

July 17, 2017

Proposal No.: P17-159 (Revised)

Mr. Randall Morris
Landfill Manager
City of Denton
Randall.Morris@cityofdenton.com

**Subject: Construction Materials Testing Services
Cell 3 Liner Construction and Improvements
City of Denton Landfill, TX**

Dear Mr. Morris:

D&S Engineering Labs (D&S Engineering) is pleased to submit this proposal for construction materials testing for the above referenced project. We understand that the project entails a new cell liner and improvements to the existing City of Denton Landfill at 1527 South Mayhill Rd in Denton, Texas.

PROJECT INFORMATION

Based on our review of the project plans and specifications, we understand that the project will consist of the following:

- ◆ Cell 3 Liner (21.6 +/- Acres):
 - ◆ Subgrade prep
 - ◆ 2-foot-thick compacted soil liner
 - ◆ 60 Mil Textured Geomembrane
 - ◆ Double Sided Geocomposite
 - ◆ Leachate Collection Trench
 - ◆ Anchor Trench Backfill
 - ◆ Liner Tie-In Construction
 - ◆ Protective Cover
- ◆ Truck Scale and Pavement:
 - ◆ Concrete walls and slab
 - ◆ 6-inch compacted paving subgrade
 - ◆ 6-inch lime treated paving subgrade
 - ◆ 10-inch Portland cement concrete paving

SCOPE OF SERVICES

The following scope of services is based on our review of project documents and is limited to providing testing and/or observations for the previously mentioned construction. ***We do request that your construction representative provide us with a 24-hour notice for scheduling purposes.*** As such, we agree to provide the appropriate personnel to perform the below construction materials services.

Earthwork

- Obtain and perform laboratory moisture/density relations (ASTM D698) and soil classification tests (liquid limit, plastic limit and percent finer than no. 200 sieve analysis) for each soil type
- Perform in-place moisture/density tests at the proposed rate of 1/8,000 square feet per 6 inches
- Perform in-place sieve analysis (ASTM D 1140) at the rate of 1/100,000 square feet with a minimum of 1 per 6 inches
- Atterberg Limits (ASTM D 4318) at a rate of 1/100,000 square feet with a minimum of 1 per 6 inches
- Permeability (ASTM D 5084) at a rate of 1/100,000 square feet with a minimum of 1 per 6 inches

Drainage Aggregate

- Test for calcium carbonate content (ASTM D 3042 modified) & gradation (ASTM D 422) at a minimum frequency of 1 test per 3,000 cubic yards or per lined area.

Protective Cover

- Visual observation

Geosynthetics Quality Assurance

- Visual Observation of delivery of geomembranes
- Conformance testing (specific gravity, carbon black content, carbon black dispersion, thickness, and tensile properties) at a rate of 1/100,000 square feet of installed.
- Visual observation of installation
- Panel placement recording
- Field seaming observation and testing

Geotextiles

- Visual Observation of delivery, testing, installation, and repairs

Reinforcing Steel

- Perform reinforcing steel observation which will include:
 - verify number and size of bars
 - verify clearance between bars and spacing
 - verify securing, tying and chairing of bars

Cast-In-Place Concrete

- Perform testing during concrete placements, which will include:

- perform ambient and concrete temperature determinations
 - perform entrained air content determination
 - perform slump determination
- Cast concrete test cylinders at the proposed rate of 5/100 cubic yards of concrete placed for pavement, or fraction thereof placed per day
- Compressive strength determination of concrete test cylinders with one tested at 7 days, three tested at 28 days and one held in reserve

Notes and Qualifications:

If a compliance letter, sealed by a professional engineer, is required at the end of the project, please let us know upfront. A compliance letter is not included in the above scope of services. If one is required, additional fees will be incurred.

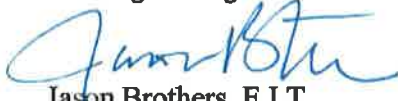
COMPENSATION

While testing is dependent on the construction sequence, contractor performance and efficiency, weather conditions, and the actual testing performed, we suggest an **estimated budget of \$78,310**. The invoicing for this project will use the attached Fee Schedule **and the actual quantity of work performed**. The estimated budget will not be exceeded without prior approval. Services provided by D&S Engineering will be consistent with the engineering standards prevailing at the time and in the area that the work is performed; no other warranty, express or implied, is intended.

A Letter of Agreement for your execution will be forwarded to your office upon your approval of this proposal.

We appreciate the opportunity to provide you with our services. Please call if you have any questions or wish to discuss any aspect of our proposal.

Sincerely,
D&S Engineering Labs, LLC



Jason Brothers, E.I.T.
Vice President

Attachments: Budget Estimate



D&S Engineering Labs
 1101 Shady Oaks Drive
 Denton, Texas 76205-7938
 Phone: 940.735.3733
 7/7/2017

Budget Estimate for Construction Materials
 Testing & Observation Services
Cell 3 Liner Construction & Site Improvements
 Denton, TX
 Proposal No: P17-159 (revised)

Item	Quantity	Unit	Unit Rate	Total
Cell Construction				
Moisture Density Relations (ASTM D698 - Method A or B)	10	each	\$160.00	\$1,600.00
Moisture Density Relations (ASTM D698 - Method C)	1	each	\$170.00	\$170.00
Atterberg Limits	46	each	\$60.00	\$2,760.00
Minus 200 Sieve Analysis	46	each	\$40.00	\$1,840.00
Calcuim carbonate content in aggregate	2	each	\$350.00	\$700.00
Aggregate gradations	2	each	\$80.00	\$160.00
Permeability - Hydraulic Conductivity	36	each	\$400.00	\$14,400.00
In-Place Moisture-Density Tests (Daily Guage Fee)	60	day	\$100.00	\$6,000.00
Construction Inspection (CQA Monitoring)	500	hour	\$65.00	\$32,500.00
Engineering Soils Technician - (when needed)	100	hour	\$45.00	\$4,500.00
Estimated Total for Earthwork Services for Paving & Utilities:				\$64,630.00
Geosynthetics Quality Assurance				
Seam Strength & Peel Adhesion	70	each	\$45.00	\$3,150.00
Density	8	each	\$35.00	\$280.00
Thickness	8	each	\$25.00	\$200.00
Carbon Black Content	8	each	\$40.00	\$320.00
Carbon Black Dispersion	8	each	\$40.00	\$320.00
Estimated Total for Earthwork Services:				\$4,270.00
Concrete Observations (Truck Scales and Paving)				
Concrete Test Cylinders (5 per set)	25	each	\$20.00	\$500.00
Engineering Technician (Min. 3 hrs. per trip & pick up)	20	hour	\$45.00	\$900.00
In-Place Moisture-Density Tests (Daily Guage Fee)	3	days	\$100.00	\$300.00
Lime Depth Checks	3	each	\$10.00	\$30.00
Lime Gradations	3	each	\$10.00	\$30.00
Estimated Total for Drilled Shaft Services:				\$1,760.00
Sr. Project Manager, Site Visits, Report Review, etc.	20	hour	\$100.00	\$2,000.00
Project Administration, Typing Reports, etc.	n/a	%	8	\$5,650.00
Estimated Total for Project Manager/Administration Services:				\$7,650.00
Estimated Total for Above Services:				\$78,310.00
NOT INCLUDED IN REQUIREMENTS OR THE BUDGET				
Tests in excess of above stated quantities or additional tests not listed				
Retesting of any failed tests / observation				
Temporary site curing facility				
Project compliance letter				
The fees listed above for field and laboratory tests, include the equipment necessary to accomplish the task. Fees not listed above are available upon request. Overtime at 1.5 times the normal rate will be billed for time in excess of 8 hours per day and Saturdays, and for time worked before 7 a.m and after 6 p.m. Overtime at 2.0 times the normal rate will be billed for Sundays and holidays.				