AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
· ENVIRONMENTAL
· GEOTECHNICAL
· MATERIALS
· FORENSICS

January 31, 2020

City of Chanhassen
7700 Market Blvd
Chanhassen, MN 55317

Attn: Mr. Charlie Howley, P.E.

RE: Quality Assurance Testing Supplemental Proposal
CSAH 101 Improvement
SAP 194-020-014
Chanhassen, MN
AET Proposal No. 20-22247

Dear Mr. Howley;

American Engineering Testing, Inc. (AET) is pleased to submit this proposal for supplemental services to our Geotechnical Proposal (AET Proposal No. 01-20255 Dated Nov 16, 2018 and accepted by the City of Chanhassen on Nov 26, 2018). This supplemental proposal includes testing services on the CSAH 101 Improvement Project. This proposal has been prepared in response to a January 14, 2020 email request for services and describes our understanding of the project, our anticipated scope of services, our unit rates, and an estimated total fee to perform these services.

PROJECT INFORMATION

The City of Chanhassen will be performing a street improvements/utility improvements project during the 2020 and 2021 construction seasons. The project area will include a reconstruction of CSAH 101 from Pioneer Trail to Flying Cloud Drive, including two prefabricated pedestrian bridges (one supported by spread footings, the other supported by driven pile). New utilities including sanitary sewer, watermain, and storm sewer along with a large reinforced retaining wall. The project will be funded by a mix of State Aid, County and City Funds.

Plans and specifications were prepared by Kimley-Horn. We understand construction inspection and contract management of the project will be performed by Kimley-Horn.

PROJECT APPROACH

During the construction improvements, AET will provide experienced, MnDOT certified Engineering Technicians to perform sampling and material testing services in accordance to the 2019 State Aid for Local Transportation (SALT) Schedule of Materials Control and project specific testing requirements referenced in the project documents.

We understand that the City will contract with MnDOT Metro Inspections for bituminous and concrete plant monitoring.

SCOPE OF SERVICES

Based on our review of the available plans and our experience with the Kimley-Horn on similar projects, our anticipated scope of services is outlined below. These services will be provided on a part-time, will-call basis coordinated through authorized Kimley-Horn or City field personnel.

Soils Sampling and Testing

Our estimate of the sampling and testing to be performed on the grading and base items is based on the requirements of MnDOT's "Specified Density Method" and in accordance with MnDOT Schedule of Materials Control. AET will perform MnDOT Relative Density testing (Proctor) as well as in-place density and moisture testing on the following materials:

- Utility trench backfill
- Embankment fill
- Subgrade preparation

The MnDOT Dynamic Cone Penetrometer will be used to verify compaction on the granular sections, including the Select Granular Borrow, and the Aggregate Base sections of the project following the MnDOT Penetration Index procedures in accordance with the MnDOT Schedule of Materials Control.

AET will perform the sampling of the aggregate base materials, and transport the samples to our St. Paul, Minnesota laboratory. Kimley-Horn personnel will update AET on the schedule of material placement, material sources (including changes in source), and changes in quantities.

Bituminous Pavement Sampling and Testing

As bituminous paving is being completed, AET personnel will pick-up companion samples provided by the contractor, during each day of paving, and transport the samples to our St. Paul, Minnesota laboratory. Samples will be tested in our laboratory for MnDOT Gyratory Mix Properties as follows:

- Gyratory Density (AASHTO T312) MnDOT Modified.
- Rice Specific Gravity (ASTM D2041).
- Asphalt extraction and aggregate gradation (ASTM D2172 Method E-11) MnDOT Modified C137 and C117.
- Fine Aggregate Angularity (AASHTO T 304, Method A, MnDOT 1206.5).
- Percent Crushed Particles (MnDOT 1214.8).

AET will utilize the MnDOT program to determine random core locations of bituminous based on information provided by Kimley-Horn personnel regarding tonnage (lot sizes) and pavement

placement patterns. AET personnel will mark the sample locations in the field. Kimley-Horn will coordinate the removal of both the contractor and companion cores with the contractor.

After the completion of the coring, AET will retrieve companion core samples from the project contractor for laboratory testing. This testing will include the following:

- The thickness of each layer of the core sample.
- The density of each layer of the core sample.

Concrete Testing

During the placement of structural concrete, concrete median barrier, curb and gutter and sidewalk, and ped ramps AET will perform field testing consisting of slump, air content and temperature of the plastic concrete, followed by casting of cylinders for compression testing. The Schedule of Materials Controls requires field testing for slump, air content, and temperature per every 100 cubic yards of each type of concrete placed each day. Compressive strength cylinders are required once per every 300 cubic yards of each type of concrete placed each day for non-structural concrete and one set of strength cylinders per every 100 cubic yards of each type of structural concrete placed each day; the cylinders will be retrieved the following day for curing and testing in our laboratory. AET will cast sets of 5 cylinders, with compressive strength testing as follows: 1 at 7 days, 3 at 28 days, and 5th cylinder will be held in reserve for future testing if the 28-day strength requirement is not met.

Concrete Pavement

During the placement of concrete pavement, AET will perform the correlation field testing of the plastic concrete and provide the contractor's tester with the requested amount of Beam Molds for casting flexural strength test specimens. AET will coordinate with Kimley-Horn field staff to schedule retrieval of the Contractor's Control Beams from the field (if cast) to determine "Opening to traffic loads" strengths. We will also collect the 28-day acceptance beam cast by the contractor for curing and testing in our laboratory.

Concrete Plant Inspection

This proposal does not incorporate the time and cost to perform concrete plant inspections. These services will be provided at your request.

Bituminous Plant Inspection

This proposal does not incorporate the time and cost to perform bituminous plant inspections. These services will be provided at your request.

Geotechnical Services

We have included in our estimate time for a Geotechnical Engineer from our firm to visit the site and provide consultation for items such as muck excavations and driven pile.

Pile Inspection

During the installation of driven pile for support of the pedestrian bridge, AET will supply an experienced MnDOT Certified Pile Inspector. The Pile Inspector will provide summary reports based upon the driving criteria established for each abutment of the structure. These reports will be provided to the Bridge Engineer and the Geotechnical Engineer for review prior to the contractor performing pile filling and cut off operations.

REPORTING

AET staff will prepare reports for Kimley-Horn to review. These reports will include the results of our field and laboratory testing as performed per the 2019 SALT Schedule of Materials Control and testing frequencies referenced in the project documents. AET will complete the Preliminary Grading and Base Report and the Final Grading and Base Report once provided with final project quantities. Daily field reports will also be prepared. AET will also provide a roster of certified personnel performing testing on the project, as well as the completed IA report (if required). AET has also included time to assist Kimley-Horn in Project Closeout Reporting for MnDOT State Aid Requirements.

INDEPENDENT ASSURANCE

AET staff will coordinate with the MnDOT office of Independent Assurance (IA) to schedule audits of AET field and laboratory staff performing sampling and testing for this project, if required. Through the MnDOT Tester Inventory form we will ensure all AET staff providing services to this project meet the requirements set forth by IA.

ESTIMATED FEES

Our services will be provided on a unit cost basis according to the unit rates provided in the attached Fee Schedule Tabulations. Our invoices will be determined by multiplying the number of personnel hours or tests by their respective unit rates. The rates are from the annual fee schedule for 2020 Projects.

We have estimated a cost for the project which estimates the tests needed to satisfy the requirements as defined in the Schedule of Materials Control/SALT Schedule of Materials Control and the project documents. The estimated cost will be required to complete the previously described testing services, based on our experience, planned staging, and assumed scheduling of the project. Our budget cost estimate for the scope of services for the project as outlined in this proposal is $137,724.00. We refer you to the attached Materials Testing Estimate as reference to how we arrived at this estimated cost for each project. We caution that this is only an estimated cost.

Often, variations in the overall cost of the services occur due to reasons beyond our control, such as weather delays, changes in the contractor's schedule, unforeseen conditions or retesting. These variations will affect the actual invoice totals, either increasing or decreasing our total costs for the project from those estimated in this proposal. If more time or tests are required, additional fees may be needed to complete the project testing services. If less time or tests are needed, a cost savings will be realized.

TERMS AND CONDITIONS

The Terms and Conditions listed AET Proposal No. 01-20255 Dated November 16, 2018 and accepted by the City of Chanhassen, November 26, 2018.

ACCEPTANCE

AET requests written acceptance of this proposal in the Proposal Acceptance box below, but the following actions shall constitute your acceptance of this proposal together with the Terms and Conditions: 1) issuing an authorizing purchase order for any of the Services described in this proposal, 2) authorizing AET's presence on site, or 3) written or electronic notification for AET to proceed with any of the Services described in this proposal. Please indicate your acceptance of this proposal by signing below and returning a copy to us. When you accept this proposal, you represent that you are authorized to accept on behalf of the Client.

GENERAL REMARKS

AET appreciates the opportunity to provide this service for you and looks forward to working with you on this project. If you have any questions or need addition information, please contact me.

Sincerely,
American Engineering Testing, Inc.

Prepared By:

Brian Arman
Senior Project Manager
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Email: barman@amengtest.com

Reviewed By:

Joseph Clem
Senior Engineering Assistant
Email: jclem@amengtest.com

Attachments: Materials Testing Estimate

AET PROPOSAL No.: *20-22247* ACCEPTANCE AND AUTHORIZATION

Signature _____ Date _____

Typed/Printed Name: _____

Company: _____

AMERICAN ENGINEERING TESTING, INC.

Materials Testing Estimate for CSAH 101 Improvements (2019 SALT SMC)
S.A.P. 194-020-014, Chanhassen, MN

Material	Units	Qty.	Trips	Hrs	Agency QA Testing Rates	# of Tests Estimated	Cost per test ($)	Cost ($) Estimated
Common Embankment	CU YD	86,360	8	12	Moisture Density 1 per soil type (Proctor)	10	125.00	1250.00
			1	1	Relative Moisture 1 split sample per project	1	15.00	15.00
			20	70	Specified Density (Nuke) 1/10,000 CU YD (test rolled)	45	25.00	1125.00
Watermain	LF	1116						
Sanitary Sewer	LF	1,239	20	30	Specified Density Testing (Nuke) 1/500 LF (Longitudinal)	20	25.00	500.00
Storm Sewer	LF	4,279	20	45	Specified Density Testing (Nuke) 1/250 LF 2' Lifts (Transverse)	45	25.00	1125.00
Total	LF	6,634						
Subgrade Prep	STA	65	15	30	Specified Density Testing (Nuke) 1/25 STA	33	25.00	825.00
					Sand Cone Testing (Upon Request)		55.00	0.00
Grading Material - Select Granular	CU YD	51,540	4	4	Gradation 1/40,000 CU YD	4	105.00	420.00
			1	1	Relative Moisture 1 split sample per project	1	15.00	15.00
			25	40	DCP 1/4,000 CU YD	50	50.00	2500.00
					Nuclear Density Gauge Testing (Upon Request)		25.00	0.00
Aggregate Base - Class V	CU YD	30,950	16	28	Gradation (2 tests per 2,000 yd3)	28	105.00	2940.00
					Percent Crushed (1 per Source Virgin Materials)		175.00	0.00
			16	30	DCP 1/1500 yd3 (test rolled)	40	50.00	2000.00
					Aggregate Quality Test (1 per source Virgin Materials)		555.00	0.00
					Percent Ashpalt Content (1 per source Recycled)	2	198.00	396.00
			1	1	Relative Moisture 1 split sample per project	1	15.00	15.00
Aggregate Backfill	CU YD	9,600	2	2	Gradation 1/40,000 CU YD	2	105.00	210.00
			1	1	Relative Moisture 1 split sample per project	1	15.00	15.00
			6	10	DCP 1/4,000 CU YD	12	50.00	600.00
					Nuclear Density Gauge Testing (Upon Request)		25.00	0.00
Granular Backfill	CU YD	220	1	1	Gradation 1/40,000 CU YD	1	105.00	105.00
			1	1	Relative Moisture 1 split sample per project	1	15.00	15.00
			2	3	DCP 1/4,000 CU YD	2	50.00	100.00
					Nuclear Density Gauge Testing (Upon Request)		25.00	0.00
Course Filter Aggregate	CU YD	1,300	1	1	Gradation 1/40,000 CU YD	1	105.00	105.00
			1	1	Relative Moisture 1 split sample per project	1	15.00	15.00
			2	3	DCP 1/4,000 CU YD	2	50.00	100.00
					Nuclear Density Gauge Testing (Upon Request)		25.00	0.00
Structural Backfill	CU YD	132	1	1	Gradation 1/40,000 CU YD	1	105.00	105.00
			1	1	Relative Moisture 1 split sample per project	1	15.00	15.00
			2	3	DCP 1/4,000 CU YD	2	50.00	100.00
					Nuclear Density Gauge Testing (Upon Request)		25.00	0.00
Bituminous Testing - SP WE/NW (roadway)	Total Tons	21,030	20	25	Mn/Dot Gyratory Mix Properties (1 test/day/mix type)	20	515.00	10300.00
			20	25	Companion Core Density	78	42.00	3276.00
Bituminous Testing - (trail) no cores	Total Tons	2,025	2	3	Mn/Dot Gyratory Mix Properties (1 test/day/mix type)	2	515.00	1030.00
Topsoil Borrow	CU YD	2,372	1	1	Topsoil Borrow Testing (engineers discretion)	1	350.00	350.00
Concrete-Non Bridge	CU YD	2,100			Cylinder Molds (5 Cyl. per 300 CU YD)	250	3.00	750.00
	*Estimated		60	180	Testing of Plastic Concrete (1 air/slump/temp per 100 CU YD) -Included in hourly rate			
					Testing of hardened Concrete Cylinders	250	22.00	5500.00
Concrete-Bridge Concrete *including approach panels	CU YD	160	24	72	Cylinder Molds (5 Cyl. per 100 CU YD)	120	3.00	360.00
	Estimated				Testing of Plastic Concrete (1 set of 5 cyls/ 100 CU YD) - Included in hourly rate			
					Testing of hardened Concrete Cylinders	120	22.00	2640.00
Concrete Pavement	CU YD	520			Concrete Beam Rental (includes cleaning)	12	40.00	480.00
	*Estimated		6	36	Testing of Plastic Concrete 1 set of correlation tests per day -Included in hourly rate			
					Testing of flexural strength beam specimens	12	60.00	720.00
Concrete Barrier	CU YD	400	6	20	Cylinder Molds (5 Cyl. per 100 CU YD)	30	3.00	90.00
	*Estimated				Testing of Plastic Concrete (1 set of 5 cyls/ 100 CU YD) - Included in hourly rate			
					Testing of hardened Concrete Cylinders	30	22.00	660.00
Segmented Masonty Retaining Wall Units		Dry Cast	2	2	Compressive Strength Testsing (ASTMC140) 3 per set	2	285.00	570.00
					Freeze Thaw (ASTM C1262) 5 per set	2	750.00	1500.00
Concrete Sample Pick Up Service					Sample collection from job site	20	75.00	1500.00
			309	684			Testing Subtotal	**44,337.00**

Time and Mileage	Unit	Rate ($)	Estimated Quantity	Estimated Cost
Mileage	Mile	0.75	16,068	12,051.00
Technician Time	Hr	89.00	684	60,876.00
Pile Inspector	Hr	102.00	50	5,100.00
Geotechnical Engineering Time	Hr	128.00	60	7,680.00
Project Management	Hr	128.00	60	7,680.00
			Subtotal =	**93,387.00**

	Estimate
Total Cost Estimate =	**137,724.00**

Estimate prepared by : Brian Arman & Joe Clem