite 200, Orem, Utah 84057

Phone: 801-319-8267

Email: cfriant@jub.com



Utility Mapping Services, Inc.

2724 South 3600 West, Unit K

West Valley City, UT 84119

801.310.9347

[www.umsi.us](http://www.umsi.us)

email: mpalmer@umsi.us

**Subsurface Utility Engineering - Phase 1 Assumptions: 48500 lineal feet of utilities**

**A two man designating crew for 10 days**

**An engineering survey for 5 days**

Project Task No.	Project Task Description	Project Manager	Project Engineer	Senior Engineer	Principal Engineer	Field Ops Manager	Field Specialist II	Field Specialist I	Staff Engineer	Clerical	Total Hours	Task Subtotal
1100	Project Preparation and Management, Meetings	2.00	2.00	1.00	1.00	2.00	2.00		2.00	4.00	16.00	1917.62
1200	Records Research and Review	4.00				4.00	2.00				10.00	1219.63
1300	Mobilization					10.00	10.00		10.00		30.00	3293.04
1400	Field Designating					80.00	80.00				160.00	17247.71
1500	Engineering Survey								40.00		40.00	4548.31
1600	CADD Development		40.00								40.00	4453.21
1700	Database Development		12.00								12.00	1335.96
1800	Project Documentation & QA/QC	2.00	8.00	2.00	2.00	8.00	4.00		2.00		28.00	3309.69
1900	Submittal Preparation	2.00	8.00	2.00	2.00					4.00	18.00	2224.78
	Phase I Hours	10.00	70.00	5.00	5.00	104.00	98.00	0.00	54.00	8.00	354	
	Hourly Raw Rates	47.05	37.28	49.85	49.85	37.88	34.30	27.68	38.07	38.29		
	Total Direct Raw Rates	470.53	2609.25	249.25	249.27	3939.94	3361.48	0.00	2055.83	306.35	13242	
	Fully Burdened Rates	140.54	111.33	148.89	148.90	113.15	102.45	82.66	113.71	114.37		
	Total Burdened Rates	1405.36	7793.12	744.44	744.50	11767.52	10039.82	0.00	6140.22	914.98	39550	39549.95
											13241.90	
											35116.20	
											4213.94	
											219.82	
											39549.95	

Item	Unit	No. of Units	Unit cost	
CADD Station	hour	40.00	11.45	458.00
Survey Equipment (Trimble R8 RTK GPS)	day	5.00	146.00	730.00
Geofeature Database Fee	hour	12.00	27.00	324.00
Specialty Field Vehicle	mile	1000.00	0.560	560.00
GSA Meals (Travel Day)	day	8.00	41.25	330.00
GSA Meals (Full Day)	day	12.00	55.00	660.00
GSA Lodging	day	16.00	96.00	1536.00
Total Direct Costs				4598.00

UMS Services **\$44,147.95**

Traffic Control (does not include flaggers)	day	2.00	1000.00	2000.00
Permits (Fee assumed to be waived)	ea	0.00	500.00	0.00

\*traffic control and permit costs are approximate; actual costs will be invoiced.

THIS ESTIMATE IS VAILD FOR 60 DAYS FROM THE DATE POSTED AT THE TOP OF THIS PROPOSAL

**SUE Phase 1 Total \$46,147.95**

R3.19.19CO

**Utility Mapping Services, Inc.**

**Cost Proposal for Utility Locating**

**Project Name: Santaquin Main St 100 W to 300 E**

UMS Project No: 11697

Date: April 15, 2021

Owner: Santaquin City

Contact: Craig Friant, P.E.

Address: 240 West Center Street, Suite 200, Orem, Utah 84057

Phone: 801-319-8267

Email: cfriant@jub.com



Utility Mapping Services, Inc.

2724 South 3600 West, Unit K

West Valley City, UT 84119

801.310.9347

[www.umsi.us](http://www.umsi.us)

email: mpalmer@umsi.us

**Subsurface Utility Engineering - Phase 2 Utility Locating: Assuming 14 vacuum excavation holes on utilities less than 7-feet in depth, 8 holes in pavement, and 6 in dirt.**

Project Task No.	Project Task Description	Project Manager	Project Engineer	Senior Engineer	Principal Engineer	Field Ops Manager	Field Specialist II	Field Specialist I	Staff Engineer	Clerical	Total Hours	Task Subtotal
2100	Work Plan, H&S, Traffic, Permits	4	2	1	1	2			2	2	14.0	\$1,765.05
2200	Mobilization					4			3		7.0	\$793.72
2300	Test Hole Staking/Designating								2		2.0	\$227.42
2400	Utility Locating					24					24.0	\$2,715.58
2500	Engineering Survey								2		2.0	\$227.42
2600	CADD Development		2								2.0	\$222.66
2700	Database Development		2								2.0	\$222.66
2800	Project Documentation & QA/QC	2	2	1	1	2			2		10.0	\$1,255.23
2900	Submittal Preparation	3	2	1	1					2	9.0	\$1,170.80
	Phase II Hours	9.0	10.0	3.0	3.0	32.0	0.0	0.0	11.0	4.0	72	
	Hourly Rates	47.05	37.28	49.85	49.85	37.88	34.30	27.68	38.07	38.29		
	Total Direct Rates	423.48	372.75	149.55	149.56	1212.29	0.00	0.00	418.78	153.17	2879.59	
	Fully Burdened Rates	140.54	111.33	148.89	148.90	113.15	102.45	82.66	113.71	114.37		
	Total Burdened Rates	1264.82	1113.30	446.67	446.70	3620.77	0.00	0.00	1250.78	457.49	8600.54	\$8,600.54
	Total Raw Labor										2879.59	
	Total Labor and Overhead									165.19%	7636.37	
	Fixed Fee									12.00%	916.36	
	FCCM									1.66%	47.80	
	<b>Labor Costs</b>										<b>8600.54</b>	

Item	Unit	No. of Units	Unit cost	
CADD Station	hour	2.00	11.45	22.90
Survey Equipment (Trimble R8 RTK GPS)	day	1.00	146.00	146.00
Geofeature Database Fee	hour	2.00	27.00	54.00
Specialty Field Vehicle	mile	200.00	0.560	112.00
<b>Total Direct Costs</b>				<b>334.90</b>

**UMS Services 8935.44**

Test Hole	ea	14.00	400.00	5600.00
Pavement Repair and Resurfacing	ea	8.00	150.00	1200.00
Pavement Coring	ea	8.00	150.00	1200.00
Mob and Dump Fees	day	3.00	250.00	750.00
Flowable Fill	ea	8.00	90.00	720.00
Lodging	day	2.00	240.00	480.00
Per Diem 2 people	day	2.00	120.00	240.00
Permit	ea	1.00	1000.00	1000.00
Traffic Control (does not include flaggers)	day	3.00	1000.00	3000.00

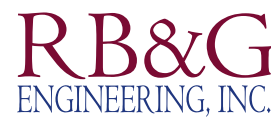
**Vendor Services, Permits, Traffic Control 14190.00**

\*traffic control, vac truck and permit costs are approximate; actual costs will be invoiced.

THIS ESTIMATE IS VALD FOR 60 DAYS FROM THE DATE POSTED AT THE TOP OF THIS PROPOSAL

**SUE Phase 2 Total \$23,125.44**

April 15, 2021



Mark Christensen  
JUB Engineers, Inc.  
240 W Center Street, Suite 200  
Orem, UT 84057

Re: Santaquin Street Improvement Project

Dear Mr. Christensen:

In accordance with your request, we are outlining below our proposal to perform a geotechnical investigation and pavement section design for the proposed Santaquin City Street Improvement Project located in Santaquin, Utah. It is our understanding that the city has divided the project into two phases, with the first phase consisting of improvements along Main Street from 300 East to 100 West and the second phase continuing along Main Street from 100 West to 600 West. This proposal includes a separate cost for each phase.

RB&G Engineering performed a geotechnical investigation and pavement analysis in 2010 for the Santaquin City Street Improvement Project extending from 100 East to 400 East. We understand that only the portion of that project east of 300 East street was constructed.

We propose to provide the following scope for the geotechnical investigation:

- Drill three borings per block along Main Street as requested, each boring extending 10 feet below the surface.
  - Obtain asphalt cores to determine condition of existing pavement where borings are on existing pavement.
- Drill additional borings on side streets and perform permeability testing to provide percolation rates for possible storm drain infiltration galleries.
  - Two locations in the first phase, three locations in the second phase, as requested.
  - Side street borings each extend 25 feet below existing surface.
- Based on the results of the field investigation and appropriate laboratory tests, provide pavement design recommendations.
  - Determine the suitability of the pavement sections presented in the 2010 report for the current project.
  - Perform additional pavement analysis, as necessary.
  - Pavement design will be performed in accordance with the 1993 AASHTO Pavement Design Guide and based on traffic loading provided by others.

Our proposal to perform the soil investigation based upon the above scope of work is as follows.

## 1. SUBSURFACE INVESTIGATION

We propose to furnish all labor, materials, and equipment to perform the work indicated above. For the pavement borings located along Main Street sampling will be performed continuously to a depth of at least 6 feet, followed by an additional sample from 8.5 to 10 feet. For side street borings with permeability testing, sampling and permeability testing will be performed at 2.5 to 3 foot intervals. Standard penetration values will be recorded at each sampling interval. Where cohesive materials are encountered, undisturbed samples will be obtained for appropriate laboratory testing. Bulk samples will be obtained at select locations for laboratory testing.

Borings were drilled in 2010 for the portion of the first phase of the project extending from 100 East to 300 East. No additional borings are planned for this project within that stretch.

Each boring will be logged in the field and each sample will be classified visually according to the Unified Soil Classification System. The location at which groundwater is encountered will be noted on the boring logs. Our cost for performing this phase of the work is as follows:

### Phase 1 Field Investigation (investigating from 100 East to 100 West)

A	Number of borings	8	(6 to 10 ft in Main St., 2 to 25 ft in side streets)			
B	Drill Rig Plus Crew	18	hrs	@	\$195.00 /hr	\$3,510.00
C	Geologist/Engineer	20	hrs	@	\$115.00 /hr	\$2,300.00
D	Technician (Bluestaking)	3	hrs	@	\$55.00 /hr	\$165.00
E	Traffic Control (cost +10%)	est.			\$500.00	\$500.00
Subtotal						\$6,475.00

### Phase 2 Field Investigation (investigating from 100 West to 600 West)

A	Number of borings	18	(15 to 10 ft in Main St., 3 to 25 ft in side streets)			
B	Drill Rig Plus Crew	37	hrs	@	\$195.00 /hr	\$7,215.00
C	Geologist/Engineer	39	hrs	@	\$115.00 /hr	\$4,485.00
D	Technician (Bluestaking)	3	hrs	@	\$55.00 /hr	\$165.00
E	Traffic Control (cost +10%)	est.			\$900.00	\$900.00
Subtotal						\$12,765.00

Traffic control costs are estimated with the assumption that lane shifts will be allowed and full lane closures with flaggers will not be required. Traffic control costs could vary significantly depending on city requirements.

## 2. LABORATORY TESTING

The exact type and number of laboratory tests cannot be completely defined until the field investigations have been completed. It is anticipated, however, that the following testing program will likely be required to define the strength and compressibility characteristics of the subsurface material:

**Phase 1 Lab Testing (investigating from 100 East to 100 West)**

A	Classification (Gradation or Plasticity)	13	tests	@	\$75.00	/test	\$975.00
B	Unconfined Compression	2	tests	@	\$75.00	/test	\$150.00
C	Consolidation with Collapse/Swell Potential	2	tests	@	\$100.00	/test	\$200.00
D	Moisture-Density Relationship (Proctor)	1	tests	@	\$125.00	/test	\$125.00
E	1-Point CBR	1	tests	@	\$125.00	/test	\$125.00
Subtotal							\$1,575.00

**Phase 2 Lab Testing (investigating from 100 West to 600 West)**

A	Classification (Gradation or Plasticity)	29	tests	@	\$75.00	/test	\$2,175.00
B	Unconfined Compression	4	tests	@	\$75.00	/test	\$300.00
C	Consolidation with Collapse/Swell Potential	4	tests	@	\$100.00	/test	\$400.00
D	Moisture-Density Relationship (Proctor)	2	tests	@	\$125.00	/test	\$250.00
E	1-Point CBR	2	tests	@	\$125.00	/test	\$250.00
Subtotal							\$3,375.00

It will be noted that the testing has been defined in terms of the number, type, and unit cost so that modifications can be made in the total cost for the laboratory testing, depending upon the actual tests performed. No additional tests will be performed without authorization from your organization. Soil samples remaining upon completion of laboratory testing will be discarded after 60 days unless arrangements are made for transfer of samples to you or longer-term sample storage.

### 3. ANALYSIS AND REPORT

The results of the field and laboratory tests will be analyzed and summarized in the form of a written report to be submitted to you in digital format. Up to three hard copies can be provided upon request. The information contained in the report will include the following: (1) Geological and Existing Site Conditions, (2) Subsurface Soil and Water Conditions, (3) Pavement Considerations and Recommendations, (4) Site Preparation and Compacted Fill Requirements, (5) Design Recommendations for Infiltration Galleries, and (6) The Results of Field and Laboratory Tests. Our cost for performing this phase of the work will along with the total amount for the investigation, testing and report is shown in the following table.

Phase	Description	Analysis and Report	Total
1	300 East to 100 West New investigation from 100 East to 100 West	\$2,000.00	\$10,050.00
2	100 West to 600 West	\$2,500.00	\$18,640.00

If the investigation for both phases is completed during one mobilization and the analysis is summarized in a single report for both phases, the total cost would be \$27,690.00. This reflects a \$1,000.00 savings for completing the entire project in one investigation and report over completing the two phases separately.

This cost assumes that access to the drill sites will be available for a drill rig mounted on a 2-ton truck, and that the work can be performed continuously during daytime hours (between 7 AM and 6 PM). Any permitting fees incurred by RB&G Engineering will be invoiced to the project.

We understand that the project schedule would allow starting the field work on or after the second week of May and that the report would be needed within a month of starting the field work. We are prepared to meet this schedule provided we receive notice to proceed at least two weeks prior to the desired start date for drilling. We appreciate the opportunity to submit this proposal to you, and hope we can be of service to you on this project.

Sincerely,

RB&G ENGINEERING, INC.

A handwritten signature in black ink, appearing to read "Jacob S. Price". The signature is fluid and cursive, with the first name "Jacob" being more prominent.

Jacob S. Price, Principal

## Exhibit 1-E – Detailed Scope of Services

### DETAILED SCOPE OF SERVICES BY J-U-B

J-U-B's Services under this Agreement are limited to the following tasks. Any other items necessary to plan and implement the project, including but not limited to those specifically listed in PART 3, are the responsibility of CLIENT.

#### A. Task 001: Project Management (Preconstruction)

1. Set up project into J-U-B's financial and record keeping systems for document retention and project controls.
2. Conduct project execution planning
  - a. *Assumption: this includes scheduling work and scheduling meetings*
3. Conduct project risk assessment and management
4. Coordinate quality assurance / quality control (QA/QC) processes
5. Communicate and coordinate J-U-B team activities with kickoff and weekly progress meetings
  - a. *Assumptions*
    - i. 300 East to 100 West: estimated duration from kickoff to recommendation of award: 39 weeks
6. Communicate and coordinate J-U-B subconsultant activities
7. Regularly monitor project status, budget, schedule, and scope
8. Provide report to CLIENT on project status, budget and schedule
  - a. *Assumptions*
    - i. 300 East to 100 West: estimated 39 weekly reports
9. Status review meeting with CLIENT (three, which are in addition to planned review meetings)
10. Provide a monthly invoice
  - a. *Assumptions*
    - i. 300 East to 100 West: estimated 10 monthly invoices
11. Provide ongoing document handling and filing

#### B. Task 002: Initial Scoping and Mapping

1. Prepare for and conduct project Kickoff Meeting
  - a. Review scope, schedule, budget
  - b. Review division of J-U-B, City, and UDOT responsibilities
    - i. *Assumptions:*
      - (a) *UDOT will have primary responsibility for SWPPP oversight*
      - (b) *UDOT will have pavement design approval authority*
  - c. Review expectations of deliverables and reviews (plan sheet contents, specifications, contract documents, opinions of probable costs)
    - i. *Assumptions:*
      - (a) *We will use a Bluebeam session for pdf documents submittals and reviews management*
      - (b) *Schedule for design documents submittals to city, review periods, and review workshops will be set at this time.*
  - d. Discuss project objectives, issues, key constraints
  - e. Identify stakeholders, possibly including:

- i. Santaquin
- ii. UDOT
- iii. Utah County
- iv. Mountainland Association of Governments (MAG)
- v. Users
- vi. Adjacent property owners/occupants
- vii. Utility companies, possibly including:
  - (a) Rocky Mountain Power
  - (b) Dominion Energy
  - (c) Dominion Energy (including high pressure)
  - (d) CentraCom
  - (e) Century Link (fiber running along the south side of Main Street bedded in pea gravel)
  - (f) AT&T
  - (g) South Utah Valley Electrical Service District (SESD)
  - (h) Summit Creek Irrigation Company
  - (i) East Santaquin Irrigation Company?
  - (j) Nephi City (a Blue Stake search says they have either power, gas, or water near 300 East Main)
- viii. UTA (route 805)
- ix. Engineer
- x. Subconsultants
- xi. Others?
- f. Identify project risks and opportunities, assign responsibility, and formulate response
- g. Discuss how changes will be handled
- h. Discuss communication methods and channels
- i. Review action items
- j. Prepare and distribute meeting minutes; quality control review
- k. *Deliverables:*
  - i. *Meeting agenda*
  - ii. *Meeting minutes*
  - iii. *Risk register*
- l. *City responsibility: Identify stakeholders and include needed city staff in meeting*
- 2. Initial Corridor Walk - walk along the project corridor, advertised to the residents ahead of time
- 3. Prepare initial CAD files set up for project
  - a. *Assumption: AutoCAD Civil 3D will be used.*
- 4. Gather and review existing data (files, designs, details, standards, UDOT traffic projections for verifying pavement design)
  - a. *City responsibilities:*
    - i. *provide materials from previous projects not designed by J-U-B*
    - ii. *obtain traffic projections from UDOT for the purpose of verifying the pavement design*
    - iii. *pass on knowledge of other buried infrastructure that may not be on plans*
- 5. Conduct geotechnical investigation and evaluate results (RB&G)
  - a. Soil conditions and characteristics (profile, gradation, classification)
  - b. Soil performance characteristics (bearing capacity; settlement, collapse, expansion and frost heave potential; percolation rate)
  - c. Opinions of suitability for possible uses (fill, structural fill, utility bedding and backfill, roadway subbase)
  - d. Miscellaneous data (potential hazards, moisture content, variability within site, use limitations and recommendations)



- e. Percolation rates at locations of infiltration galleries
  - i. *Assumptions: estimated two locations from 100 West to 300 East*
- f. Existing pavement section cores and CBR
  - i. *Assumption: estimate three per block, and that we already have them from 100 East to 300 East*
- g. Pavement design review, update and/or revision.
  - i. *Assumption:*
    - (a) *The pavement design performed for the 2011 project will have to be updated using new traffic data*
    - (b) *UDOT will provide the estimated traffic data*
- h. *City responsibility: provide access to private property as needed*
- i. *Deliverable: geotechnical investigation report with recommended pavement design and percolation/infiltration test data.*
- 6. Gather utility data from utility companies and prepare existing utility CAD file (utility quality level B, C & D data) (UMS)
  - a. *City responsibility: provide existing GIS or CAD mapping of city infrastructure*
  - b. *City responsibility: pay any fees assessed by utility companies to obtain their data*
- 7. Obtain available signal, interconnect, roadway and right-of-way plans from UDOT, beyond what J-U-B already has
  - a. *City responsibility: pay any fees assessed by UDOT to obtain their data*
- 8. Establish design criteria and standards
  - a. Roadway (UDOT)
  - b. Pavement (UDOT)
  - c. Storm water quantity and quality (UDOT and City)
  - d. Planting (City)
  - e. Irrigation (City)
  - f. Streetlights (City)
  - g. Power (Rocky Mountain Power)
  - h. Utility clearances/spacing (all utility owners)
  - i. Construction specifications (UDOT, City)
  - j. Construction standards (UDOT, City, utility owners)
  - k. *City Responsibility: provide information as noted above*
- 9. Set local survey control, conduct topographic survey and add existing conditions data to CAD
  - a. *City responsibility: provide for access to private property*
- 10. Identify right-of-way, property boundaries and easements within project limits
  - a. *Assumption: previously performed right-of-way work is accurate and will be used where a recent record of survey was performed.*
- 11. Add existing physical features, property lines, easements and addresses to CAD base map
- 12. Quality control review of mapping, including edits
- 13. Coordination with stakeholders during initial scoping and mapping

### **C. Task 003 Prepare 30% Design**

- 1. Establish initial cross sections and horizontal alignments of centerline, curb and gutter, sidewalk, right-of-way
  - a. *Assumptions:*
    - i. *There will be no planter boxes*
    - ii. *The traffic signal at 200 West will not require modifications*
- 2. Perform site walk through to verify conditions, survey elements, take project photos and develop a firm understanding of project elements and existing conditions.
- 3. Perform subsurface utility evaluation (UMS) (utility quality level A data)

- a. By direct exposure at key locations (potholing)
    - i. *Assumption: estimated number from 100 West to 300 East: 8 locations in existing asphalt and 6 locations outside of existing hardscape*
  - b. *City Responsibility: provide for access to private property*
- 4. Document known vertical utility locations in CAD; quality control review
- 5. Coordinate with utility owners on utility replacements they want to do (we assume only the gas line on the south side of the road, telecommunications on south side, and galvanized water services; accommodating others is out of scope)
  - a. *City responsibility: take the lead in discussions with utility owners regarding everything other than relocations required because of the project*
- 6. Establish initial storm drain concept
  - a. *Assumptions*
    - i. *We will use the same approach as was used in 2011, with infiltration galleries to percolate runoff from only Main Street (with no runoff from cross streets the south)*
    - ii. *Conveyances across Main Street will be preserved or replaced, without consideration for increasing capacity*
- 7. Establish initial street light layout
  - a. *Assumption: the spacing will match the 2011 project*
- 8. Identify and map possible conflicts between proposed improvements and existing utility or private infrastructure in online GIS; quality control review
- 9. Provide link to online GIS utility data to utility companies for their review
- 10. Identify and map possible right-of-way needs for sections where right-of-way has not already been established by record of survey performed previously; quality control review
  - a. *Assumption: This does not include easements or permits to enter and construct (we don't need these until 60% design)*
- 11. Establish conceptual opinion of probable costs (construction, right-of-way, utility company and UDOT, preconstruction and construction engineering) compared to funding
  - a. *City responsibility: provide funding amount*
  - b. *Assumption: these costs will be based primarily on the costs in the Concept Report(s)*
- 12. Quality control review of 30% design materials
- 13. Complete and compile 30% design materials
  - a. *Deliverables:*
    - i. *Scroll map of corridor showing mapping of existing conditions, initial alignments, right-of-way*
    - ii. *Conceptual opinion of probable costs*
- 14. 30% Review Meeting - Walk site with City
  - a. Review mapping, initial alignments and layouts
  - b. Review potential conflicts
  - c. Discuss possible resolution of conflicts
  - d. Prepare and distribute meeting minutes
  - e. *Deliverable: meeting agenda and meeting minutes*
  - f. *City responsibility: relevant staff participate in meeting*
- 15. Coordination with stakeholders during 30% design

#### **D. Task 004 Prepare 60% Design**

- 1. Update mapping and layouts based on 30% Design Review Meeting, including additional survey; quality control review
  - a. *City responsibility: provide for any necessary private property access*
- 2. Create CAD plan sheet files; convert needed files to AutoCAD and current standards; quality control review

3. Prepare survey control sheet; quality control review
4. Prepare roadway design, draft plans and profiles, cross sections; quality control review
5. Perform storm drainage calculations; prepare design, details; quality control review
6. Identify private infrastructure impacts; quality control review
7. Preliminarily design proposed work on private property; quality control review
  - a. Driveway/walkway transitions and replacements
  - b. Grading and retaining
  - c. Parking
  - d. Power services, meters, panels
  - e. Landscaping and irrigation
    - i. Assumption: we will recommend trees based on the City standards
  - f. Fencing
  - g. Signage
8. Field review with City of proposed work on private properties
  - a. *Deliverables: field review agenda and minutes of decisions*
  - b. *City responsibilities:*
    - i. *Provide for access to private property*
    - ii. *Include relevant staff in field review*
9. Modify preliminary design of private property work per review comments; quality control review
10. Prepare draft plans showing work on private property (this would be a detail of the work on each property, where detail is warranted (we estimate 14 from 100 West to 300 East); quality control review
  - a. *Deliverable: for those properties in which it is warranted, provide a 60%-design-level sketch detailing the changes to the private property*
11. Discuss and address private property impacts with owners (The Langdon Group staff and City staff)
  - a. Discuss need for work on or along private properties with property owners/residents
  - b. Identify and communicate property owner/resident concerns to engineers
  - c. Work with property owners/residents to identify project impacts
    - i. Physical impacts such as
      - (a) Horizontal and vertical changes to sidewalks and driveways
      - (b) Effect of undergrounding power
      - (c) Disruptions to landscaping, fencing, walls, etc.
    - ii. Operational impacts such as
      - (a) Access to business entrances
      - (b) Access to patron parking
      - (c) Disruptions to business functions
      - (d) Noise, dust, mud, etc.
  - d. Work with property owners/residents to identify satisfactory means of mitigating project impacts
    - i. Communicate with property owners and engineers to resolve concerns
    - ii. If The Langdon Group staff are unable to find solutions, the issue will be escalated to City staff.
    - iii. *City responsibility: work with property owners/residents and engineers to find acceptable solutions to property owner/resident concerns, which may or may not be resolved financially*
  - e. *Assumptions:*

- i. *It is impossible to reliably predict the level of effort required by J-U-B to perform this role, therefore the scope of work is defined as the estimated number of hours; work beyond the estimated number of hours is by definition out-of-scope.*
  - ii. *Negotiations will not be required between 200 East and 300 East*
  - iii. *Number of parcels from 100 West to 300 East: 29*
  - iv. *Number of parcels from 600 West to 100 West: 36*
  - v. *A city employee will accompany TLG staff for first contacts to each property owner.*
  - vi. *Landscaping restoration design will be handled by notes or by payment to cure to the property owner; detailed planting and irrigation design on private properties is not included in the scope.*
- f. *Deliverables:*
  - i. *Documentation of property owner meetings*
  - ii. *Terms, limitations, expectations, etc. for each property (as applicable), which will be incorporated into permits to enter and construct*
- 12. Negotiate any compensation to property owners for damages or to self-perform restoration work on their property (this task is performed by the City)
  - a. *City responsibilities:*
    - i. *Negotiate financial terms with residents*
    - ii. *Prepare any legal documents or agreements related to compensation (other than permits to enter and construct and easement descriptions)*
    - iii. *Make agreed upon payments to residents*
- 13. Prepare descriptions for purchase of necessary right-of-way; quality control review (*not used for 100 West to 300 East scope*)
- 14. Prepare utility design and draft plans; quality control review
  - a. *City responsibility: negotiate agreements and compensation for required utility relocations, financial contributions to the project, and any optional work they want to include in the project.*
- 15. Prepare street lighting design and draft plans; quality control review
- 16. Prepare power main and service undergrounding (including transformer locations) design and draft plans; quality control review. Prepare easements and easement exhibits for Rocky Mountain power required
  - a. *Assumption:*
    - i. *Rocky Mountain Power will provide the power main undergrounding conceptual design, transformer locations, and conduit sizing*
    - ii. *J-U-B scope includes providing detailed design of conduits*
  - b. *City responsibility: coordinate with Rocky Mountain Power on undergrounding*
- 17. Prepare user power meter/panel changes design and draft plans; quality control review
- 18. Prepare planting design and draft plans; quality control review
  - a. *Assumption: street trees with grates will be designed along both sides of the street the length of the project.*
- 19. Prepare irrigation design and draft plans; quality control review
  - a. *Assumption: irrigation for street trees with grates will be designed along both sides of the street the length of the project.*
- 20. Prepare roadway signing and striping design and draft plans; quality control review
- 21. Prepare removal and relocation draft plans; quality control review
- 22. Add planned utility replacements by others to plans (this isn't referring to necessary relocations, but rather optional planned replacements); quality control review
  - a. *Assumption: these plans will be provided to J-U-B in a CAD format*
- 23. Site walkthrough with utility companies to review relocation needs (estimated four separate walkthroughs)
- 24. Identify major bid items and estimate quantities; quality control review

25. Establish preliminary opinion of probable costs (construction, right-of-way, utility company and UDOT, preconstruction and construction engineering) compared to funding; quality control review
  - a. *City responsibility: provide funding amount and estimated costs (other than construction, preliminary engineering and construction engineering)*
26. Quality control review of 60% design materials
  - a. Draft plans (note: draft plans contain design information without all the notes)
  - b. Preliminary opinion of probable costs vs. funding
27. Complete, compile, and deliver 60% design materials to City and UDOT
  - a. *Deliverables:*
    - i. *Draft plans*
    - ii. *Preliminary opinion of probable costs vs. funding*
28. 60% Design Review Meeting with City, UDOT
  - a. Review draft plans
  - b. Discuss preliminary opinion of costs vs. funding
  - c. Discuss additive bidding and additive boundaries
  - d. Evaluate possible need for change of scope if extents of 90% design will be different than anticipated
  - e. Prepare and distribute meeting minutes; quality control review
  - f. *Deliverable: meeting agenda and minutes*
  - g. *City responsibilities:*
    - i. *Relevant staff review meeting materials*
    - ii. *Relevant staff participate in meeting*
29. Coordination with stakeholders during 60% design

#### **E. Task 005: 90% Design**

1. Update designs and draft plans based on 60% Design Review Meeting; quality control review
2. Complete general sheets (cover, notes, legend, one SWPPP sheet, index); quality control review
3. Complete roadway plan sheets and profile sheets, details, specs; quality control review
4. Complete storm water and utility plans, details, specs; quality control review
5. Complete street lighting and power plans, details, specs; quality control review
6. Modify design of private property work to address owner concerns; quality control review
7. Complete plans showing work on private property, details, specs; quality control review
  - a. The plans will include a detail for each private property where work is being performed that warrants more detail than can be clearly shown on the roadway drawings
  - b. The details would show things such as dimensions, slopes, elevations, etc. on driveways, as well as other information we deem necessary to communicate the intention of the design.
8. Prepare opinion of probable costs of work on private property (estimating costs at this stage will allow negotiators to have the information in case they want to offer a payment to residents to perform the work on private property themselves); quality control review
9. Prepare permits to enter and construct on private properties; quality control review
  - a. *Assumptions:*
    - i. *A permit form similar to the one used in 2011 will be used*
    - ii. *Permits will not be needed from 200 East to 300 East*
    - iii. *Permits will not be needed on undeveloped parcels*
    - iv. *Permits needed from 100 West to 200 East: 26*
  - b. *Deliverables: A permit and a copy of the detail from the plans showing the work on each property, if one is warranted for each property*
10. Prepare easement descriptions and exhibits for underground power mains and possibly other infrastructure; quality control review
  - a. *Assumptions:*

- i. *Estimated number from 100 West to 300 East: 6*
  - ii.
- b. *Deliverables:*
  - i. *Easement description*
  - ii. *Sketch of easement location*
- 11. Obtain owner signatures on easements and permits to enter and construct
  - a. *Assumption: The Langdon Group will obtain signatures as they can; as conflicts between the project and property owner concerns require compensation to property owners or are escalated to the City for other reasons, the City will obtain the signatures*
  - b. *City responsibility:*
    - i. *Prepare legal documents for easements using the descriptions J-U-B provides*
    - ii. *Obtain signatures in cases in which The Langdon Group cannot, or is not authorized to represent the City in negotiations*
- 12. Complete planting plans, details, specs; quality control review
- 13. Complete irrigation plans, details, specs; quality control review
- 14. Complete roadway signing and striping plans, details, specs; quality control review
- 15. Complete removal and relocation plans, details, specs; quality control review
- 16. Compile needed Santaquin and UDOT standard drawings; quality control review
- 17. Identify bid items and perform quantity takeoff by block; quality control review
- 18. Prepare spreadsheet to assist contractors in preparing bids; quality control review
- 19. Prepare general project requirements and measurement and payment portions of specifications; quality control review
- 20. Prepare contract documents; quality control review
- 21. Establish opinion of probable costs vs. funding; quality control review
  - a. *City responsibility: provide funding amount and estimated costs (other than construction, preliminary engineering and construction engineering)*
- 22. Quality control review of 90% design materials
- 23. Complete and compile 90% design materials
  - a. *Deliverables:*
    - i. *90% construction drawings*
    - ii. *90% specifications*
    - iii. *90% contract documents, including spreadsheet to assist contractors in bidding*
    - iv. *90% opinion of probable costs vs. funding*
- 24. 90% Design Review Meeting with City, UDOT
  - a. Review 90% plans, specifications, contract documents
  - b. Discuss additive boundaries and opinion of costs vs. funding
  - c. Evaluate possible need for change of scope if extents of 90% design will be different than anticipated
  - d. Prepare and distribute meeting minutes; quality control review
  - e. *Deliverable: meeting agenda and minutes*
  - f. *City responsibilities:*
    - i. *Relevant staff review meeting materials*
    - ii. *Relevant staff participate in meeting*
- 25. Coordination with stakeholders during 90% design

#### **F. Task 006: Prepare Advertising Package**

- 1. Update plans, specifications and contract documents based on the 90% Design Review Meeting comments; quality control review
- 2. Prepare duplicate sheets at the end of the project for bid additive locations; quality control review
- 3. Refine quantities to reflect the end of additive bid locations; quality control review
- 4. Update bid form; quality control review

5. Update opinion of probable costs vs. funding; quality control review
6. Quality control review of advertising package materials
7. Complete, compile and deliver advertising package
8. Coordination with stakeholders during the period of preparing the advertising package
9. Provide the Civil3D design and CAD files to the City on a portable memory device or access to them on a cloud-based server
  - a. *Use of the electronic files is subject to the Electronic Documents/Data Limited License at <https://web.jub.com/electronic-documents/>*
  - b. *City responsibilities:*
    - i. *Review advertising package*
    - ii. *Post and maintain advertising package on at least SciQuest*

**G. Task 007: Assistance During Bidding**

1. Prepare agenda for and attend pre-bid meeting
  - a. *Deliverable: pre-bid meeting agenda and sign-in sheet*
  - b. *City responsibility: provide input to agenda items and conduct pre-bid meeting*
2. Compile minutes from pre-bid meeting and provide in addendum 1; quality control review
  - a. *Deliverables:*
    - i. *Pre-bid meeting minutes*
    - ii. *Addendum 1 containing pre-bid meeting minutes and possibly other changes*
3. Address contractor questions during bidding
4. Prepare two additional addenda; quality control review
  - a. *Deliverables: addenda 2 & 3*
5. Prepare documents for bid opening and bid tabulation
6. Conduct bid opening
  - a. *Deliverable: bid tabulation sheet*
7. Prepare bid tabulation spreadsheet; tabulate and evaluate bids; quality control review
8. Prepare recommendation of award letter and document; quality control review
  - a. *Deliverables:*
    - i. *Bid tabulation*
    - ii. *Letter of recommendation of award*
    - iii. *Recommendation of award form*
9. Coordination with stakeholders during the bidding process

**H. Task 008: Construction Engineering**

1. The scope of construction engineering is yet to be determined; it will include tasks as negotiated later, as well as the following:
  - a. Communicate the project completion to CLIENT and other affected agencies and stakeholders, as required. (does this have to be stated? Seems
  - b. Close financial billing and accounting records in J-U-B's financial and record-keeping systems.