

**Collin County Toll Road Authority
Outer Loop Segment 3a from DNT to East of SH 289
Supplemental Agreement No. 3 to Agreement No. 2015-107**

Scope of Work

The work to be performed by the Engineer shall consist of revisions to the final plans, specifications and estimates (PS&E) for the improvements to the Collin County Outer Loop Access Road (ultimate eastbound 2 lane frontage road with curb and gutter) along Segment 3A from the Dallas North Tollway (DNT) to Preston Road (SH 289). Further investigation into railroad constraints have determined that constructing the ML section instead of the EBFR (impacting approximately 6,800 LF of the project corridor) would eliminate costly relocation. The proposed changes within this scope of work includes eliminating the frontage road concept from just west of Doe Branch to Preston Road (SH 289), resulting in the ultimate “mainlane only” concept. The ultimate eastbound mainlane bridge will be partially constructed and function as a two-way roadway for the interim eastbound frontage road condition. The ultimate bridge details are not part of this scope of work.

Except as provided herein, all terms and conditions of the original contract remain in full force and effect and may only be modified in writing signed by both parties.

The deliverables under this supplemental agreement shall include an update to the previously submitted Drainage Report, Geotech Design, ROW Development, Bridge Design, Retaining Wall Layouts, Roadway Design and update to the 60% PS&E.

BASIC SERVICES

1. ASSEMBLY AND REVIEW OF DATA

Roadway Design Criteria

The ENGINEER shall apply appropriate Roadway Design Criteria based on TxDOT 4R guidelines for urban arterials and freeways and prepare a Design Criteria Tabulation for the project and will submit to the COUNTY for approval. The ENGINEER will use the design criteria to identify the maximum and minimum values for all design elements including drainage criteria and will identify the project preferred values.

2. ROADWAY DESIGN

GENERAL

Typical Sections

The ENGINEER shall update the Collin County Outer Loop Access Road, County Roads 51, and County Road 53 Connector proposed typical sections within the mainlanes only revision area for the 60% submittals, based on the adjusted horizontal and vertical alignments.

Miscellaneous Sheets

1. Update Title sheet (1 plan sheet)
2. Update Index of sheets (1 plan sheet)
3. Update Project layout sheets (1 plan sheet)

TRAFFIC CONTROL

The ENGINEER shall update 60% traffic control and sequence of construction plans based on the adjusted horizontal and vertical alignment.

- a. Traffic Control Advance Warning Layout is not included with this supplemental agreement. It is included under the original contract.
- b. Update Traffic Control Typical Sections
- c. Update Sequence of Construction, Narrative, and General Notes
- d. Update Traffic Control Layouts
- e. Update Intersection Staging Plans
- f. Driveway Staging Plans are not included with this supplemental agreement. It is included under the original contract.
- g. Update TCP Quantities Summary Sheet
- h. Detour Plans are not included with this supplemental agreement. It is included under the original contract.
- i. Traffic Control Standard Details are not included with this supplemental agreement. It is included under the original contract.

ROADWAY DESIGN

Horizontal Alignment Data Sheet

The ENGINEER shall update the 60% plan sheet with all applicable horizontal alignment data (Geopak output) along the project.

Roadway Plan and Profiles

The ENGINEER shall update the 60% plan and profile sheets based on the revised horizontal and vertical geometry.

The plan and profile sheets will include the following:

- a. Collin County Outer Loop Access Road
- b. County Road 51
- c. County Road 53 Connector

Intersection Layout Sheets

The ENGINEER shall update 60% intersection details for four (4) intersections (County Road 51, County Road 53 Connector, and SH 289).

Roadway Cross Sections

The ENGINEER shall update the 60% proposed cross sections based on the revised horizontal and vertical geometry to establish earthwork quantities, grading, and right-of-way need.

Retaining Wall Layouts

The ENGINEER shall develop each retaining wall design and determine the location of each soil boring needed for the foundation design of each retaining wall in accordance with the *Geotechnical Manual*. Prior to preparation of the retaining wall layouts, the ENGINEER shall prepare a comparative cost analysis of different type of retaining walls versus roadway embankment, pavement, soil stabilization, retaining walls type and available ROW to determine the optimum selection based on economics, construction time duration, ROW encroachments (need for construction easements) and construction feasibility.

The approximate limits of the retaining walls shall be based on Station or length. The ENGINEER shall notify the COUNTY of the type of retaining walls that will be used for each Cut and Fill location. Retaining wall types include:

- Mechanically Stabilized Earth (MSE) Walls. The ENGINEER shall prepare the retaining wall layouts showing plan and profile. The ENGINEER shall incorporate a slope of 4:1 or flatter (6:1 preferred) from the existing and finished ground line elevation to the face of the retaining wall.

The ENGINEER shall provide layouts (assume scale 1"=100'), elevations, quantity estimate, summary of quantities, typical cross sections and miscellaneous details of all retaining walls within the project.

If applicable, architectural standard drawings are not included as part of this scope of services and will be provided by the COUNTY and shall be incorporated into design details. The specific requirements for each item are as follows:

1. Layout Plan:
 - a. Designation of reference line
 - b. Beginning and ending retaining wall stations
 - c. Offset from reference line
 - d. Horizontal curve data
 - e. Total length of wall
 - f. Indicate face of wall
 - g. All wall dimensions and alignment relations (alignment data as necessary)
 - h. Soil boring locations
 - i. Drainage, signing, lightning, etc. that is mounted on or passing through the wall, if applicable.
 - j. Subsurface drainage structures or utilities which could be impacted by wall construction.
2. Elevation:
 - a. Top of wall elevations
 - b. Existing and finished ground line elevations
 - c. Vertical limits of measurement for payment
 - d. Type, limits and anchorage details of railing (only if Traffic Railing foundation standard is not being used on this project)
 - e. Top and bottom of wall profiles plotted at correct station & elevation.
 - f. Underdrains
 - g. Any soil improvement, if applicable.
 - h. Drainage, signing, lighting etc. as noted above
 - i. Subsurface drainage structures and utilities as noted above
3. Sectional View:
 - a. Reinforced volume
 - b. Underdrain location
 - c. Soil improvements, if applicable.
4. General Guidelines for Retaining Walls
 - a. The ENGINEER shall perform design calculations to check the external stability of the walls including slope stability, bearing, sliding and overturning and detail drawings in accordance with the standard requirements of the State.
 - b. For retaining wall submittals, the ENGINEER shall look at State's Bridge Division website and Dallas District's website for current requirements.

BID PREPARATION (ROADWAY)

The ENGINEER shall update the following related to bid preparation of the roadway elements including:

1. Estimate of quantities, summary table sheets, and an estimate of probable cost using TxDOT bid items to be provided at the 60% submittal.
2. Construction time line will be prepared using Microsoft Project or similar scheduling software.
3. Applicable general notes and specifications from lists provided by the COUNTY.
4. Roadway Standard and Special Specifications for the Project at the 95% are not included as part of this supplemental agreement. This effort is included in the original contract.
5. Specification, Bid Forms and Contract Documents for the Project at the 95% and final submittal are not included as part of this supplemental agreement. This effort is included in the original contract.

3. DRAINAGE DESIGN

1. HYDROLOGY

The ENGINEER shall update the overall drainage areas (offsite and delineated storm sewer) based on the adjusted horizontal and vertical alignments and recalculate the discharge directed to each proposed culvert. Update the 60% drainage area map identifying all sub-areas.

2. HYDRAULIC DESIGN

Bridge Hydraulic Reports

The ENGINEER shall update a hydraulic study utilizing HEC-RAS to re-analyze the proposed conditions of the following FEMA regulated waterways:

Doe Branch

The ENGINEER will revise the “corrected effective” hydraulic model of the existing channels and conditions using the channel survey data and field observation notes, and available FEMA maps and information. The ENGINEER will revise a hydraulic model of the proposed crossing utilizing the existing hydraulic model and incorporating the proposed structure.

The ENGINEER will revise the Hydraulic Reports for Doe Branch in accordance to the COUNTY and STATE criteria comparing the existing creek conditions with the proposed roadway crossing. Although CLOMR/LOMR submittals are not included in this scope, the ENGINEER shall prepare a drainage report with working maps, profiles, cross sections, and tables that are typically included in a LOMR submittal.

3. DRAINAGE STRUCTURE DESIGN

Storm Sewer Plan & Profile Sheets (Assumed 12 plan sheet)

Update storm sewer plan and profile sheets depicting storm sewer, inlets and manholes necessary to drain the facility and convey the runoff to the designated discharge points, based on the revised horizontal and vertical alignment (60%)

Miscellaneous Drainage Details (Assumed 1 plan sheet)

Revise any and all necessary plan details to clarify construction requirements of the drainage facilities.

Assembly of Drainage Standards

The ENGINEER will select standard details that are applicable to address the mainlane only concept revisions and include in the plans for the 60% submittals).

4. OPEN CHANNEL DESIGN

The ENGINEER shall revise the proposed ditch and/or channel grading design based on the revised horizontal and vertical alignment (60%).

5. STORM WATER POLLUTION PREVENTION PLAN (SW3P)

SW3P Data Sheet

The ENGINEER shall update SW3P on standard TxDOT SW3P plan sheet.

SW3P Layouts

The ENGINEER shall update SW3P erosion control plan consistent with the project construction phases based on revised horizontal and vertical alignment. (60%)

Temporary Drainage

The ENGINEER shall update the temporary drainage during phased construction based on revised horizontal and vertical alignment. (60%)

6. BID PREPARATION (DRAINAGE)

The ENGINEER shall provide the following bid preparation of drainage elements including:

1. Estimate of quantities, summary table sheets, and an estimate of probable cost using TxDOT bid items to be provided at the 60% submittal.
2. Applicable general notes and specifications from lists provided by the COUNTY.
3. Drainage Standard and Special Specifications for the Project are not included as part of this supplemental agreement. This effort is included in the original contract.

7. QUALITY CONTROL (DRAINAGE)

The ENGINEER will perform a Quality Control / Quality Assurance review based on the requirements in the *Project Quality Management Plan (PQMP)* including the following:

QAQC will be performed prior to each submittal and the ENGINEER's QAQC review set will be provided with each submittal.

4. TRAFFIC DESIGN

SIGNING AND PAVEMENT MARKINGS

Signing and Pavement Marking Layout

The ENGINEER shall revise traffic signing and pavement marking layouts based on the revised horizontal and vertical alignment (60%). The layouts will identify the locations of proposed signing and permanent pavement markings in accordance with applicable TxDOT standards and the latest edition of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

Summary Tables

The ENGINEER shall update small sign summary table utilizing TxDOT standard sheets (60%).

TRAFFIC SIGNALS

No additional work included as part of this supplemental agreement.

5. BRIDGE DESIGN

DOE BRANCH

The ENGINEER shall update 60% Bridge Layouts for the proposed Doe Branch Bridge based on the revised horizontal and vertical bridge alignment. The structure is approximately 625' long and 42' wide with a varying (but approximate 30 degree) skew. It is assumed the structure will consist of an I-Girder superstructure supported by cast-in-place concrete bents on a drilled shaft foundation.

BNSF RAILROAD

The ENGINEER shall prepare structural details for bridge over BNSF railroad crossing. The structure is approximately 600' long and 42' wide with a varying (but approximate 15 degree) skew. The details shall include abutment details, interior bent details, span/unit details and beam details. TxDOT standards shall be used if possible. Prestressed concrete I-beam units shall be designed to be continuous slab, with no integral concrete end diaphragms. Bents shall be standard TxDOT bents with standard columns and bent caps and shall not include aesthetic details.

BNSF Exhibit A Preparation

The ENGINEER shall prepare a grade separated railroad Exhibit A for the Collin County Outer Loop Eastbound Mainlanes in accordance with BNSF railroad requirements.

Illumination

The ENGINEER shall refer to TxDOT's Highway Illumination Manual and other deemed necessary State approved manuals for design of underbridge lighting. The ENGINEER shall provide a preliminary layout for initial review and approval by the COUNTY. The Engineer shall prepare circuit wiring diagrams showing the number of luminaries on each circuit, electrical conductors, length of runs, service pole assemblies.

The ENGINEER shall:

- A. Provide underbridge lighting over the existing BNSF Railroad in a configuration that minimizes the need for lane closures during maintenance.
- B. Coordinate with local electric power provider to establish locations for all

- power service drops.
- C. Calculate voltage drop for all required circuits and provide sealed calculations to the COUNTY.
- D. Complete estimation of required quantities.
- E. Provide special specifications as needed for LED luminaires, shared-use path lighting, etc.
- F. Coordinate necessary agreements between the COUNTY and local electrical utility providers.

6. PROJECT MANAGEMENT

Project Coordination and Resolution Meetings

The ENGINEER shall attend the additional below listed meeting with the COUNTY with up to two (2) team members. Meetings will include the following:

1. 60% Resubmittal Comment Review Resolution Meeting
2. Meeting with Affected Property Owners (MAPO)

Project Administration

Preparation of project correspondence and monthly progress reports, coordination with sub consultants, and routine project record keeping.

Invoicing

Preparation of monthly invoices for the project including a progress report for the work completed the previous.

SPECIAL SERVICES

SS1. SURVEY AND RIGHT-OF-WAY

Additional work will include:

1. Revision of overall Parcel Exhibit Map for revised parcels, including creation of revised parcels.
2. Revision of parcel boundaries, including creation of polyline boundaries.
3. Revision of BNSF parcel exhibit.
4. Additional topographic survey of railroad crossing location based on adjusted horizontal alignment. TxDOT "Guidelines for Railroad Grade Separation Project" manual requires profile of the existing top-of-rail, measuring 1,000 ft on each side of the overhead structure. For this scope of services, the 1,000 ft measurement shall extend out from the outside of the ultimate eastbound and westbound mainlane bridge structures.

SS2. GEOTECHNICAL SERVICES

The geotechnical investigation performed for the referenced project will consist of field and laboratory investigations, engineering analysis, and a report prepared by a Registered Professional Engineer.

Field Investigation

The field investigation will consist of drilling nine (9) bridge borings and seven (7) retaining wall borings. The bridge borings will be drilled until 15 feet of unweathered rock is penetrated. Unweathered rock is anticipated to be encountered at average depths of 35 feet below the existing ground surface. Therefore, it is anticipated that the test borings will be drilled to depths of 50 feet below the existing ground surface. If unweathered rock is encountered at average depths of greater than 35 feet, additional drilling footage will be required in order to penetrate 15 feet into unweathered rock.

The retaining wall borings will be advanced to depths of 35 feet below the existing ground surface or until 5 feet of rock is encountered (whichever is shallower). Two (2) of the retaining wall borings will possibly be drilled through existing pavements. Minor traffic control consisting of safety cones only is anticipated for these boring locations.

Subsurface soil samples will be secured with thin walled tube and/or split spoon samples depending on soil type and consistency. Rock encountered within the bridge borings will be continuously rock cored and will also be evaluated using the Texas Department of Transportation Penetrometer (TxDOT Cone). TxDOT cone testing will be performed on 5-foot intervals for the overburden soils for the borings. An additional TxDOT cone test will be performed at 3 feet for the retaining wall borings. All samples will be properly logged, packaged, sealed, and placed in a core box for transportation to the laboratory.

The test borings will be backfilled with soil cuttings and the pavement will be patched upon completion.

The ENGINEER assumes that the client will obtain the right-of-entry to the all of the properties and that the boring locations will be accessible to our conventional truck mounted drilling equipment during normal working hours. AGG will assist the client with ROE coordination during the performance of the field work. The bridge borings will be offset outside of BNSF ROW. Therefore, railroad insurance and permitting will not apply. Should unusual soil conditions be encountered, we will call you with a recommendation and cost estimate to explore these unusual conditions.

Tree clearing will be required in order to access the area of the proposed Branch Doe Creek Bridge. Also, the one boring that will be drilled near the middle of the proposed retaining wall will require tree clearing in order to access this area. This proposal is based upon the assumption that the client will obtain permission from the property owners to allow the ENGINEER to cut down the required trees. This proposal is also based upon downed trees being left on the properties.

The ENGINEER will contact Dig Tess to have them locate underground utilities. However, the ENGINEER is not responsible for damage to underground utilities that are not identified prior to drilling.

Laboratory Investigation

Laboratory tests will be conducted to classify the soil and to evaluate the volume change potential and strength of the soil and rock present at the site. Classification tests consisting of Atterberg limits, percent passing #200 sieve, moisture contents and dry unit weights will be performed. The volume change potential of the soils will also be evaluated by swell tests. The strength of the soil will be estimated using hand penetrometer tests and unconfined compressive strength tests. Unconfined compressive strength testing will also be performed on the rock cores. Sulfate testing will be performed to determine if sulfate resistant concrete is required for below grade concrete. CU triaxial and consolidation testing will be performed to assist the evaluations of the proposed retaining walls.

Engineering Analyses

Results of field and laboratory work will be presented in an engineering report. The report will include our recommendations to guide design and construction of the new roadway and will include the following:

1. Generalized soils stratigraphy and groundwater levels. Results of classification and TCP testing with WinCore format boring logs.
2. Site Condition.
3. Site Geology.
4. Visually classify the soil samples by an engineer in the laboratory.
5. Straight shaft pier recommendations for the design of the proposed bridges.

6. Settlement / swell analysis of bridge abutments.
7. Slope stability analyses for proposed MSE retaining walls.
8. MSE retaining wall recommendations.

SS3. ULTIMATE DESIGN CONCEPT

The ENGINEER will revise the previous basic schematic level geometric design (including geometric layout and basic profile design) of the following locations of the project in the ultimate full build-out configuration and determine the necessary right-of-way footprint:

1. Update Dallas North Tollway (DNT) at Collin County Outer Loop to match NTTA consultant revisions.
2. Update Preston Road (SH 289) at Collin County Outer Loop to place the Collin County Outer Loop on the second level and Preston Road (SH 289) on the third level.

SS5. PUBLIC INVOLVEMENT

Additional Public Involvement

The ENGINEER will attend a Commissioners Court meeting scheduled by the County and prepare a short project overview presentation to be given.

The ENGINEER shall also attend one Meeting with Affected Property Owners (MAPO), assume small local community meeting to present roll plot exhibit displaying revisions to Collin County Outer Loop concept within the project limits.

The ENGINEER will provide a plan view exhibit at 1"=100' scale of the revised project showing proposed improvements and proposed right-of-way limits for use at this meeting.

SUMMARY
CH2M HILL, INC.
Collin County Outer Loop Segment 3: DNT to East of SH 289
SUPPLEMENTAL AGREEMENT NO.3

<i>Collin County Outer Loop Segment 3</i> <i>DNT to SH 289</i>	
Total CH2M HILL Fee **	\$389,616.90
Total Brown & Gay Fee **	\$14,465.00
Total Lamb Star Fee **	\$50,343.53
Total Alliance Fee **	\$54,222.50
Total CH2M HILL Team Fee * **	\$508,647.93

*Excludes Incremental Services

**Includes Direct Costs

Total Incremental Services (Not to Exceed)	\$0.00
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OVERALL CONTRACT AMOUNT	\$508,647.93
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FEE PROPOSAL
CH2M HILL, INC.
Collin County Outer Loop Segment 3: DNT to East of SH 289
SUPPLEMENTAL AGREEMENT NO.3

<i>Collin County Outer Loop DNT to E. of SH 289</i>	Project Manager	Senior Engineer	Project Engineer	EIT	Senior Designer	Clerical	Totals
Rate	\$195.18	\$195.00	\$135.00	\$105.00	\$135.00	\$75.00	
BASIC SERVICES							
Task 1 - Assembly and Review of Data							
Roadway Design Criteria (Freeways)			4	4			8
Task 1 Totals	0	0	4	4	0	0	8
Task 2 - Roadway Design							
A. GENERAL							
Title Sheet				2			2
Index of Sheets				2			2
Project Layout Sheets			1	2			3
Typical Sections (Proposed)	2		4	36			42
Quantity Summary Sheets	1		4	16			21
B. TRAFFIC CONTROL							
Traffic Control General Notes and Narrative	REFER TO BROWN & GAY FEE						
Traffic Control Advance Warning Layout							
Traffic Control Typical Sections							
Traffic Control Plan Sheets							
Assembly of Traffic Control Standards							
C. ROADWAY DESIGN							
Horizontal Alignment Data Sheet	1		1		2		4
Roadway Plan & Profile Sheets	4		34	32	24		94
Cross Street Plan & Profile Sheets	6		12	24			42
Intersection Layout Sheets	2		12	12	10		36
Driveway Profiles/Details/Summary			2	8			10
Roadway Cross Sections	2		40	24			66
Assembly of Roadway Standards							0
RETAINING WALLS							
Retaining Wall Estimated Quantity Summary Table			8		8		16
Retaining Wall Key Map			2		6		8
Retaining Wall Typical Sections	1		8		16		25
Retaining Wall Layouts	2		24		120		146
Retaining Wall Miscellaneous Details	2		16		32		50
D. BID PREPARATION (ROADWAY)							
Determination of Roadway Quantities	4		16	32			52
Construction time line	4		16				20
Roadway General Notes (60%)	2		16				18
Roadway Cost Estimates (60%)	2		8	24			34
E. QUALITY CONTROL (ROADWAY)							
Roadway QA/QC Plan Review	3	0	16	15	16	0	50
Task 2 Totals	38	0	240	229	234	0	741

Collin County Outer Loop DNT to E. of SH 289	Project Manager	Senior Engineer	Project Engineer	EIT	Senior Designer	Clerical	Totals
Rate	\$195.18	\$195.00	\$135.00	\$105.00	\$135.00	\$75.00	
Task 5 - Bridge Design							
A. DOE BRANCH							
Bridge Layouts	6	10	20	12	40		88
Summary of Quantities	1	4	4	12			21
Foundation Design	1		4	10			15
Beam Design	1	6	10	10			27
Foundation Plan	1		24	6	24		55
Abutment Details	1	4	12	12	12		41
Bent Details	3	4	10	8	24		49
Framing Plan	2	8	10	10	20		50
Span Details	2	10	10	12	12		46
Prepare Bridge Calculations			16		16	6	38
B. BNSF RR CROSSING							
Bridge Layouts	6	10	20	12	40		88
Summary of Quantities	1	4	4	12			21
Foundation Design	1		4	10			15
Beam Design	1	6	10	10			27
Foundation Plan	1		10	10	24		45
Abutment Details	1	2	16	10	12		41
Bent Details	3	4	24	12	32		75
Framing Plan	2	8	10	10	20		50
Span Details	2	10	20	12	12		56
Prepare Bridge Calculations			16		16	6	38
C. BNSF EXHIBIT A							
Title Sheet	1	1	4	4	4		14
Project Plan	2	8	12	8	24		54
Project Details		2	8	8	8		26
Bridge Layouts		1	2	2	4		9
Boring Logs			2		2		4
RR Requirements for Bridge Construction		2	8	8	16		34
Rail Profile		2	8	8	16		34
Design Conformance to RR Guidelines Report	2	16	8	8		4	38
D. ILLUMINATION							
Underbridge lighting	2	70	140				212
E. BID PREPARATION (BRIDGE)							
Bridge Cost Estimates (60%)	3		24	24			51
F. QUALITY CONTROL (BRIDGE)							
Bridge QA/QC Plan Review	6		32				38
Task 5 Totals	52	192	502	260	378	16	1,400
Task 6 - Project Management							
A. PROJECT MANAGEMENT							
Schedule, Progress Reports, and Invoices (2 months)	4					10	14
Progress Meetings (1)	3	3	3			2	11
Additional Public Involvement Meetings (2)	6	1	3				10
Task 6 Totals	13	4	6	0	0	12	35
Total Hours (Basic Services)	132	250	921	692	612	28	2,635
Total Labor Costs (Basic Services)	\$25,764	\$48,750	\$124,335	\$72,660	\$82,620	\$2,100	\$356,229

Collin County Outer Loop DNT to E. of SH 289		Project Manager	Senior Engineer	Project Engineer	EIT	Senior Designer	Clerical	Totals
Rate	\$195.18	\$195.00	\$135.00	\$105.00	\$135.00	\$75.00		
SPECIAL SERVICES								
Task SS1 - Survey and Right-of-Way								
A. ROW DOCUMENTS ROW Documents & Preparation		REFER TO LAMB-STAR FEE						
Task SS1 Totals	0	0	0	0	0	0	0	0
Task SS2 - Geotechnical								
A. GEOTECHNICAL INVESTIGATION Geotechnical Investigation		REFER TO ALLIANCE GEOTECHNICAL FEE						
Task SS2 Totals	0	0	0	0	0	0	0	0
Task SS3 - Ultimate Design Concept								
A. ULTIMATE DESIGN CONCEPT								
Dallas North Tollway at Outer Loop Ultimate Geometric Concept Design		10	20	10	20			60
Preston Road (SH 289) at Outer Loop Ultimate Geometric Concept Design		10	20	10	20			60
Coordination with NTTA and TxDOT		8	4	4				16
Task SS3 Totals	28	44	24	40	0	0	0	136
Total Hours (Special Services)		28	44	24	40	0	0	136
Total Labor Costs (Special Services)		\$5,465	\$8,580	\$3,240	\$4,200	\$0	\$0	\$21,485
Reimbursable Direct Expenses								
				Unit	Quantity	Rate	Total	
8.5" x 11" Copies				EA		\$0.10	\$0	
11" x 17" Copies				EA		\$0.15	\$0	
Mileage				MILE		\$0.56	\$0	
White Mylar (11" x 17")				EA		\$1.50	\$0	
Postage (Express Mail)				EA		\$3.00	\$0	
Total Reimbursable Direct Expenses								\$0
Total Markup on Subconsultants (10%)								
								\$11,903
Total CH2M HILL FEE								
								\$389,617

FEE PROPOSAL
BROWN & GAY ENGINEERS
Collin County Outer Loop Segment 3: DNT to East of SH 289
SUPPLEMENTAL AGREEMENT NO.3

<i>Collin County Outer Loop DNT to E. of SH 289</i>	Project Manager	Senior Engineer	Project Engineer	EIT	Senior Designer	Clerical	Totals
Rate	\$190.00	\$160.00	\$120.00	\$105.00	\$130.00	\$60.00	
Task 1 - Project Management							
Project Coordination		4					4
Data Management				4			4
Invoicing		2					2
Meetings		2					2
Creation of Construction Timeline using Microsoft Project		2	2		4		8
Task 1 Totals	0	10	2	4	4	0	20
Task 2 - Roadway Design							
B. TRAFFIC CONTROL							
Traffic Control General Notes and Narrative			2		2		4
Traffic Control Advance Warning Layout (2 phases)			1	1	2		4
Traffic Control Typical Sections (2 phases)			1	2	4		7
Traffic Control Plan Sheets			4	12	16		32
Assembly of Traffic Control Standards							0
Preparation of Quantities and Estimate (8 hours each (3) submittals				1	1		2
Task 2 Totals	0	0	8	16	25	0	49
Task 3 - Drainage Design							
E. SW3P							
SW3P Data Sheet				1	1		2
SW3P Layouts (200 scale)			1	8	8		17
Temporary Drainage (no hydraulic computations)			1	2	1		4
Task 3 Totals	0	0	2	11	10	0	23
Task 4 - Traffic Design							
A. SIGNING & PAVEMENT MARKING							0
Signing & Pavement Marking Layout (100 scale)			2	8	12		22
Summary of Small Signs (assuming 2 sheets)			1	2	1		4
Assembly of Sign and Marking Standards							0
Task 4 Totals	0	0	3	10	13	0	26
Total Hours	0	10	15	41	52	0	118
	0.0%	8.5%	12.7%	34.7%	44.1%		
Total Labor Costs	\$0	\$1,600	\$1,800	\$4,305	\$6,760	\$0	\$14,465
Reimbursable Direct Expenses				Unit	Quantity	Rate	Total
8.5" x 11" Copies				EA	0	\$0.10	\$0
11" x 17" Copies				EA	0	\$0.15	\$0
Mileage				MILE	0	\$0.55	\$0
White Mylar (11" x 17")				EA	0	\$1.50	\$0
Postage (Express Mail)				EA	0	\$3.00	\$0
Total Reimbursable Direct Expenses							\$0



EBFR Collin County Outer Loop
P16-0612Er1
July 7, 2016

ITEMIZED FEES

	Estimated Units	Estimated Unit Cost	Estimated Cost
FIELD INVESTIGATION			
Site Reconnaissance & Boring Staking, hr	6	\$125.00	\$750.00
Trimble Tech GPS Rental, day	1	\$125.00	\$125.00
Utility Clearance Coordination, hr	8	\$95.00	\$760.00
Drilling Coordination, hr	2	\$95.00	\$190.00
	1	\$125.00	\$125.00
Trip Charges, ea	5	\$40.00	\$200.00
Mobilization of ATV Buggy, ls	2	\$450.00	\$900.00
Daily Crew Travel, day	7	\$175.00	\$1,225.00
Soil Drilling, ft	560	\$14.00	\$7,840.00
Rock Coring, ft	135	\$30.00	\$4,050.00
Hollow Stem Auger Casing, ft	0	\$6.00	\$0.00
Buggy Surcharge, ft	695	\$4.00	\$2,780.00
TCP Penetration Tests, ea.	146	\$35.00	\$5,110.00
SPT Penetration Tests, ea.	16	\$25.00	\$400.00
Pavement Penetrations, ea	2	\$85.00	\$170.00
Pavement Patching, ea.	2	\$55.00	\$110.00
Traffic Control	1	\$750.00	\$750.00
ESTIMATED FIELD SUBTOTAL			\$25,485.00
TREE CLEARING			
Tree Clearing for Branch Doe Creek Bridge, ls	1	\$4,000.00	\$4,000.00
Tree Clearing for Middle Retaining Wall Boring, ls	1	\$1,000.00	\$1,000.00
ESTIMATED TREE CLEARING SUBTOTAL			\$5,000.00
LABORATORY TESTING			
Moisture Content, ea.	105	\$7.50	\$787.50
Atterbergs, ea.	25	\$55.00	\$1,375.00
Percent Passing #200 Sieve, ea.	15	\$40.00	\$600.00
Swell Tests,ea.	12	\$85.00	\$1,020.00
Compressive Strength Testing - Soil, ea.	16	\$45.00	\$720.00
Compressive Strength Testing - Rock, ea.	36	\$55.00	\$1,980.00
Sulfate Testing, ea	24	\$85.00	\$2,040.00
CU Triaxial Testing, ea.	2	\$2,400.00	\$4,800.00
Consolidation Testing, ea.	2	\$450.00	\$900.00
Editing Soil Samples, hr	8	\$125.00	\$1,000.00
ESTIMATED LABORATORY SUBTOTAL			\$15,222.50



EBFR Collin County Outer Loop
P16-0612Er1
July 7, 2016

ENGINEERING, ANALYSES & REPORTING

Prepare WinCore Logs	12	\$55.00	\$660.00
	6	\$125.00	\$750.00
Bridge Recommendations	12	\$125.00	\$1,500.00
	4	\$165.00	\$660.00
Soil Swell Calculations	6	\$95.00	\$570.00
	1	\$125.00	\$125.00
Slope Stability Analyses	6	\$55.00	\$330.00
	8	\$125.00	\$1,000.00
	2	\$165.00	\$330.00
	8	\$125.00	\$1,000.00
MSE Retaining Wall Recommendations	2	\$165.00	\$330.00
	4	\$45.00	\$180.00
Reporting	6	\$125.00	\$750.00
	2	\$165.00	\$330.00
ESTIMATED ENGINEERING SUBTOTAL			\$8,515.00
ESTIMATED TOTAL			\$54,222.50

SUMMARY
Survey Fee Estimate
CH2M Hill/Collin County
Collin County Outer Loop Segment 3 Schematic Design: Denton County Line to FM 2478
Supplemental Preston Road Scanning, Parcel Revisions and Topo Within ROW and RR Survey

LAMB-STAR ENGINEERING, L.P.

TASK/LABOR	SENIOR SURVEY STAFF	SENIOR SURVEY PROJECT MANAGER	SURVEY PROJECT MANAGER	SURVEY PRODUCTION MANAGER	SENIOR SURVEY/LASER SCANNING TECHNICIAN	SURVEY TECHNICIAN	FIELD COORDINATOR	CLERICAL/ ADMIN	ABTRACTOR (IN-HOUSE)	ONE-MAN FIELD CREW	TWO-MAN FIELD CREW	THREE-MAN FIELD CREW	TWO-MAN SCANNING CREW	TOTAL PER TASK
Parcel Revisions														
Revisions to 16 Parcels (1, 3, 5, 8, 10, 11, 20, 21, 22, 23, 24, 25)														\$0.00
		12	6	12	48	48	12	6			56			\$23,486.00
Each Parcel includes the following items:														\$0.00
Confirm Current Ownership														\$0.00
Research New Easements														\$0.00
Revise Legal Description														\$0.00
Revise Exhibit														\$0.00
Remove existing monuments														\$0.00
Set new monuments														\$0.00
Review & QA/QC														\$0.00
Sign & Seal Exhibits & Descriptions														\$0.00
Topo Within ROW and RR Survey														
Deed Sketch					1	4								\$420.00
ROE for 15 parcels			1		1	3		4						\$814.00
														\$0.00
														\$0.00
Verify Hz & V Control			1	0	1	2	1				10			\$1,990.00
														\$0.00
Survey for Rail				2	2	6	4				20			\$4,370.00
Cross Section Roadways (4)						1					10			\$1,530.00
Topo Utility Features					2	6	4				15			\$3,375.00
Supplemental Topography	1		4		5	12	7				40			\$8,970.00
	0		0	0	0	0	0				0			\$0.00
Prepare Supplemental Topographic Map	1		2	4	6	12								\$2,600.00
														\$0.00
TOTAL HOURS	2	12	14	18	66	94	28	10	0	0	151	0	0	395
HOURLY RATE	\$ 200.00	\$ 180.00	\$ 150.00	\$ 135.00	\$ 100.00	\$ 80.00	\$ 130.00	\$ 81.00	\$ 60.00	\$ 90.00	\$ 145.00	\$ 165.00	\$ 150.00	\$47,555.00

DIRECT EXPENSES	RATE	+ 10.0%	QUANTITY	ESTIMATE
Mileage	\$0.54	NA	560	\$ 302.40
Aerial Mapping Services		\$ -		\$ -
Materials (Aerial Panels)		\$ -		\$ -
Materials (Control Monuments)		\$ -		\$ -
Property Record Fees		\$ -		
Parcel & Easement Abstracting (2 parcels x \$600 per parcel)	\$600.00			\$ -
Tolls	\$2.61	\$ 0.26	30	\$ 86.13
BNSF Flagger	\$1,200.00	\$ -	2	\$ 2,400.00
Laser Scanner	\$45.00	\$ 4.50		\$ -
		\$ -		\$ -
		\$ -		\$ -
		\$ -		\$ -
		\$ -		\$ -
		\$ -		\$ -
TOTAL DIRECT EXPENSES				\$ 2,788.53

TOTAL ESTIMATE	\$50,343.53
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Field

Office

PM

ODE