



## STAFF REPORT

DATE: December 17, 2019  
**CONSENT**

**AGENDA ITEM:** Approve Geotechnical Investigation Proposal for 2020 Construction Projects.

**SUBMITTED BY:** Jack Griffin, City Engineer

**REVIEWED BY:** Kristina Handt, City Administrator  
Chad Isakson, Assistant City Engineer

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**ISSUE BEFORE COUNCIL:** Should the City Council approve a contract to complete geotechnical investigation work for the scheduled 2020 construction projects?

**PROPOSAL DETAILS/ANALYSIS:** Staff received proposals from two geotechnical firms (AET and Braun Intertec) to complete an analysis, prepare a report of findings, and provide construction recommendations based on soil conditions found in construction projects planned for 2020. These projects consist of:

1. Heritage Farms Street and Utility Improvements
2. Stonegate Addition Street and Utility Improvements
3. 31<sup>st</sup> Street and Stillwater Boulevard Watermain Extension
4. Pumphouse No. 5
5. Well No. 5 Connecting Watermain Improvements

Both companies provided a scope of services with an understanding of the work. AET's proposal includes a fee of \$29,700 with the fieldwork to be completed in a period of 2-3 weeks after authorization to complete the work. Braun Intertec's proposal includes a fee of \$28,931 with the fieldwork to be completed in a period of 5-7 weeks after authorization to complete the work. The City Engineer is recommending a contract be awarded to AET due to the accelerated schedule of completion of work proposed in comparison to Braun.

**FISCAL IMPACT:** \$29,700. This fee is a part of the overall project costs presented to the Council for each of the 5 infrastructure projects listed above. The appropriate costs will be assigned to each project.

**RECOMMENDATION:** Staff is recommending that the City Council, *as part of the Consent Agenda*, approve a geotechnical services contract for the 2020 construction projects to AET in the not to exceed amount of \$29,700. If removed from the consent agenda, the recommended motion for the action is as follows:

***“Move to approve a geotechnical services contract for the 2020 construction projects to AET in the not to exceed amount of \$29,700”.***

**ATTACHMENTS:**

1. AET Proposal for Lake Elmo 2020 Geotechnical Services.



CONSULTANTS  
• ENVIRONMENTAL  
• GEOTECHNICAL  
• MATERIALS  
• FORENSICS

November 18, 2019

Chad Isakson, PE  
City of Lake Elmo  
3880 Laverne Avenue North  
Lake Elmo, MN 55042

Re: Proposal for Geotechnical Services  
AET Proposal No. 01-20691  
Lake Elmo 2020 Infrastructure Improvements

Dear Mr. Isakson:

American Engineering Testing, Inc. (AET) is pleased to submit this proposal to conduct the scope of services listed below:

**Scope of Services:**

***Field Exploration***

**Heritage Farms Street and Utility Improvement**

- Drill and sample twelve (12) standard penetration test (SPT) borings to depths ranging from 10 to 35 feet.

**Stonegate Addition Street and Utility Improvement**

- Drill and sample seventeen (17) SPT borings to a depth of 10 feet.

**31<sup>st</sup> Street & Stillwater Boulevard Watermain Extension**

- Drill and sample four (4) SPT borings to a depth of 10 feet.

**Production Well No. 5 Pumpouse**

- Drill and sample three (3) SPT borings to depths of 10 and 20 feet.

**Well No. 5 Connecting Watermain Improvement**

- Drill and sample four (4) SPT borings to a depth of 10 feet.

For all the projects listed above, our field services also include:

- Stake the soil borings in the field using provided diagrams or GPS coordinates.
- Clear underground public utilities through the Gopher State One Call system.
- Backfill borings per Minnesota Department of Health requirements.
- Measure and document the boring locations and surface elevations by using a GPS.

***Laboratory***

- Visually-manually classify the soils per the Unified Soil Classification System.



- Conduct water content tests on cohesive soils retrieved.

***Report (to include)***

- Logs of the test borings, including soil classifications, N-values, and laboratory results.
- Review of encountered soil and groundwater conditions.
- Foundation recommendations and settlement estimation for the proposed pumphouse.
- General recommendations for directional drilling, utility bedding and backfill, if applicable.
- Recommendations for pavement subgrade preparation, estimated R-value, pavement design, and reclamation, if applicable.

AET's scope of work is intended for geotechnical purposes only, and not to explore for the presence or extent of environmental contamination at the site. However, we will note obvious contamination encountered.

**Fee:**

Our services will be performed on a time-and-material basis per the attached fee schedule. For the scope described, we will establish \$29,700 as a not-to-exceed fee. The budget breakdowns of each project are attached. We combined the mobilization to projects in asterisk (\*) into one trip.

1. Heritage Farms St. and Utility Improvements	\$ 11,500
2. Stonegate Addition St. and Utility Improvements	\$ 8,500
3. 31 <sup>st</sup> St. and Stillwater Blvd Watermain Extension*	\$ 4,300
4. Production Well No. 5 Pumphouse*	\$ 2,900
5. Well No. 5 Connecting Watermain Improvements*	\$ 2,500
<b>Total</b>	<b>\$ 29,700</b>

**Schedule:**

Based on our current backlog, we anticipate the fieldwork can begin on about 2 to 3 weeks after receiving authorization to proceed. Verbal results can be provided shortly after fieldwork completion. Individual final report should then follow field completion by about 2 to 2½ weeks.

**Terms/Conditions:**

Our services will be conducted per our executed *Contract Agreement between the City of Lake Elmo and American Engineering Testing, Inc. for Professional Services*, dated July 10, 2010.

**Acceptance:**

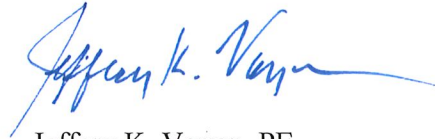
Please indicate your acceptance of this proposal by endorsing the enclosed copy and returning it to us. The original proposal is intended for your records.

City of Lake Elmo  
Lake Elmo 2020 Infrastructure Improvements  
November 18, 2019  
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Sincerely,  
**American Engineering Testing, Inc.**



Liang Chern Chow, PE  
Geotechnical Engineer  
Phone: 612-685-4313  
Email: lchow@amengtest.com



Jeffery K. Voyer, PE  
Vice President/Principal Engineer  
Phone: 651-659-1305  
Email: jvoyer@amengtest.com

<b>AET PROPOSAL No.: 01-20691 ACCEPTANCE AND AUTHORIZATION</b>
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Signature \_\_\_\_\_ Date \_\_\_\_\_  
Printed Name \_\_\_\_\_  
Title \_\_\_\_\_  
Representing \_\_\_\_\_

Attachment:  
2019 Geotechnical Fee Schedule  
Tables A to E – Budget Details

**I. Personnel Hourly Rates**

A. Administrative Assistant	70.00/hr.
B. Engr. or Env. Technician I	77.00/hr.
C. Engr. or Env. Technician II	90.00/hr.
D. Drill Technician/Geo Lab Technician	102.00/hr.
E. Engr. or Env. Technician III	110.00/hr.
F. Engineering Assistant	119.00/hr.
G. Engineer I/Geologist I	132.00/hr.
H. Engineer II/Geologist II/Sr. Engr. Assistant	152.00/hr.
I. Senior Engineer/Geologist	169.00/hr.
J. Principal Engineer/Geologist	205.00/hr.
K. Principal of Firm	225.00/hr.

**II. Vehicle Mileage**

A. Personal Automobile/Truck	0.75/mile
B. Auxiliary Truck Vehicle	1.00/mile
C. Truck with Coring, FWD, or GPR Equipment	1.10/mile
D. Truck with Warning Sign/Crash Trailer	1.20/mile
E. 1-ton Truck with Drill Rig	1.20/mile
F. 1½ to 2½-ton Truck with Drill Rig	1.35/mile
G. CPT Truck Rig (20-ton push capacity)	1.60/mile
H. Tractor/Lowboy Trailer	1.80/mile

**III. Equipment Rental**

A. Drill Rig Rental	
1. Rotary Drill on 1-ton Truck	78.00/hr.
2. Rotary Drill on 1½ to 2½-ton Truck	88.00/hr.
3. Rotary Drill on All-Terrain Vehicle	120.00/hr.
4. Portable, Non-rotary Rig	88.00/hr.
B. Auxiliary/Specialty Vehicle Rental	
1. Auxiliary Truck Vehicle	19.50/hr.
2. Truck with Warning Sign/Crash Trailer	43.00/hr.
3. Truck with Coring Equipment	59.00/hr.
C. Cone (CPT) Rig/Equipment Rental	
1. CPT Rig (Truck or ATV)	155.00/hr.
2. Electronic Cone w/Computer	48.00/hr.
3. Soil Sampler	7.00/hr.
4. Water Sampler	22.00/hr.
D. Miscellaneous Equipment Rental	
1. Field Vane Shear	335.00/day
2. Field Electrical Resistivity	260.00/day
3. Field Seismic Shear Wave (ReMi)	435.00/day
4. Inclinator Reading Equipment	340.00/day
5. Electronic Transducer Reading	180.00/day
6. Bore Hole Permeability	
a. Open End Casing Method	140.00/day
b. HQ Wireline Packer	350.00/day
7. Borehole Pressuremeter	75.00/hr.
8. Iowa Borehole Shear Tester	335.00/day
9. Double Ring Infiltrometer	275.00/day
10. GPS Mapping System	16.00/hr.
11. Pile Driving Analyzer (PDA)	750.00/day
12. Calibrated SPT Rod	230.00/day
13. Pile Integrity Test (PIT)	360.00/day
E. Geotechnical Software Rental	
1. Geo Studio Finite Element	75.00/hr.
2. CAPWAP	40.00/hr.
3. AutoCAD or Microstation	35.00/hr.
4. Wave Equation (WEAP)	25.00/hr.
5. LPILE or GROUP	25.00/hr.
6. Slope Stability (ReSSA)	25.00/hr.
7. Stabilized Earth Slopes & Walls	25.00/hr.
8. Settlement (FoSSA)	25.00/hr.

**F. Bit Wear- Rock Coring**

1. Diamond Bit - Sedimentary Rock	
a) B, NQ	12.00/foot
b) HQ	14.00/foot
2. Diamond Bit - Metamorphic & Igneous	
a) B, NQ	20.00/foot
b) HQ	23.00/foot

**IV. Laboratory Tests of Soil**

A. Water Content	hourly
B. Dry Density (includes water content)	60.00/test
C. Atterberg Limits (ASTM:D4318)	
1. Plasticity Index	118.00/test
2. Liquid Limit or Plastic Limit Separately	103.00/test
D. Sieve Analysis (includes -#200)	110.00/test
E. Hydrometer Analysis (sieve included)	208.00/test
F. Thermal Resistivity w/Proctor (ASTM:D5334)	
1. As Received and Oven Dried (2 pts)	1000.00/test
2. Dry Out Curve (4 pts)	1245.00/test
G. Electrical Resistivity (ASTM:G57-Soil Box)	102.00/test
H. Corrosion/Concrete Attack Series*	price upon request
I. Consolidation (up to 32 tsf)	
1. With P-e curves only	480.00/test
2. With P-e curves, time curves	610.00/test
J. Unconfined Compression (incl. wc/density)	103.00/test
K. Hand Penetrometer	10.00/test
L. Organic Content of Soil	70.00/test
M. Topsoil Borrow Test (Mn/DOT 3877)	298.00/test
N. R-value (Hveem Stabilometer)	400.00/test
O. California Bearing Ratio	
1. Granular	640.00/test
2. Cohesive	730.00/test
P. Proctor Tests (Methods A or B)	
1. Standard	140.00/test
2. Modified	150.00/test

\*includes pH, chloride ion, soluble sulfates, sulfides, redox potential (resistivity not included).

**V. Expenses**

A. Direct Project Expenses: includes out-of-town per diem; plowing & towing; special materials & supplies; special travel, transportation & freight; subcontracted services, and miscellaneous costs	Cost + 15%
B. Equipment Replacement (when abandonment is more feasible than recovery)	Cost
C. Equipment Recovery (when required by regulatory agencies or project specifications)	Cost + 15%

The rates presented are portal-to-portal with vehicle mileage, expenses and equipment rentals being additional.

Overtime for personnel charged at above cost plus 25% for over 8 hours per day or Saturday; and at above cost plus 50% for Sundays or Holidays. Hazardous work charged at an additional 25%. Night time shift work will include a premium charge of \$30.00 per person per shift.

**Table A - Budget Details: Heritage Farms St. & Utility Improvements****Hourly Breakdown:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Principal Engineer	1 hours	\$205.00	\$205.00
Engineer II	6.5 hours	\$152.00	\$988.00
Engineering Assistant	2 hours	\$119.00	\$238.00
Senior Engr Tech III	0 hours	\$110.00	\$0.00
Drill/Lab Technician	47 hours	\$102.00	\$4,794.00
Word Processing Specialist	2.5 hours	\$70.00	\$175.00
<b>Total:</b>			<b>\$6,400.00</b>

**Equipment Rental/Mileage:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Personal Auto/Truck Mileage	0 miles	\$0.75	\$0.00
Auxiliary Drill Truck Mileage	120 miles	\$1.00	\$120.00
1.5-2.5 Ton Truck Drill Rig Mileage	90 miles	\$1.35	\$121.50
CPT Truck Rig Mileage	0 miles	\$1.60	\$0.00
Tractor/Lowboy Trailer Mileage	0 miles	\$1.80	\$0.00
Auxiliary Drill Truck Rental	45 hours	\$23.50	\$1,057.50
1.5-2.5 Ton Truck Drill Rig Rental	42 hours	\$88.00	\$3,696.00
All-Terrain Drill Rig Rental	0 hours	\$120.00	\$0.00
CPT Truck Rig Rental	0 hours	\$143.00	\$0.00
Piezocone w/computer Rental	0 hours	\$41.00	\$0.00
GPS Equipment	3.5 hours	\$15.25	\$53.38
<b>Total:</b>			<b>\$5,048.38</b>

**Lab Test Rates**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Sieve Analysis, without hydrometer	0 tests	\$110.00	\$0.00
Sieve Analysis, with hydrometer	0 tests	\$208.00	\$0.00
Atterberg Limits	0 tests	\$118.00	\$0.00
Unconfined Compression, w/wc, dens	0 tests	\$103.00	\$0.00
Organic Content	0 tests	\$70.00	\$0.00
<b>Total:</b>			<b>\$0.00</b>

**Expenses**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
MDH Temp Well Notification	1 x cost	\$75.00	\$75.00
Warning Sign Rental Costs	0 x cost	\$0.00	\$0.00
<b>Total:</b>			<b>\$75.00</b>

**Overall Total:           \$11,523.38**

**Table B - Budget Details: Stonegate Addition St. & Utility Improvements****Hourly Breakdown:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Principal Engineer	1 hours	\$205.00	\$205.00
Engineer II	8.5 hours	\$152.00	\$1,292.00
Engineering Assistant	1 hours	\$119.00	\$119.00
Senior Engr Tech III	0 hours	\$110.00	\$0.00
Drill/Lab Technician	33 hours	\$102.00	\$3,366.00
Word Processing Specialist	2 hours	\$70.00	\$140.00
<b>Total:</b>			<b>\$5,122.00</b>

**Equipment Rental/Mileage:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Personal Auto/Truck Mileage	0 miles	\$0.75	\$0.00
Auxiliary Drill Truck Mileage	90 miles	\$1.00	\$90.00
1.5-2.5 Ton Truck Drill Rig Mileage	60 miles	\$1.35	\$81.00
CPT Truck Rig Mileage	0 miles	\$1.60	\$0.00
Tractor/Lowboy Trailer Mileage	0 miles	\$1.80	\$0.00
Auxiliary Drill Truck Rental	31 hours	\$23.50	\$728.50
1.5-2.5 Ton Truck Drill Rig Rental	28 hours	\$88.00	\$2,464.00
All-Terrain Drill Rig Rental	0 hours	\$120.00	\$0.00
CPT Truck Rig Rental	0 hours	\$143.00	\$0.00
Piezocone w/computer Rental	0 hours	\$41.00	\$0.00
GPS Equipment	3 hours	\$15.25	\$45.75
<b>Total:</b>			<b>\$3,409.25</b>

**Lab Test Rates**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Sieve Analysis, without hydrometer	0 tests	\$110.00	\$0.00
Sieve Analysis, with hydrometer	0 tests	\$208.00	\$0.00
Atterberg Limits	0 tests	\$118.00	\$0.00
Unconfined Compression, w/wc, dens	0 tests	\$103.00	\$0.00
Organic Content	0 tests	\$70.00	\$0.00
<b>Total:</b>			<b>\$0.00</b>

**Expenses**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
MDH Temp Well Notification	0 x cost	\$75.00	\$0.00
Warning Sign Rental Costs	0 x cost	\$0.00	\$0.00
<b>Total:</b>			<b>\$0.00</b>

**Overall Total: \$8,531.25**

**Table C - Budget Details: 31st St. & Stillwater Blvd Watermain Ext.****Hourly Breakdown:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Principal Engineer	0.5 hours	\$205.00	\$102.50
Engineer II	5.5 hours	\$152.00	\$836.00
Engineering Assistant	1 hours	\$119.00	\$119.00
Senior Engr Tech III	0 hours	\$110.00	\$0.00
Drill/Lab Technician	21 hours	\$102.00	\$2,142.00
Word Processing Specialist	1 hours	\$70.00	\$70.00
<b>Total:</b>			<b>\$3,269.50</b>

**Equipment Rental/Mileage:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Personal Auto/Truck Mileage	0 miles	\$0.75	\$0.00
Auxiliary Drill Truck Mileage	120 miles	\$1.00	\$120.00
1.5-2.5 Ton Truck Drill Rig Mileage	60 miles	\$1.35	\$81.00
CPT Truck Rig Mileage	0 miles	\$1.60	\$0.00
Tractor/Lowboy Trailer Mileage	0 miles	\$1.80	\$0.00
Auxiliary Drill Truck Rental	11 hours	\$23.50	\$258.50
1.5-2.5 Ton Truck Drill Rig Rental	6 hours	\$88.00	\$528.00
All-Terrain Drill Rig Rental	0 hours	\$120.00	\$0.00
CPT Truck Rig Rental	0 hours	\$143.00	\$0.00
Piezocone w/computer Rental	0 hours	\$41.00	\$0.00
GPS Equipment	3 hours	\$15.25	\$45.75
<b>Total:</b>			<b>\$1,033.25</b>

**Lab Test Rates**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Sieve Analysis, without hydrometer	0 tests	\$110.00	\$0.00
Sieve Analysis, with hydrometer	0 tests	\$208.00	\$0.00
Atterberg Limits	0 tests	\$118.00	\$0.00
Unconfined Compression, w/wc, dens	0 tests	\$103.00	\$0.00
Organic Content	0 tests	\$70.00	\$0.00
<b>Total:</b>			<b>\$0.00</b>

**Expenses**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
MDH Temp Well Notification	0 x cost	\$75.00	\$0.00
Warning Sign Rental Costs	0 x cost	\$0.00	\$0.00
<b>Total:</b>			<b>\$0.00</b>

**Overall Total: \$4,302.75**



**Table D - Budget Details: Production Well No. 5 Pumphouse****Hourly Breakdown:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Principal Engineer	0.5 hours	\$205.00	\$102.50
Engineer II	7.5 hours	\$152.00	\$1,140.00
Engineering Assistant	1 hours	\$119.00	\$119.00
Senior Engr Tech III	0 hours	\$110.00	\$0.00
Drill/Lab Technician	9 hours	\$102.00	\$918.00
Word Processing Specialist	1.5 hours	\$70.00	\$105.00
<b>Total:</b>			<b>\$2,384.50</b>

**Equipment Rental/Mileage:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Personal Auto/Truck Mileage	0 miles	\$0.75	\$0.00
Auxiliary Drill Truck Mileage	0 miles	\$1.00	\$0.00
1.5-2.5 Ton Truck Drill Rig Mileage	0 miles	\$1.35	\$0.00
CPT Truck Rig Mileage	0 miles	\$1.60	\$0.00
Tractor/Lowboy Trailer Mileage	0 miles	\$1.80	\$0.00
Auxiliary Drill Truck Rental	4 hours	\$23.50	\$94.00
1.5-2.5 Ton Truck Drill Rig Rental	4 hours	\$88.00	\$352.00
All-Terrain Drill Rig Rental	0 hours	\$120.00	\$0.00
CPT Truck Rig Rental	0 hours	\$143.00	\$0.00
Piezocone w/computer Rental	0 hours	\$41.00	\$0.00
GPS Equipment	0 hours	\$15.25	\$0.00
<b>Total:</b>			<b>\$446.00</b>

**Lab Test Rates**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Sieve Analysis, without hydrometer	0 tests	\$110.00	\$0.00
Sieve Analysis, with hydrometer	0 tests	\$208.00	\$0.00
Atterberg Limits	0 tests	\$118.00	\$0.00
Unconfined Compression, w/wc, dens	0 tests	\$103.00	\$0.00
Organic Content	0 tests	\$70.00	\$0.00
<b>Total:</b>			<b>\$0.00</b>

**Expenses**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
MDH Temp Well Notification	1 x cost	\$75.00	\$75.00
Warning Sign Rental Costs	0 x cost	\$0.00	\$0.00
<b>Total:</b>			<b>\$75.00</b>

**Overall Total:                   \$2,905.50**

**Table E - Budget Details: Well No. 5 Connecting Watermain Improvements****Hourly Breakdown:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Principal Engineer	0.5 hours	\$205.00	\$102.50
Engineer II	5 hours	\$152.00	\$760.00
Engineering Assistant	1 hours	\$119.00	\$119.00
Senior Engr Tech III	0 hours	\$110.00	\$0.00
Drill/Lab Technician	9 hours	\$102.00	\$918.00
Word Processing Specialist	1.5 hours	\$70.00	\$105.00
<b>Total:</b>			<b>\$2,004.50</b>

**Equipment Rental/Mileage:**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Personal Auto/Truck Mileage	0 miles	\$0.75	\$0.00
Auxiliary Drill Truck Mileage	0 miles	\$1.00	\$0.00
1.5-2.5 Ton Truck Drill Rig Mileage	0 miles	\$1.35	\$0.00
CPT Truck Rig Mileage	0 miles	\$1.60	\$0.00
Tractor/Lowboy Trailer Mileage	0 miles	\$1.80	\$0.00
Auxiliary Drill Truck Rental	4 hours	\$23.50	\$94.00
1.5-2.5 Ton Truck Drill Rig Rental	4 hours	\$88.00	\$352.00
All-Terrain Drill Rig Rental	0 hours	\$120.00	\$0.00
CPT Truck Rig Rental	0 hours	\$143.00	\$0.00
Piezocone w/computer Rental	0 hours	\$41.00	\$0.00
GPS Equipment	0 hours	\$15.25	\$0.00
<b>Total:</b>			<b>\$446.00</b>

**Lab Test Rates**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
Sieve Analysis, without hydrometer	0 tests	\$110.00	\$0.00
Sieve Analysis, with hydrometer	0 tests	\$208.00	\$0.00
Atterberg Limits	0 tests	\$118.00	\$0.00
Unconfined Compression, w/wc, dens	0 tests	\$103.00	\$0.00
Organic Content	0 tests	\$70.00	\$0.00
<b>Total:</b>			<b>\$0.00</b>

**Expenses**

	<i>Unit</i>	<i>Rate</i>	<i>Total</i>
MDH Temp Well Notification	1 x cost	\$75.00	\$75.00
Warning Sign Rental Costs	0 x cost	\$0.00	\$0.00
<b>Total:</b>			<b>\$75.00</b>

**Overall Total: \$2,525.50**