

ENGINEERING SERVICES AGREEMENT

THIS AGREEMENT is made and entered by and between COLLIN COUNTY TOLL ROAD AUTHORITY, a political subdivision of the State of Texas, hereinafter referred to as "CCTRA", and, CH2M Hill, Inc., a Florida Corporation, hereinafter referred to as "Engineer", to be effective from and after the date as provided herein.

WITNESSETH:

WHEREAS, the CCTRA desires to engage the services of the Engineer to perform engineering and consulting services in connection with the preparation of final plans, specifications and estimates (PS & E) for the Collin County Outer Loop, Segment 3A a (Dallas North Toll Way to East of SH 289) in Collin County, hereinafter referred to as the "Project"; and

WHEREAS, the Engineer desires to render such engineering services for the CCTRA upon the terms and conditions provided herein.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

That for and in consideration of the covenants contained herein, and for the mutual benefits to be obtained hereby, the parties hereto agree as follows:

I. Employment of the Engineer

The CCTRA hereby agrees to retain the Engineer to perform professional engineering services in connection with the Project; Engineer agrees to perform such services in accordance with the terms and conditions of this Agreement, exercising the same degree of care, skill, and diligence as is ordinarily possessed and exercised by a member of the same profession, currently practicing, under similar circumstances.

II. Scope of Services

2.1 The parties agree that Engineer shall perform such services as are set forth herein and described in Exhibit "A", which is attached hereto and thereby made a part of this Agreement. Work for each phase shall be preceded by a Notice to Proceed issued by CCTRA. The parties understand and agree that deviations or modifications in the form of written change orders may be authorized from time to time by the CCTRA.

2.2 The Engineer will serve as the CCTRA's professional engineering representative under this Agreement, providing professional engineering, consultation, advice and furnishing customary services incidental thereto. The Engineer agrees to cooperate and coordinate with other design professionals, the CCTRA and its contractors to help facilitate efficient construction of the Project and maintain the Project schedule.

2.3 The Engineer shall advise the CCTRA with regard to the necessity for subcontract work such as special surveys, tests, test borings, or other subsurface investigations in connection with design and engineering work to be performed hereunder. The Engineer shall also advise the CCTRA concerning the results of same. Such survey, test, and investigations shall be furnished to the CCTRA.

2.4 The Engineer shall assist the CCTRA in the preparation and filing of documents required for the approval of governmental authorities having jurisdiction over the Project.

III. Schedule of Services

3.1 The Engineer agrees to commence its services immediately upon execution of this Agreement, or as otherwise directed in writing by the CCTRA, and to proceed diligently with said services to completion as described in the Completion Schedule attached hereto as Exhibit "B" and thereby made a part of this Agreement. Engineer shall not be considered in default of this Agreement for delays in performance caused by circumstances beyond its reasonable control. Should such circumstances occur, the Engineer shall, within a reasonable time of being prevented from performing, give written notice to the CCTRA describing the circumstances preventing continued performance and the efforts being made to resume performance of this Agreement.

3.2 In the event that the Engineer is delayed in the progress of the work on the Project by an act or neglect of the CCTRA, CCTRA's employees, or separate contractors employed by the CCTRA, or by changes ordered in the Project, fire, adverse weather conditions not reasonably anticipated, unavoidable casualties or other causes beyond the Engineer's control, or delay authorized by the CCTRA pending arbitration, or by other causes which the CCTRA and Engineer agree may justify delay, then the Contract Time shall be reasonably extended by Change Order. The CCTRA shall have the right at any time to delay or suspend the work or any part thereof for any reasonable time and if this happens, the Engineer's sole remedy for any delays or suspension shall be any extension of time. However, should the delay continue for more than one year past the original completion date in the completion schedule, the Engineer may request to renegotiate their professional fee provided that the fee is reasonable and substantiated by documents showing the need for the requested increase. Any request for a fee increase shall be submitted to Collin County Toll Road Authority for final approval. The CCTRA shall not be independently liable to the Engineer for any delay or interference caused by circumstances beyond the CCTRA's control or any delay caused by any other person or entity.

IV. Compensation and Method of Payment

The parties agree that Engineer shall be compensated for all services provided pursuant to this Agreement in the amount and manner described and set forth in the Payment Schedule attached hereto as Exhibit "C" and thereby made a part of this Agreement. Engineer further agrees that it will prepare and present such monthly progress reports and itemized statements as are described in said Exhibit "C". Payment will be made in accordance with The Texas Government Code, Title 10, Subtitle F, Chapter 2251. Engineer further agrees to the following terms prior to payment being due by CCTRA:

A. Invoice and Payment

- (1) The Engineer shall provide the CCTRA sufficient documentation to reasonably substantiate the invoices.
- (2) The Engineer will issue monthly invoices for all work performed under the Agreement.
- (3) In the event of disputed or contested billing, only that portion so contested will be withheld from payment, and the undisputed portion will be paid. The CCTRA will exercise reasonableness in contesting any portion thereof. NO interest will accrue on any contested portion of the billing until mutually resolved.
- (4) In the event of any conflict between Paragraph IV and Chapter 2251 of the Texas Government Code, The Texas Government Code shall prevail.

V. Information to be provided by the CCTRA

5.1 The CCTRA agrees to furnish to Engineer, prior to the Engineer's commencement of its services, all that information set forth and described on Exhibit "D", which is attached hereto and thereby made a part of this Agreement.

5.2 The CCTRA will make its facilities accessible to the Engineer as required for the Engineer's performance of its services. The Engineer represents that it understands the scope of this Agreement and has reviewed and inspected the Project sites, and can fully perform its obligations pursuant to this Agreement. Any failure of the Engineer to acquaint itself with the available information will not relieve the Engineer from its responsibilities pursuant to this Agreement.

5.3 The CCTRA shall disclose, to the extent known to the CCTRA, the results of prior tests, inspections or investigations conducted for the Project upon request by the Engineer.

VI. Progress Meetings

In addition to providing the monthly progress reports as required under Paragraph IV herein above, Engineer agrees to attend all monthly progress meetings scheduled by CCTRA, and at such meetings to outline work accomplished and special problem or delays encountered in connection with the Project during the previous report period, as well as planned work activities and special problems and delays anticipated for the next report period. The Engineer agrees to cooperate and coordinate with other design professionals, the CCTRA and its contractors to help facilitate efficient construction of the Project and maintain the Project schedule.

VII. Insurance

Engineer agrees to meet all insurance requirements as set forth on Exhibit "E" which is attached hereto and thereby made a part of this Agreement.

VIII. Indemnity

8.1 The Engineer agrees to the fullest extent permitted by law, to indemnify and hold harmless the CCTRA, Collin County, and its officers, agents and employees of and from damages, injuries (including death), claims, property damages (including loss of use), losses, demands, suits, judgments and costs, including reasonable attorney's fees and expenses, arising out of or occasioned by Engineer's breach of any of the terms or provisions of this Agreement, or by any other negligent act, error or omission of the Engineer, its agents, servants, employees, subcontractors, licensees, invitees, or any other persons or entities for whose acts the Engineer is legally liable.

8.2 In claims against any person or entity indemnified under this Section 8.1 by an employee of the Engineer, anyone directly or indirectly employed by the Engineer or anyone for whose acts the Engineer may be liable, the indemnification obligation under this Section 8.1 shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for the Engineer under workers' compensation acts, disability benefit acts or other employee benefit acts.

IX. Independent Contractor

In the performance of services hereunder, the Engineer shall be deemed an independent contractor and shall not, with respect to its acts or omissions, be deemed an agent, subcontractor or employee of the CCTRA.

X. Assignment and Subletting

The Engineer agrees that neither this Agreement nor the services to be performed hereunder will be assigned or sublet without the prior written consent of the CCTRA. The Engineer further agrees that the assignment or subletting or any portion or feature of the services required in the performance of this Agreement shall not relieve the Engineer from its full obligations to the CCTRA as provided by this Agreement.

XI. Audits and Records/Conflict of Interest

11.1 The Engineer agrees that at any time during normal business hours, and as often as CCTRA may deem necessary, Engineer shall make available to representatives of the CCTRA for examination all of its records with respect to all matters covered by this Agreement, and will permit such representatives of the CCTRA to audit, examine, copy and make excerpts or transcripts from such records, and to make audits of all contracts, invoices, materials, payrolls, records of personnel, conditions of employment and other data relating to all matters covered by this Agreement, all for a period of three (3) years from the date of final settlement of this Agreement or of such other or longer period, if any, as may be required by applicable statute or other lawful requirements.

11.2 The Engineer agrees that it is aware of the conflict of interest requirements of the state law which are applicable to persons entering into contracts with the CCTRA and will abide by the same. Further, a lawful representative of Engineer shall execute the Affidavit shown in Exhibit "F". Engineer understands and agrees that the existence of a conflict of interest during the term of this Agreement will render the agreement voidable.

11.3 The Engineer acknowledges to the CCTRA that it has made full disclosure in writing of any existing conflicts of interest or potential conflicts of interest, including personal financial interest, direct or indirect, in property abutting the proposed Project and business relationships with persons or entities with interest in abutting properties.

XII. Contract Termination

The parties agree that CCTRA shall have the right to terminate this Agreement without cause upon thirty (30) days written notice to Engineer. In the event of such termination without cause, Engineer shall deliver to CCTRA all finished or unfinished documents, data, studies, surveys, drawings, maps, models, reports, photographs or other items prepared by Engineer in connection with this Agreement. Engineer shall have the right to terminate this Agreement upon thirty (30) days written notice to CCTRA in the event of the CCTRA's breach of any material term of this Agreement, including but not limited to compensation and method of payment. Regardless of which party initiates termination, Engineer shall be entitled to compensation for any and all services completed to the satisfaction of CCTRA in accordance with the provisions of this Agreement prior to termination.

XIII. Cost Estimates

The parties recognize and agree that any and all Engineer's estimates of probable construction costs (estimates) prepared by Engineer in connection with the Project represent the best judgment of Engineer as a design professional familiar with the construction industry, but that the Engineer has no control over costs or the price of labor, equipment or materials or over the Contractor's methods of pricing and does not guarantee that any bids solicited or received in connection with the Project will not vary from estimates prepared by Engineer.

XIV. Ownership of Documents

Original drawings and specifications (Instruments of Service) created by Engineer are the property of the Engineer; however, the Project is the property of the CCTRA, and Engineer may not use the drawings and specifications for any purpose not relating to the Project without CCTRA's consent. CCTRA shall be furnished with such reproductions of drawings and specifications as CCTRA may reasonably require. Upon completion of the services or any earlier termination of this Agreement under Article XII, and payment in full of all monies due Engineer, Engineer will revise drawings to reflect significant changes made by data furnished to the Engineer by or through the CCTRA. Engineer will promptly furnish the CCTRA with one (1) complete set of reproducible record prints. All such reproductions shall be the property of the CCTRA who may use them without the Engineer's permission for any proper purpose relating to the Project, including but not limited to, maintenance of the Project, additions to the Project, or completion of the Project. Prints shall be furnished, as an additional service, at any other time requested by CCTRA. The CCTRA may use such drawings in any manner it desires; provided, however, that the Engineer shall not be liable for the use of such drawings for any project other than the Project described herein.

XV. Complete Contract

15.1 This Agreement, including the exhibits hereto numbered "A" through "F", constitute the entire agreement by and between the parties regarding the subject matter hereof and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified or canceled by a duly executed written instrument, signed by the CCTRA and the Engineer.

15.2 Warranties contained in this Agreement are in addition to and not in lieu of, any and all other liability imposed upon the Engineer by law with respect to the Engineer's duties, obligations, and performance hereunder. The Engineer's liability hereunder shall survive the CCTRA's final acceptance and payment for the Project. All representations and warranties set forth in this Agreement, including without limitation, this paragraph, shall survive the final completion of the Work or earlier termination of this Agreement. The Engineer acknowledges that the CCTRA is relying upon the Engineer's skill and experience in performing the services pursuant to this Agreement.

XVI. Mailing of Notices

Unless instructed otherwise in writing, Engineer agrees that all notices or communications to the CCTRA permitted or required under this Agreement shall be addressed to the CCTRA at the following address:

Mr. Clarence Daugherty, P.E., Director
Collin County Engineering Department
4690 Community Ave, Suite 200
McKinney, Texas 75071

County agrees that all notices or communications to Engineer permitted or required under this Agreement shall be addressed to Engineer at the following address:

Mr. Will Barresi, P.E.
CH2M Hill, Inc.
12750 Merit Dr., Ste. 1100
Dallas, TX 75251

All notices or communications required to be given in writing by one party or the other shall be considered as having been given to the date such notice or communication is posted by the sending party.

XVII. Miscellaneous

A. Paragraph Headings

The paragraph headings contained herein are for convenience only and are not intended to define or limit the scope of any provision in this Agreement.

B. Interpret Contract Fairly

Although this Agreement is drafted by CCTRA, should any part be in dispute, the parties agree that the Agreement shall not be construed more favorable for either party.

C. Venue/Governing Law

The parties agree that the laws of the State of Texas shall govern this Agreement, and that it is performable in Collin County, Texas. The venue for any litigation related to this Agreement shall be in Collin County, Texas.

D. Parties Bound

CCTRA and Engineer, and their partners, successors, subcontractors, executors, legal representatives, and administrators are hereby bound to the terms and conditions of this Agreement.

E. Severability

In the event a term, condition, or provision of this Agreement is determined to be void, unenforceable, or unlawful by a court of competent jurisdiction, then that term, condition, or provision shall be deleted and the remainder of the Agreement shall remain in full force and effect.

F. Effective Date

This Agreement shall be effective from and after execution by both parties hereto.

G. Term of Agreement

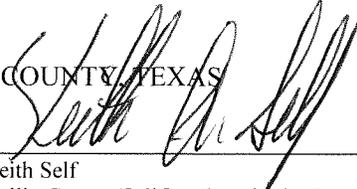
The term of Agreement shall conform to the schedule as stipulated in Exhibit "B" attached herein. No other extension shall be authorized unless granted by written agreement between the CCTRA and Engineer.

H. Observe and Comply

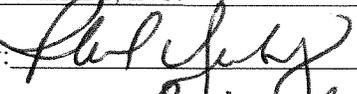
Engineer shall at all times observe and comply with all federal and State laws and regulations and with all City ordinances and regulations which in any way affect this Agreement and the work hereunder, and shall observe and comply with all orders, laws, ordinances and regulations which may exist or may be enacted later by governing bodies having jurisdiction or authority for such enactment. No plea of misunderstanding or ignorance thereof shall be considered. Engineer agrees to defend, indemnify and hold harmless CCTRA and all of its officers, agents, and employees from and against all claims or liability arising out of the violation or any such order, law, ordinance, or regulation, whether it be by itself or its employees.

WITNESS OUR HANDS AND SEALS on the date indicated below.

Date: 1/28/15

COLLIN COUNTY, TEXAS
By: 
Keith Self
Collin County Toll Road Authority Board President
Court Order No. 2015-3002-01-26

Date: 02/18/2015

~~CH2M HILL, INC.~~ **CH2M HILL ENGINEERS, INC.** *P.S.D. 2-18-15*
By: 
Title: Vice President
Philip S. Jerby

ACKNOWLEDGMENT

STATE OF TEXAS }

COUNTY OF COLLIN }

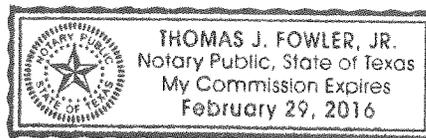
BEFORE ME, Thomas J. Fowler, Sr. on this day personally appeared Philip S. Yerby, of CH2M HILL Engineers, Inc., a Delaware Corporation, known to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same as the act and deed of the corporation, for the purposes and consideration therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the February 18th, 2015.

Thomas J. Fowler Jr.
Notary Public, State of Texas

Thomas J. Fowler Jr.
Printed Name

My Commission expires on the 29th day of February, 2016.



STATE OF TEXAS }

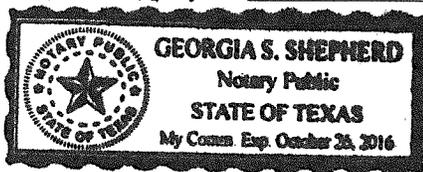
COUNTY OF COLLIN }

BEFORE ME, Georgia S. Shepherd on this day personally appeared **Keith Self, Board President** of COLLIN COUNTY, TEXAS, a political subdivision of the State of Texas, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same as the act and deed of COLLIN COUNTY TOLL ROAD AUTHORITY, for the purposes and consideration therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 28th day of January, 2015.

Georgia S. Shepherd
Notary Public, State of Texas

Georgia S. Shepherd
Printed Name



My Commission expires on the 20th day of January, 2016.

Agreement No. 2015-107

EXHIBIT "A"

SCOPE OF SERVICES

See attached document

EXHIBIT "A"

SCOPE OF SERVICES

Collin County Outer Loop Segment 3A Access Road Plan, Specification and Estimate Preparation Dallas North Tollway (DNT) to east of Preston Road (SH 289)

Purpose

The Scope of Work to be performed by the ENGINEER under this contract will consist of the preparation of 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 east of Preston Road (SH 289) (the Project).

Details

- The Engineer will prepare plans, details and compute quantities to include grading, paving, drainage, removals, bridges, traffic control/construction sequencing, storm water pollution prevention plans, signals and miscellaneous details.
- Design Criteria for the project shall comply with TxDOT 4R guidelines for urban arterials.
- This Project will be developed utilizing English units of measure and all final plan sheets will be half size (11"x17").
- The work described in this scope of services will include the following major work tasks: Assembly and Review of Data; ROW Development; Supplemental SUE and Utility Coordination; Roadway Design; Drainage Design; Traffic Design; Miscellaneous Roadway Design; Geotechnical Design; Bridge Design and Project Management.

BASIC SERVICES

1. ASSEMBLY AND REVIEW OF DATA

Collection of Data, Reports, and Maps

The determination of data requirements, availability, and sources will be coordinated with the COUNTY. Once the data needs and sources are identified, the ENGINEER will contact the appropriate agencies and organizations to obtain the data. Data to be collected will include, but not be limited to:

- Utility plans and documents from appropriate municipalities and utility companies.
- Readily available plan sets for crossing or abutting sections within the Project Limits.
- Readily available flood plain information and studies from the Federal Emergency Management Agency, FEMA, the Corps of Engineers and/or other governmental agencies. The ENGINEER will obtain electronic and/or hard copies from the COUNTY: GIS Data, drainage reports, mapping, survey, and improvement plans within the scoped area. The ENGINEER will acquire from the COUNTY any aerial mapping and soil data for the designated area.

Review of Data

The ENGINEER will review the data collected and from this information will:

- Integrate additional data into the study file and evaluate tasks for supporting documentation.
- Develop additional field data, as needed, following review and discussion with the COUNTY.

Roadway Design Criteria

The ENGINEER shall apply appropriate Roadway Design Criteria based on TxDOT 4R guidelines for urban arterials 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 prepare the existing and proposed typical sections of the roadway, to include Collin County Outer Loop Access Road, Dallas North Tollway Access Road, County Roads 51, 52, 53, 88, 1117, and BNSF RR. The existing pavement structure shall be based upon as as-built plan sets provided by the COUNTY. (Assumed 3 plan sheets)

Miscellaneous Sheets

1. Title sheet (Assumed 1 plan sheet)
2. Index of sheets (Assumed 1 plan sheet)
3. Project layout sheets at 1"=1000' scale (Assumed 2 plan sheets)
4. Survey control data sheet (Assumed 1 plan sheet)

TRAFFIC CONTROL

Traffic Control Plan

The ENGINEER shall prepare traffic control and sequence of construction plans at a scale of 1" = 100'. The TCP plan will show staged construction of the cross streets improvements to maintain local access. The plans shall identify work areas, temporary paving, temporary shoring, signing, detour alignments, barricades, temporary drainage and other traffic control related items as required. A narrative will be prepared and submitted to the COUNTY for review and incorporation into the plans. Traffic control will utilize TxDOT standard details and meet the requirements of the Texas Manual on Uniform Traffic Control Devices (TMUTCD).

- a. Develop Traffic Control Advance Warning Layout (Assumed 1 plan sheet)
In conjunction with the Traffic Control Layouts, the Engineer shall develop an overall advance warning layout in conformance with TxDOT standard requirements.
- b. Develop Traffic Control Typical Sections (Assumed 4 plan sheets)
In conjunction with the Traffic Control Layouts, the Engineer shall develop typical cross sections showing lane widths, edge conditions, channelization and proposed construction area.
- c. Develop Sequence of Construction, Narrative, and General Notes (Assumed 1 plan sheet)
The Engineer shall develop a sequence of construction for the proposed improvements including a written narrative and any applicable general notes.
- d. Traffic Control Layouts (Assumed 3 phases, 36 plan sheets)
Prepare layouts (1" = 100') showing the travel lanes and construction area for each phase of construction. Included in the layouts will be temporary signing and striping, channelization

- devices, barricades and a narrative of the sequence of work.
- e. Intersection Staging Plans (Assumed 1 plan sheet)
Develop typical intersection staging plans for similar intersections. Develop custom intersection staging layouts only for special conditions.
 - f. Driveway Staging Plans (Assumed 1 plan sheet)
Develop a typical driveway staging plan for similar driveways. Develop custom driveway staging layouts only for special conditions.
 - g. TCP Quantities Summary Sheet
The Engineer shall develop TCP Quantity Summary Sheets
 - h. Detour Plans (Assumed 1 plan sheet)
For detour routings on existing streets, roads, or highways, provide layouts of proposed routing, showing "trail blazing" signs at intersections.
 - i. Traffic Control Standard Details
Identify and include applicable TxDOT traffic control standard details for inclusion in the plans.

ROADWAY DESIGN

Horizontal Alignment Data Sheet (Assumed 1 plan sheet)

The ENGINEER shall provide a plan sheet with all applicable horizontal alignment data (Geopak output) along the project.

Removal Sheets (Assumed 6 plan sheets)

The ENGINEER shall provide removal layouts showing items to be removed at a 1" = 100' scale on dual plan layout sheets.

Roadway Plan and Profiles (Assumed 16 plan sheets)

The ENGINEER shall develop the plan sheets and profile sheets at a Scale of 1" = 100' (on 11" x 17" sheets) for the Collin County Outer Loop Access Road and cross streets for this project. The ENGINEER shall refine the vertical alignment for the roadway based upon the approved design criteria and design ultimate schematic. The horizontal curve data and vertical curve data shall be shown including "K" values. The vertical profiles shall use the approved design ultimate schematic as the starting profile, with minor adjustments as necessary.

The plan and profile sheets will include the following:

- a) Collin County Outer Loop Access Road / County Road 88
- b) County Road 52
- c) County Road 51
- d) County Road 53 / County Road 1117

Surface improvements to be removed including driveways, streets, storm sewer piping, storm sewer inlets, abandoned water mains and abandoned sanitary sewer mains will be identified on the plan and profile sheets. It is assumed the franchised utilities will either remove their own equipment or will abandon it in place. Information on abandoned water mains and sanitary sewer will be provided by others. The removal of buildings and building foundations located within the proposed ROW is assumed to be within the scope of this contract and will be identified for removal.

Intersection Layout Sheets (Assumed 5 plan sheets)

The ENGINEER shall develop contour plans and intersection details for five (5) intersections (Dallas North Tollway, County Road 52, County Road 51, County Road 53 / County Road 1117, and SH 289). Layouts will be at a scale of 1"=20'.

Driveway Profiles / Details Summary (Assumed 2 plan sheets)

The ENGINEER shall analyze six (6) driveways within the project and develop driveway profiles as needed to ensure that driveways function as intended. (For example, residential driveways will be designed to accommodate passenger cars; commercial driveways will be designed to accommodate trucks). Delineate the limits of construction outside of the right of way needed to secure an adequate driveway profile. Calculate and summarize driveway quantities.

Driveway details will be prepared in a tabular format.

Miscellaneous Roadway Details (Assumed 1 plan sheet)

Prepare any and all necessary plan details necessary to clarify the construction requirements of the paving facilities.

Roadway Cross Sections

The ENGINEER shall prepare proposed cross sections at a scale of 1" = 10' horizontal and 1"=10' vertical (on 11"X17" format). Cross sections shall be created at all critical locations and on 100-foot increments for Collin County Outer Loop Access Road and cross streets with construction beyond the radius return.

The ENGINEER shall determine the quantities of cut and fill for each cross section and provide the earthwork quantities in a tabular format in the plans.

Assembly of Roadway Standards

The ENGINEER will select standard details applicable to the roadway design as needed for construction and include in the plans for the 60%, 90%, and final submittals.

BID PREPARATION (ROADWAY)

The ENGINEER shall provide the following related to bid preparation of 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 30%, 60%, 95% and final submittal and at major project milestones.
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% and final submittal.
5. Specifications, Bid Forms and Contract Documents for the Project at the 95% and final submittal. Sections to be included are: Advertisement for Bids, Instructions to Bidders, Governing Specifications and Special Provisions, General Notes, Bid Form, Base Bid Schedule, Construction Agreement, Texas Statutory Payment and Performance Bond, Performance Bond and Maintenance Bond.

QUALITY CONTROL (ROADWAY)

The ENGINEER will perform a Quality Control / Quality Assurance review based on the requirements in

the *Project Quality Management Plan* (PQMP) including the following:

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

3. DRAINAGE DESIGN

HYDROLOGY

The ENGINEER shall subdivide the overall drainage areas into sub-areas and calculate the discharge directed to each proposed culvert or inlet. Prepare drainage area map identifying all sub-areas. The ENGINEER shall prepare drainage area maps on standard 11" x 17" plan sheets.

- a) Offsite drainage area map for the site (Scale of 1" = 2000') (Assumed 1 plan sheet)
- b) Storm sewer inlet area maps. (Scale of 1" = 500') (Assumed 2 plan sheets)

The ENGINEER shall design storm sewer improvements for the Collin County Outer Loop Access Road. The runoff to each inlet and bridge and deck drainage will be calculated in accordance with COUNTY criteria using the appropriate design frequency and as defined in the TxDOT Hydraulic Manual and as shown on standard TxDOT runoff and inlet computation plan sheets.

HYDRAULIC DESIGN

Hydraulic Design for Culverts & Storm Sewer

The ENGINEER will perform necessary hydraulic computations for the design of this project utilizing GEOPAK Drainage, THYSIS Culvert or HY-8. Calculations will include culverts, bridge waterways, channels, storm sewers and inlets.

The ENGINEER will provide all hydraulic calculations to the COUNTY by showing the necessary information in the final plan set.

Bridge Hydraulic Reports

The ENGINEER shall prepare a hydrologic study utilizing HEC-HMS (or best available) data to determine discharges at the proposed crossings for the following FEMA regulated waterways:

- a) Doe Branch

The ENGINEER shall conduct a field investigation to document the creek characteristics in the vicinity of the proposed crossings. The hydrologic model will be developed with existing land use conditions and future developed conditions. It is assumed that no channel realignment design will be required for Doe Branch and that a CLOMR will not be required for the project.

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

- a) Doe Branch

The ENGINEER will develop a hydraulic model of the existing channels and conditions using the channel survey data and field observation notes, and calibrate the model using available FEMA maps and information. The ENGINEER shall develop a hydraulic model of the proposed crossing utilizing the

existing hydraulic model and incorporating the proposed structure.

The ENGINEER shall analyze and check scour impacts for the 100 year flood and the lower of the 500 year or overtopping event to the proposed crossing structures for scour potential and channel stability and will incorporate scour protection into the crossing structure design if determined to be necessary. The ENGINEER shall prepare the Hydraulic Reports for Doe Branch in accordance to the COUNTY and STATE criteria comparing the existing creek conditions with the proposed roadway crossing. The ENGINEER shall prepare working maps, profiles, cross sections, and tables to be included with the drainage report.

DRAINAGE STRUCTURE DESIGN

Culvert Layouts (Assumed 4 plan sheets)

Prepare four (4) non-bridge class culvert crossing layout sheets for each cross drainage structure in accordance with State standard details, the Hydraulic Manual and the hydraulic computations developed utilizing HY-8 or other approved method. Prepare layouts at 1" = 20' on 11"x17" plan sheets unless otherwise directed.

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

Prepare 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. The storm sewer plan profiles will be consistent with the hydraulic computations developed using Geopak Drainage or other approved method, and the State Hydraulic Manual. Inlets, manholes and junctions will be in accordance with TxDOT standard details. Prepare layouts at 1" = 100' on 11"x17" plan sheets unless otherwise directed.

Miscellaneous Drainage Details (Assumed 1 plan sheet)

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

Assembly of Drainage Standards

The ENGINEER will select standard details applicable to the drainage design as needed for construction and include in the plans for the 60%, 90%, and final submittals.

OPEN CHANNEL DESIGN

Ditch/Channel Layout Sheets (Assumed 2 plan sheet)

The ENGINEER shall prepare ditch and/or channel grading layout sheets at 1"=50' scale showing proposed grading contours, typical channel section, and limits of grading. Earthwork associated with proposed ditch and/or channel excavations will be tabulated and included in earthwork summary.

Doe Branch Channel Layout Sheets (Assumed 2 plan sheet)

The ENGINEER shall prepare channel grading layout sheets at 1"=50' scale along the limits of Doe Branch grading improvements showing proposed grading contours, typical channel section, and limits of grading. Earthwork associated with proposed Doe Branch channel excavation will be tabulated and included in earthwork summary.

STORM WATER POLLUTION PREVENTION PLAN (SW3P)

SW3P Data Sheet (Assumed 1 plan sheet)

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

SW3P Layouts (Assumed 9 plan sheets)

The ENGINEER shall design a SW3P erosion control plan consistent with the project construction phases that will minimize sediment discharge from the project site through runoff. The ENGINEER shall prepare an erosion control plan at a 1" = 500' scale for each phase of construction.

Post-Construction Plans (BMP Control for TNRCC Section 401)

The ENGINEER will analyze/design the use of vegetative filter strips, grassy swales, special ditch grading, and other non structural BMP controls within the proposed corridor. Any other BMP control designs, such as permanent detention and/or sedimentation ponds will be considered as additional services.

Temporary Drainage

The ENGINEER shall review the temporary drainage during phased construction by running cross sections at major phases of the TCP. The ENGINEER shall review drainage for positive flow and perform a low point review. Temporary drainage will not include hydrologic study but may include temporary pipes and ditch flow lines included in the phases of construction.

BID PREPARATION (DRAINAGE)

The ENGINEER shall provide the following related to 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 30%, 60%, 95% and final submittal and at major project milestones.
2. Applicable general notes and specifications from lists provided by the COUNTY.
3. Drainage Standard and Special Specifications for the Project at the 95% and final submittal.

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:

1. 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 (Assumed 6 plan sheets)

The ENGINEER shall prepare a traffic signing and pavement marking layouts at a scale of 1" = 200' feet on a standard 11" x 17" plan sheets. 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 (Assumed 1 plan sheet)

The ENGINEER shall prepare a small sign summary table utilizing TxDOT standard sheets.

Assembly of Sign and Marking Standards

The ENGINEER will select standard details applicable to the signing and marking design as needed for construction and include in the plans for the 60%, 90%, and final submittals.

TRAFFIC SIGNALS

Traffic Signal Layout (Assumed 1 plan sheet)

The ENGINEER shall develop signal layout sheets showing necessary modifications at the existing signalized intersection of SH 289 including relocation of poles, ground boxes, conduit and/or wiring, and other existing signal components to accommodate the proposed intersection. This work does not include design of a new signal or adjustment to existing wiring configuration and/or phasing.

Assembly of Signal Standards

The ENGINEER will select standard details applicable to the signal design as needed for construction and include in the plans for the 60%, 90%, and final submittals.

RAILROAD

Exhibit A Preparation (Assumed 4 plan sheets)

The ENGINEER shall prepare an at-grade railroad Exhibit A for the Collin County Outer Loop Eastbound Frontage Road on standard 11" x 17" plan sheets in accordance with BNSF railroad requirements and as described below:

- a. General Notes, Description of Work, and Summary of Improvements
- b. Layout Sheet including location of crossing, and existing/proposed typical sections at crossing location.
- c. Crossing Plan & Profile Sheet with the following information:

PLAN

- i. Showing existing and new edge of roadway with dimensions
- ii. Showing existing flasher lights-gates and 6'x6' crossing control house
- iii. Showing new crossing signals with centerline of signal foundations located 5'-3" from face-of-curb and 15' from centerline of track with gates oriented perpendicular to traveled lane.
- iv. Note: by maintaining the existing south edge of roadway (or installing the new curb on south edge of roadway to be 5'-3" from centerline of signal foundation), only the north/east flasher lights-gate mechanism would need to be relocated/replaced.
- v. Show existing and new ends of the concrete crossing surface (note: concrete panels are available in 8-ft lengths, should extend 2' min. beyond back of curb), existing is 24-ft long on both tracks.

PROFILE

- i. Showing level profile of roadway surfaces with top of rail for 35-ft minimum distance from rail (or preferred to 50-ft right of way line)
- d. Existing and Proposed Right-Of-Way layout

BNSF Coordination

The ENGINEER shall attend up to three (3) coordination meetings with BNSF staff to coordinate the design and construction of the proposed at-grade railroad crossing.

BNSF Crossing Layout Plan and General Notes (Assumed 2 plan sheets)

The ENGINEER shall provide general notes and a proposed at-grade crossing layout plan at a scale of 1"=20', including all applicable standards, showing improvements provided in the Exhibit A package.

Assembly of Railroad Standards

The ENGINEER will select standard details applicable to the railroad crossing design as needed for construction and include in the plans for the 60%, 90%, and final submittals.

BID PREPARATION (TRAFFIC)

The ENGINEER shall provide the following related to bid preparation of traffic elements including:

1. Estimate of quantities, summary table sheets, and an estimate of probable cost using TxDOT bid items to be provided at the 30%, 60%, 95% and final submittal and at major project milestones.
2. Applicable general notes and specifications from lists provided by the COUNTY.
3. Traffic Standard and Special Specifications for the Project at the 95% and final submittal.

QUALITY CONTROL (TRAFFIC)

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

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

5. BRIDGE DESIGN

DOE BRANCH

The ENGINEER shall produce complete Bridge Layouts and Structural Details for the proposed Doe Branch Bridge. The structure is approximately 625' long and 30' 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.

STRUCTURE

The ENGINEER shall prepare structural details for bridge. 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.

BRIDGE LAYOUTS

The ENGINEER shall prepare bridge layouts in accordance with TxDOT's Bridge Division Manuals.

FOUNDATION DESIGN

The ENGINEER shall develop the foundation design in accordance with the TxDOT's Bridge Division Geotechnical Manual.

BRIDGE TOTAL QUANTITIES AND COST ESTIMATES

The ENGINEER shall provide all of the bridge quantities by construction phase and the estimate of probable cost for the bridge.

BEARING SEAT AND CONTROL ELEVATIONS

The ENGINEER shall provide bearing seat elevations for each beam and control elevations for each abutment and bent.

GENERAL GUIDELINES FOR BRIDGE DESIGN

The ENGINEER shall make final design calculations and provide information to the COUNTY. The bridge designs shall be in accordance with TxDOT's Bridge Division manuals. TxDOT standard details will be used to the extent possible.

BRIDGE CLASSIFICATION CULVERT LAYOUTS

The ENGINEER shall prepare culvert layouts for submission to the Bridge Division for culverts that meet criteria for bridge classification culverts.

BID PREPARATION (BRIDGE)

The ENGINEER shall provide the following related to bid preparation of bridge/structural elements including:

1. Estimate of quantities, summary table sheets, and an estimate of probable cost using TxDOT bid items to be provided at the 30%, 60%, 95% and final submittal and at major project milestones.
2. Applicable general notes and specifications from lists provided by the COUNTY.
3. Bridge Standard and Special Specifications for the Project at the 95% and final submittal.

QUALITY CONTROL (BRIDGE)

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

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

6. PROJECT MANAGEMENT

Project Coordination and Resolution Meetings

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

1. Design Kickoff Meeting
2. 30% Comment Review Resolution Meeting

3. 60% Comment Review Resolution Meeting
4. 95% Comment Review Resolution Meeting

PS&E Package Coordination

The ENGINEER shall manage the assembly of the PS&E package to include the following:

1. Plan assembly with sheet numbers.
2. Coordination with subconsultants for deliverables.
3. Printing of complete PS&E submittals for delivery to the COUNTY.

Project Administration

Prepare project correspondence and monthly progress reports, coordinate with sub consultants, and maintain routine project record keeping.

Invoicing

The ENGINEER shall prepare monthly invoices for the project including a progress report for the work completed the previous period.

SPECIAL SERVICES

SS1. SURVEY AND RIGHT-OF-WAY

General Standards

All surveys shall meet or exceed the standards set in the Professional Land Surveying Practices Act, the General Rules of Procedures and Practices promulgated by the Texas Board of Professional Land Surveying (TBPLS), and TxDOT's Survey Manual, latest edition, and shall be accomplished in an organized and workman-like manner, subject to the approval of the County.

TxDOT's Right-of-Way Procedures Preliminary to Project Release, Volume 1, (online at: <http://manuals.dot.State.tx.us/>) and TxDOT's Survey Manual, latest edition, will serve as a guide for the format and preparation of all right-of-way documents produced, including Right-of-Way maps, property descriptions (including parcel plats), and other Right-of-Way work products, unless otherwise directed by the County.

The North American Datum of 1983 (NAD83), Texas Coordinate System of 1983 (State Plane Coordinates), applicable to the zone or zones in which the work is performed, with values in U.S. Survey Feet, will be used as the basis for all horizontal coordinates derived, unless otherwise directed by the County.

Elevations will be based on the North American Vertical Datum 88 (NAVD88), unless otherwise directed by the County.

All GPS work, whether primary control surveys or other, shall meet or exceed the current TxDOT's GPS Manual of Practice, latest edition, to the order of accuracy specified in the categories listed below or in a work authorization. If the order of accuracy is not specified in this contract or in a work authorization, the work shall meet or exceed the order of accuracy specified in the publications listed in this paragraph.

All conventional horizontal and vertical control surveys shall meet or exceed the current, TxDOT's Survey Manual, latest edition, and the Texas Society of Professional Surveyors (TSPS) Manual of Practice for Land Surveying in the State of Texas, latest edition, to the order of accuracy specified, and in the categories listed below or in a work authorization. If the order of accuracy is not specified in this contract or in a work authorization, the work shall meet or exceed the order of accuracy specified in the publications listed in this paragraph.

In order to ensure accuracy and accountability of the services provided under this contract, the Surveyor may be required to certify work performed under this contract as true and correct according to, TxDOT's Survey Manual, latest edition, TxDOT's GPS Manual of Practice, latest edition, or the TSPS Manual of Practice for Land Surveying in the State of Texas, as may be applicable.

The Surveyor shall provide temporary signing and traffic control in and around survey operations. All signs, flags and safety equipment shall be provided by the Surveyor. Collin County shall be notified at least 48 hours in advance of any lane closures.

The Surveyor shall provide all personnel, equipment, and survey supplies necessary for the performance of the activities required by this agreement or by any work authorization.

Data (original and processed) shall be provided to the County on a compact disk or other approved medium and shall be in the following formats: Microsoft Word for word processing, MicroStation, Geopak V8i for graphics applications.

Variations from these software applications or other requirements listed above shall only be allowed if requested in writing by the Surveyor and approved by the County.

The Surveyor shall perform Quality Control/Quality Assurance on all procedures, field surveys, data, and products prior to delivery to the County. If, at any time, during the course of reviewing a submittal of any item it becomes apparent to the County that the submittal contains errors, omissions, and inconsistencies, the County may cease its review and return the submittal to the Surveyor immediately for appropriate action by the Surveyor. A submittal returned to the Surveyor for this reason is not a submittal for purposes of the submission schedule.

The Standards for services that are not boundary-related but that relate to surveying for engineering projects may be determined by the project Engineer, construction specifications, or design specifications.

Specific Work To Be Performed for approximately 2.7 miles from the Ultimate Dallas North Tollway and Collin County Outer Loop interchange, past SH 289 to east of Charla Choate property:

1. The Surveyor will prepare overall Parcel Exhibit Map. The Surveyor shall use the previously established Aerial mapping image as a backdrop for the new parcel configuration that comprises the length of the new Right-of-Way corridor. The overall Parcel Exhibit Map will show the new right-of-way lines, parcel boundaries, current ownership, bearings and distances and set or found monumentation for the new right-of-way corridor. Each 22"x 34" sheet will cover approximately 2300 feet of length of the new right-of-way corridor.
2. The Surveyor will prepare 27 Parcels Exhibits. These will show the individual configurations that comprise the new right-of-way corridor. These will show new right-of-way lines, parcel boundaries, current ownership, bearings and distances and set or found monumentation. They will be reviewed by Collin County and CH2M Hill representatives for correctness and parcel configuration. These will include area designations for any determined prescriptive easement areas within the boundaries of the Parcel Exhibits and shown for appraisal purposes. There are approximately 11 Parcels that Right-of-Entry permission was never granted within the Right-of-Way corridor. If Right-of-Entry can't be obtained, the Surveyor will be unable to set the new Right-of-Way monuments on those Parcels. The Surveyor could prepare Parcel Exhibits omitting the new Right-of-Way monumentation to be set. New Right-of-Way monuments can be set after Collin County obtains title to these parcels. It is estimated there will be 15 one-page, 6 two-page, 3 three-page and 3 four-page (48 total pages) Parcels Exhibit pages at a maximum scale of 1"=100'.
3. The Surveyor will prepare 17 Metes and Bounds descriptions that describe the Parcel boundaries. These will be signed and sealed by a Texas Registered Professional Land Surveyor and will become part of each Parcel Exhibit and suitable for acquisition purposes. These will be prepared after Parcel Exhibits have been reviewed and approved by others.
4. The Surveyor will use an outside Abstractor to abstract 27 Parcels that do not have easement references in their current deed. The Abstractor will research for easements back for a period of fifty (50) years. Each current parcel deed could have multiple previous smaller tracts that comprise the current total acreage. In this event, each separate smaller tract will need Abstracting research for the previous fifty (50) years also.
5. The Surveyor will use the Abstractor findings to place the existing easements in relation to current parcel boundaries. This could include existing drainage easements, existing gas easements, existing electrical easements, existing right-of-way easements/dedications and other existing utility easements that may affect the right-of-way corridor alignment, placement of new easements and prescriptive right-of-way locations. This includes field crew time to locate additional utility appurtenances aiding in the placement of newly discovered existing easements.
6. Surveyor shall obtain Right-of-Entry permission prior to physically accessing any private property for the additional 5 parcels at the ultimate Dallas North Tollway and Collin County Outer Loop interchange. Surveyor will utilize public records to determine ownership data and secure

permission to enter private property for purposes of performing Land Surveying. A right-of-entry (ROE) letter will be prepared on County letterhead and mailed to each property owner in the project limits. A written response will be requested either confirming or denying ROE. The Surveyor will make reasonable attempts to contact each landowner verbally prior to conducting any fieldwork if written correspondence is not successful. A log of all contact with landowners will be maintained.

7. Determine boundary lines and rights-of-way lines for approximately 3 parcels and/or rights-of-way at the ultimate Dallas North Tollway and Collin County Outer Loop interchange.

8. Determine boundary lines and rights-of-way lines for approximately 3 parcels and/or rights-of-way at the ultimate Preston Road and Collin County Outer Loop interchange.

9. Surveyor shall prepare Parcel Exhibit with Metes and Bounds description for at-grade crossing of south frontage road from BNSF Railroad. This Parcel Exhibit will be used to define the area of a crossing agreement with BNSF Railroad secured by others.

10. All Surveying shall be performed under the direct supervision of a Professional Land Surveyor licensed and in good standing with the State of Texas.

Deliverables for Survey and ROW Task

1. DGN files containing bearings, distances, monumentation of each parcel configuration (with easements, if Items 4 and 5 are included) required to reproduce the overall Parcel Exhibit Maps.

2. Three (3) copies of signed and sealed Parcel Exhibits that include the associated Metes and Bounds for twenty-three (23) Parcels with PDF copies.

3. Two hard copies (22"x34" & 11"x17") and PDF copies of the overall Parcel Exhibit Map.

**STANDARD RATE SCHEDULE
COLLIN COUNTY OUTER LOOP
ABSTRACTING & PLACEMENT/LOCATING OF RECORDED EASEMENTS ON PARCEL(S)**

SURVEY PERSONNEL:

Survey personnel and equipment will be provided at the following fixed hourly rates:

Senior Survey Staff	\$160.00 per hour
Senior Survey Project Manager/RPLS	\$150.00 per hour
Survey Project Manager/RPLS	\$125.00 per hour
Survey Production Manager/Non-RPLS	\$120.00 per hour
Senior Survey/Laser Scanning Technician	\$95.00 per hour
Survey Technician	\$85.00 per hour
Clerical/Admin	\$75.00 per hour
Abstractor (in-house)	\$60.00 per hour
Field Coordinator	\$120.00 per hour
One-man Field Crew	\$90.00 per hour
Two-man Field Crew	\$125.00 per hour
Three-man Field Crew	\$165.00 per hour
Two-man Laser Scanning Field Crew	\$150.00 per hour
Additional Rodman, Chainman, or Flagman	\$40.00 per hour
G.P.S. Static Receivers	\$300.00 per day per receiver
G.P.S. RTK System	\$50.00 per hour
Robotic Reflectorless Equipment	\$30.00 per hour
Laser Scanning Equipment	\$45.00 per hour
Mileage	\$0.56 per mile
Courthouse Research Specialist -Abstracting	\$500.00 per parcel

There are approximately 27 Parcels that will require Abstracting for easements and then placing/locating those found easements on the associated parcel boundaries.

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 three (3) bridge borings. One bridge boring will be drilled on each end of the proposed bridge and one bridge boring will be located near the middle of the proposed bridge. The field investigation will also consist of drilling two (2) embankment borings to depths of 35 feet and drilling eight (8) pavement borings to depths of 20 feet below the existing ground surface.

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 40 feet below the existing ground surface. Therefore, it is anticipated that the test borings will be drilled to depths of 55 feet below the existing ground surface. If unweathered rock is encountered at average depths of greater than 40 feet, additional drilling footage will be required in order to penetrate 15 feet into unweathered rock.

Two (2) of the pavement borings will be drilled through the existing pavements. The pavements will be cored prior to performing the drilling. These existing county roads are 2-lane roads so traffic control will be required to shut down one lane of traffic during the drilling of these test borings. This proposal includes costs for the traffic control signs, cones and flagmen for these two borings. However, a crash truck has not been included within the scope of this proposal.

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). In addition, TxDOT cone testing will be performed on 5-foot intervals for the overburden soils for the bridge 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 will obtain the right-of-entry to the all of the properties and assumes that the boring locations will be accessible to our conventional truck mounted drilling equipment during normal working hours. Should unusual soil conditions be encountered, we will provide the COUNTY with a recommendation and cost estimate to explore these conditions.

The one boring that will be drilled near the middle of the existing bridge will require tree clearing and a buggy drilling rig in order to access this area. It is assumed that permission will be granted from the property owner to allow the ENGINEER to cut down the required trees. This area of the site is low lying and floods during wet weather. This area of the site will require several days of dry weather after water has receded prior to the ENGINEER being able to access this area even with our ATV buggy drilling equipment.

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. Per TxDOT standards, Atterberg limits, sieve analysis and moisture contents will be performed on every stratum within each of the pavement borings. 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 at 0 to 2 feet and 2 to 4 feet per TxDOT standards. Lime / PI series tests will also be performed on selected clay samples. CU

triaxial testing will be performed for the slope stability analyses for the proposed embankments.

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 bridges.
6. Gradation test results for scour analyses.
7. Settlement / swell analysis of bridge abutments.
8. Pavement subgrade stabilization recommendations.
9. Concrete pavement section recommendations based upon design traffic data provided by others.
10. Comments on the presence and effect of expansive soils on pavement construction will be provided. Alternative methods of reducing any anticipated shrink/swell movements associated with expansive clays will be included for pavement construction, if required.
11. Slope stability analyses for proposed embankments.
12. Embankment filling recommendations.

SS3. ULTIMATE DESIGN CONCEPT

The ENGINEER will perform a 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. Dallas North Tollway (DNT) at Collin County Outer Loop
2. Preston Road (SH 289) at Collin County Outer Loop
3. Future County Road 88 connection at Collin County Outer Loop Eastbound Frontage Road

Design will utilize best-available geometric data for the stated interchanges/intersections and will follow TxDOT/NTTA geometric design requirements. Assumed 2 coordination meetings with NTTA and TxDOT.

Assumptions:

1. Available existing ground topographic survey is limited and will not encompass the entire proposed interchanges at DNT and SH 289. Although basic profiles will be provided for the locations listed above, the Engineer may use 2-ft existing contour data obtained from the North Central Texas Council of Governments (NCTCOG) for areas outside of available topographic data.
2. Interchange configuration at DNT will follow the geometric configuration as shown in DNT Section 4A design schematic dated June 2008. The County will assist in any coordination with the North Texas Tollway Authority (NTTA) to obtain existing and/or current design files at this location.
3. Interchange configuration at SH 289 will follow the geometric configuration of the existing interchange of SH 121 at Preston Road. The County will assist in any coordination with TxDOT to obtain existing and/or current design files at this location.
4. Proposed profiles along the Outer Loop mainlanes and Westbound Frontage Road will be assumed by the Engineer based on proposed interchange layout and are subject to change based on detailed design of these facilities.

Ultimate Design Concept Deliverables

1. Revised Design Schematic with ultimate geometric design at the above locations and associated ROW footprint.

SS4. UTILITY COORDINATION

Utility Coordination

The ENGINEER shall assist the COUNTY in planning, coordinating, and attend up to three (3) utility coordination meetings with the identified affected utility companies within the limits of the project. These meetings will establish the preliminary schedule for the respective utility adjustments performed by others. CH2M HILL will provide up to two (2) team members at each meeting.

Utility Agreements

The COUNTY shall prepare and obtain all necessary Utility Agreements for the project. The ENGINEER shall aid the COUNTY in production of exhibits and estimates for the utility agreements.

INCREMENTAL SERVICES

The following incremental services are considered supplemental to basic or special services as described above and are to be billed by the ENGINEER on a time and materials basis as outlined below not to exceed an overall amount. Prior to any incremental services being performed, the ENGINEER shall prepare for the COUNTY a fee proposal based on pre-negotiated rates. The ENGINEER shall not begin any work until written authorization has been provided by the COUNTY.

IS1. SUBSURFACE UTILITY ENGINEERING (SUE)

Introduction

The ENGINEER will perform the SUE work required for this project in general accordance with the recommended practices and procedures described in ASCE Publication CI/ASCE 38-02 (Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data). As described in the mentioned ASCE publication, four levels have been established to describe the quality of utility location and attribute information used on plans. The four quality levels are as follows:

- Quality Level D (QL”D”) – Information derived from existing records.
- Quality Level C (QL”C”) - QL”D” information supplemented with information obtained by surveying visible above-ground utility features (i.e. valves, hydrants, meters, manhole covers, etc.).
- Quality Level B (QL”B”) – Two-dimensional (x, y) information obtained through the application and interpretation of non-destructive surface geophysical methods. Also known as “designating” this quality level provides the horizontal position of subsurface utilities within approximately one foot.
- Quality Level A (QL”A”) – Also known as “locating”, this quality level provides precise three dimensional (x, y, z) information at critical locations by exposing specific utilities. Non-destructive vacuum excavation equipment is used to expose the utilities at specific points which are then tied down by survey.

It is the responsibility of the SUE provider to perform due-diligence with regard to records research (QL “D”) and acquisition of available utility records. The due-diligence provided for this project will consist of contacting the applicable “one call” agency, visually inspecting the work area for evidence of utilities; and reviewing the available utility record information. Utilities that are not identified through these efforts will be here forth referred to as “unknown” utilities. The ENGINEER’s personnel will scan the defined work area using electronic prospecting equipment to search for “unknown” utilities. However, the ENGINEER is not responsible for designating and locating “unknown” utilities that were not detected while scanning the work area.

Scope of Work

The scope of work described may be modified, with COUNTY concurrence, during the performance of the SUE fieldwork if warranted by actual field findings.

For this project, the ENGINEER will provide QL”B” and “A”.

- QL”B”
 - Along the proposed EBFR from Dallas Parkway to 1200 feet east of Preston Road for the width of the frontage road plus the limits of the proposed grading. (Approximate width of 100’)
 - Along Preston Road for the limits of construction shown on the schematic plus 50’
 - Along Dallas Parkway – for the limits of construction shown on the schematic plus 50’
 - OH utilities along the length of the project as shown on the schematics provided
- QL”A”
 - The QL “A” will involve excavation of test holes on utilities that are in potential conflict with the proposed work. For this proposal, we are assuming 20 QL “A” test holes.

The ENGINEER will perform all surveying that is required for collection of SUE field data.

It has been our experience in this part of north Texas that test hole excavation frequently encounters rock strata. The ENGINEER will do everything feasible to non-destructively expose utilities requested for test holes. However we cannot ensure that vacuum excavation will be successful on all test holes if significant rock layers are encountered. If this becomes an issue we will communicate the locations with the COUNTY immediately to discuss options. Also, for PVC lines located under pavement it may be necessary to excavate additional test holes to locate the line.

Assumptions:

- Storm drain will not be included

Designating Procedures

Prior to beginning field designating activities, the ENGINEER's field manager will review the project scope of work and available utility records. Once these initial reviews are complete, the field manager and technicians will begin designating the approximate horizontal position of known subsurface utilities within the specified project limits. A suite of geophysical equipment (electromagnetic induction, magnetic) will be used to designate metallic/conductive utilities (e.g. steel pipe, electrical cable, telephone cable). Non-metallic/non-conductive utilities will be designated using other proven methods, such as rodding, and probing. Where access is available, a sonde will be inserted into the utility line (e.g. PVC gravity sewer pipe) to provide a medium for signal transmission, which can then be designated using geophysical equipment. In instances where access is not available, (e.g. pressurized PVC water line), the ENGINEER's personnel will attempt to designate the utility by probing. The ENGINEER's personnel will utilize vacuum excavation equipment outfitted with a high-pressure water lance to conduct probing. Probing will typically be conducted at 100-foot intervals; however, the probing interval may vary depending on the specific alignment of the utility. When using probing methods to designate, the ENGINEER will vacuum excavate test holes periodically to provide positive visual verification that the correct utility is being probed. Due to obvious inefficiencies, probing will not be attempted in paved areas.

Accurate collection and recording of designated utilities is a critical component of the SUE process. The ENGINEER will utilize a proven method of collecting and recording survey information once the utilities have been designated in the field. The ENGINEER's field manager will produce detailed sketches depicting each utility as well as relevant surface features such as roadways, buildings, manholes, fire hydrants, utility pedestals, valves, meters, etc. Each utility will be labeled with a unique ID code. For example, if two buried electric cables exist on the project, one will be labeled E1 and the other E2. Paint and pin flags will be used to designate the utilities in the field. A labeled pin flag or paint mark will be used to mark each location where a survey shot is required. Shot points will typically be placed at 100-foot intervals on utilities running parallel to the alignment and at 50-foot intervals on utility crossings. The locations will be numbered sequentially for each individual utility line. For example, if there are 50 shots required on buried electric line E1, the points will be numbered E1-1 through E1-50.

Preliminary field sketches depicting the designated utilities will be prepared for use during subsequent surveying activities. These sketches will also be used to check the survey information for completeness and accuracy.

Locating Procedures

The ENGINEER will utilize its utility designating marks and specific information in the design to lay out the test hole locations. The ENGINEER will attempt to place the test holes outside of paved areas wherever possible. However, some test holes may need to be placed in paved areas that may require traffic control measures to be implemented. The ENGINEER will establish routine/ordinary traffic control (cones and free standing signage, etc.) whenever required as part of our standard pricing. If non-routine traffic control measures are required (barricades, flag person, changeable message board, etc.), these services will be considered extra and invoiced at cost. The COUNTY will be notified if such circumstances arise, and COUNTY approval will be necessary before commencement.

The ENGINEER will utilize non-destructive vacuum excavation equipment to excavate the test hole at the required locations. Once the utilities are located, the ENGINEER will record the type, size, material, depth

to top and general running direction. The test hole will be assigned a unique ID number and will be marked with rebar/cap, nail/disk, or chiseled X, as appropriate. Test-hole excavations will be backfilled with appropriate material and the original surface will be restored. The backfill will be compacted in lifts by mechanical means to minimize settlement.

Deliverables

As a QL”B” SUE deliverable, the ENGINEER will produce a SUE CAD file depicting the type and horizontal location of the designated utilities. The size and material type will be provided only if the information is indicated on available record drawings. The ENGINEER will utilize its standard utility line styles and symbology to produce the QL”B” deliverable of one CAD reference file and existing utility layout sheets with the ROW and Proposed alignments as a background. The existing utility layout sheets will be signed and sealed by a professional engineer registered in Texas.

The QL”A” SUE deliverable will consist of an updated CAD Reference file, updated existing utility sheets, and Test Hole Data sheets containing the field data collected at each test hole. The Test Hole Data Sheets will be signed and sealed by a professional engineer registered in Texas.

Schedule

The ENGINEER can commence work within two weeks of receiving the notice to proceed (NTP). It is estimated that the QL “B” SUE field work can be completed within four (4) work days.

Once the location of the QL “A” test holes have been determined, the QL “A” field work must be preceded by a One Call ticket and a mandatory 48-hour clearance period. Also, for test holes within the pavement, a city permit may be required. Once the permit and clearance period have been obtained, the QL “A” test holes are estimated to be completed within eight (8) work days. The deliverables as previously described can be submitted within 10 days after the survey has been completed.

Estimated Fees

Job Administration (QL "D")			\$1,000.00
QL "B" SUE	\$2,300/Day	(4 Days)	\$9,200.00
QL "A" (See table)			\$22,700.00
Survey	\$1,750/Day	(2 Days)	\$3,500.00
Permitting and Traffic Control	\$2,000/Day	(1 Day)	\$2,000.00
		Total	\$38,400.00

SUE QL "A" (Test Holes)	Unit Price					
	Depth	In Pavement Using Coring Machine	Assumed Quantity	Outside Pavement	Assumed Quantity	Assumed
	0-4 ft.	\$1,050.00	0	\$ 850.00	5	\$4,250.00
	4-8 ft.	\$1,350.00	3	\$ 1,150.00	10	\$15,550.00
	8-12 ft.	\$1,650.00	0	\$ 1,450.00	2	\$2,900.00
	12-18 ft.	\$2,500.00	0	\$ 2,300.00	0	\$0.00
QL "A" Sub-Total			3		17	\$22,700.00

The ENGINEER will invoice test holes based on the actual number completed and the actual depth as indicated in the table above and for QL “B”, only days worked in the field. If non-routine traffic control measures are required (barricades, flag person, changeable message board, etc.), these services will be considered extra and invoiced at cost. The traffic control fee shown above is for estimating purposes only.

The total estimated cost to complete the worked described herein is **Thirty-Eight Thousand Four Hundred and 00/100 Dollars (\$38,400.00)**.

ADDITIONAL SERVICES

The following additional services are beyond the scope of services described above. However, the ENGINEER can provide the additional services, if required, upon the County's written request. Any additional amounts paid to the ENGINEER as a result of any material change to the scope of the project shall be agreed upon in writing by both parties before the services are performed.

The additional services include, but are not limited to, the following:

Additional Construction Services

- Bid Phase Services
- Shop Drawing Review
- Construction Phase Services

Agreement No. 2015-107

EXHIBIT "B"

COMPLETION SCHEDULE

See attached

EXHIBIT "B"

**FINAL DESIGN
COMPLETION SCHEDULE**

Refer to the attached schedule for deliverable/milestone dates

30% Design Submittal

- 3 sets of 11" x 17" plan sheets including:
 - Preliminary Title Sheet
 - Existing and Proposed Typical Sections
 - Plan and Profile Sheets for all Alignments
 - Preliminary Intersection Layouts
 - BNSF Railroad Layout
 - Drainage Area Maps
 - Hydraulic Computations
 - Preliminary Culvert Layouts
 - Preliminary Bridge Layouts
 - Preliminary Geotechnical Boring Locations
 - Preliminary Existing Utility Plans
 - Comprehensive Map of all Utilities Within the Project Area
- 1 set of 11" x 17" 1"=10'(H), 1"=10'(V) cross sections
- ENGINEER's internal QAQC marked-up set

60% Design Submittal

- 3 sets of 11" x 17" plan sheets including:
 - Address 30% Design Comments
 - Update Title Sheet with Index of Sheets including Standards
 - Final Existing and Proposed Typical Sections
 - Preliminary Summary Sheets
 - Preliminary Traffic Control Plans
 - Control Data Sheets & Right Of Way Marker Sheets
 - Plan and Profile Sheets for all Alignments
 - Preliminary Intersection Layouts
 - Miscellaneous Roadway Details
 - Preliminary Storm Sewer Plans
 - Final Drainage Area Maps
 - Final Hydraulic Computations
 - Final Culvert Layouts
 - Existing Utility Plans
 - Final Bridge Layouts
 - Draft Hydraulic Reports for Throckmorton and Slayter Creeks
 - Preliminary Bridge Details
 - Preliminary Signing Layouts
 - Preliminary Pavement Marking Layouts
 - Preliminary SW3P Layouts
- 1 set of 11" x 17" 1"=50'(H), 1"=20'(V) cross sections

Estimate of construction cost
ENGINEER's internal QAQC marked-up set

95% Design Submittal

3 sets of 11" x 17" complete plan set with 60% Comments addressed
1 set of 11" x 17" 1"=50'(H), 1"=20'(V) cross sections
Estimate of construction cost
Preliminary Specification, Bid Form, General Notes and Contract Document
Construction Schedule
ENGINEER's internal QAQC marked-up set

Final Submittal

6 sets of 11" x 17" plan sheets with 95% Comments addressed
1 set of 11" x 17" white mylar sheets
Final Estimate of construction cost
Final Construction Schedule
Final Hydraulic Reports for Throckmorton and Slayter Creeks HEC-HMS/RAS Models on CD
Final Specification, Bid Form, General Notes and Contract Document
ENGINEER'S internal QAQC mark-up set
CD of Final drawings including GPK files for the COUNTY
2 sets of 11" X 17" 1"=50'(H), 1"=20'(V) final cross sections (Paper)
1 set of 11" X 17" 1"=50'(H), 1"=20'(V) final cross sections (Mylar)

Calculations

The ENGINEER shall provide a 3 ring binder with all quantity and design calculations.

COLLIN COUNTY OUTER LOOP SEGMENT 3A FINAL DESIGN & ROW SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish	Gantt Chart															
						4	Dec 28, '14	Mar 15, '15	May 31, '15	Aug 16, '15	Nov 1, '15	Jan 17, '16	Apr 3, '16	Jun							
						S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S
1		NTP from County	1 day	Mon 1/5/15	Mon 1/5/15	[Gantt bar from Dec 28, '14 to Dec 28, '14]															
2		SCHEMATIC REVISIONS	37 days	Tue 1/6/15	Wed 2/25/15	[Gantt bar from Dec 29, '14 to Feb 1, '15]															
3		DNT/SH 289 Ultimate Concept Design	35 days	Tue 1/6/15	Mon 2/23/15	[Gantt bar from Dec 29, '14 to Feb 1, '15]															
4		Submit Revised Schematic	1 day	Wed 2/25/15	Wed 2/25/15	[Gantt bar from Feb 1, '15 to Feb 1, '15]															
5		ENVIRONMENTAL (BY NCTCOG)	35 days	Thu 2/26/15	Wed 4/15/15	[Gantt bar from Feb 2, '15 to Mar 20, '15]															
6		Finalize EA	7 wks	Thu 2/26/15	Wed 4/15/15	[Gantt bar from Feb 2, '15 to Mar 20, '15]															
7		PUBLIC HEARING	1 day	Thu 5/14/15	Thu 5/14/15	[Gantt bar from May 14, '15 to May 14, '15]															
8		Public Hearing	1 day	Thu 5/14/15	Thu 5/14/15	[Gantt bar from May 14, '15 to May 14, '15]															
9		FINAL DESIGN	239 days?	Mon 5/18/15	Thu 4/14/16	[Gantt bar from May 18, '15 to May 18, '16]															
10		Begin PS&E Design	1 day?	Mon 5/18/15	Mon 5/18/15	[Gantt bar from May 18, '15 to May 18, '15]															
11		Geotechnical Investig	20 days	Tue 5/19/15	Mon 6/15/15	[Gantt bar from May 19, '15 to Jun 8, '15]															
12		30% Plan Development	50 days?	Tue 5/19/15	Mon 7/27/15	[Gantt bar from May 19, '15 to Jul 8, '15]															
13		30% Plan Submittal to County	1 day	Wed 7/29/15	Wed 7/29/15	[Gantt bar from Jul 29, '15 to Jul 29, '15]															
14		BNSF Exhibit A Submittal	1 day?	Wed 7/29/15	Wed 7/29/15	[Gantt bar from Jul 29, '15 to Jul 29, '15]															
15		30% Plan Review	10 days	Thu 7/30/15	Wed 8/12/15	[Gantt bar from Jul 30, '15 to Aug 9, '15]															

Project: CCOL Seg 3A Final Des

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Progress	
Project Summary		Manual Summary		Manual Progress	
Inactive Task		Start-only			
Inactive Milestone		Finish-only			

COLLIN COUNTY OUTER LOOP SEGMENT 3A FINAL DESIGN & ROW SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish	Calendar																
						4	Dec 28, '14	Mar 15, '15	May 31, '15	Aug 16, '15	Nov 1, '15	Jan 17, '16	Apr 3, '16	Jun								
						S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	
16		60% Plan Development	60 days?	Thu 8/13/15	Wed 11/4/15																	
17		60% Plan Submittal to County	1 day?	Fri 11/6/15	Fri 11/6/15																	
18		60% Plan Review	10 days?	Mon 11/9/15	Fri 11/20/15																	
19		95% Plan Development	40 days	Mon 11/23/15	Fri 1/15/16																	
20		95% Plan Submittal to County	1 day?	Tue 1/19/16	Tue 1/19/16																	
21		95% Plan Review	10 days	Wed 1/20/16	Tue 2/2/16																	
22		Final Plan Development	30 days	Wed 2/3/16	Tue 3/15/16																	
23		Final Plans Submittal to County'	1 day?	Thu 3/17/16	Thu 3/17/16																	
24		Bid Preparation	20 days	Fri 3/18/16	Thu 4/14/16																	
25		ROW	534 days?	Wed 5/21/14	Mon 6/6/16																	
26		Exhibit Production (Excluding Interchanges)	30 days	Tue 1/6/15	Mon 2/16/15																	
27		Exhibit Production (Interchanges)	15 days	Fri 5/15/15	Thu 6/4/15																	
28		Appraisal/Offer/Closing (BY COUNTY)	262 days	Fri 6/5/15	Mon 6/6/16																	
29																						

Project: CCOL Seg 3A Final Des	Task		Inactive Summary		External Tasks	
	Split		Manual Task		External Milestone	
	Milestone		Duration-only		Deadline	
	Summary		Manual Summary Rollup		Progress	
	Project Summary		Manual Summary		Manual Progress	
	Inactive Task		Start-only			
	Inactive Milestone		Finish-only			

EXHIBIT "C"

PAYMENT SCHEDULE

Invoices will be transmitted to the County on a monthly basis based on a percentage of completion up to that time, and payments to the Engineer will be made as follows:

A derivation of the total contract fee amount is attached.

SUMMARY
CH2M HILL, INC.
Collin County Outer Loop Segment 3: DNT to East of SH 289

<i>Collin County Outer Loop Segment 3 DNT to SH 289</i>	
Total CH2M HILL Fee **	520,085.82
Total Brown & Gay Fee **	75,752.50
Total Lamb Star Fee **	116,633.00
Total Alliance Fee **	\$47,702.50
Total CH2M HILL Team Fee * **	\$760,173.82
*Excludes Incremental Services	
**Includes Direct Costs	
Total Incremental Services (Not to Exceed)	\$38,400.00

FEE PROPOSAL
CH2M HILL, INC.
Collin County Outer Loop Segment 3A: DNT to E. of SH 289

Collin County Outer Loop to E. of SH 289	DNT	Project Manager	Senior Engineer	Project Engineer	EIT	Senior Designer	Clerical	Totals
Rate	\$195.18	\$170.39	\$133.21	\$108.46	\$132.53	\$70.88		
BASIC SERVICES								
Task 1 - Assembly and Review of Data								
Collection of Data, Reports, and Maps				8				8
Review of Data				8				8
Project Design Criteria Tabulation				4	4			8
Task 1 Totals	0	0	20	4	0	0		24
Task 2 - Roadway Design								
A. GENERAL								
Title Sheet	1				4	4		9
Index of Sheets	1				4	4		9
Project Layout Sheets	1				7	7		15
Typical Sections (Existing & Proposed)	3			8	16	8		35
Quantity Summary Sheets	2			8	12	12		34
B. TRAFFIC CONTROL								
Traffic Control General Notes and Narrative								
Traffic Control Advance Warning Layout								
Traffic Control Typical Sections								
Traffic Control Plan Sheets								
Assembly of Traffic Control Standards								
REFER TO BROWN & GAY FEE								
C. ROADWAY DESIGN								
Horizontal Alignment Data Sheet	1			2		4		7
Removal Plan Sheets	2			24	24	8		58
Roadway Plan & Profile Sheets	12	8		40	100	80		240
Cross Street Plan & Profile Sheets	4	4		16	20	30		74
Intersection Layout Sheets	4	4		12	20	20		60
Driveway Profiles/Details/Summary	2				8	16		26
Miscellaneous Roadway Details	2	4		8	16			30
Roadway Cross Sections	4			40	20			64
Assembly of Roadway Standards	3			4	6			13
D. BID PREPARATION (ROADWAY)								
Determination of Roadway Quantities	3			8	14	14		39
Roadway General Notes (60%, 95%, Final)	2			16				18
Roadway Cost Estimates (60%, 95%, Final)	3			3	6			12
Roadway Specs, Bid Form and Contract Docs (95% and Final)	2			16	16		16	50
E. QUALITY CONTROL (ROADWAY)								
Roadway QA/QC Plan Review	4	30		12				46
Task 2 Totals	56	50	217	293	207	16		839
Task 3 - Drainage Design								
A. HYDROLOGY								
Offsite Drainage Area Map	2			16	12			30
Storm Sewer Drainage Area Map	2			24	24	8		58
Runoff Computations and Sheet Tabulations	2				8	8		18
B. HYDRAULIC DESIGN								
Culvert Hydraulic Data Sheet	1	2		6		8		17
Inlet Computations and Sheet Tabulations	1				8	8		17
Storm Sewer Hydraulic Data and Sheet Tabulations	1				8	8		17

Collin County Outer Loop to E. of SH 289		DNT		Project Manager	Senior Engineer	Project Engineer	EIT	Senior Designer	Clerical	Totals
Rate		\$195.18	\$170.39	\$133.21	\$108.46	\$132.53	\$70.88			
Doe Branch Hydraulic Data Sheet		1	4		4					17
Doe Branch HEC-RAS Final Design		2	16	6						40
Doe Branch HEC-RAS Floodway Final Design		1	8							25
Doe Branch Scour Analysis		1	8							17
C. DRAINAGE STRUCTURE DESIGN										
Culvert Layouts (Non-Bridge Class)		4	16	24	24			20		88
Storm Sewer Plan & Profile Sheets		4	12	24	48			32		120
Miscellaneous Drainage Details		1		4	8					13
Assembly of Drainage Standards		1		4	6			4		15
D. OPEN CHANNEL DESIGN										
Ditch / Channel Layout Sheets		2	6	8	16					32
Doe Branch Channel Layout Sheets		2	8	10	16					36
E. SW3P										
SW3P Data Sheet										
SW3P Layouts										
F. BID PREPARATION (DRAINAGE)										
Determination of Drainage Quantities		1		4	10			8		23
Drainage General Notes (60%, 95%, Final)		2		16						18
Drainage Cost Estimates (60%, 95%, Final)		3		3	6					12
Drainage Specifications (95% and Final)		2		8						10
G. QUALITY CONTROL (DRAINAGE)										
Drainage QA/QC Plan Review		4	20	12						36
Task 3 Totals		40	100	169	198	152	0			659
Task 4 - Traffic Design										
A. SIGNING & PAVEMENT MARKING										
Signing & Pavement Marking Layout										
Summary of Small Signs										
Assembly of Sign and Marking Standards										
B. TRAFFIC SIGNALS										
Preston Road (SH 289) Signal Modification Layout		6	8	16	16					46
Assembly of Signal Standards		2		4	4					10
C. RAILROAD										
Exhibit A Preparation (At-Grade Crossing)		8		32	32					72
BNSF Coordination Meetings (3 Meetings)		8	8	8						24
BNSF Crossing Layout Plan and General Notes		4	8	16	12			8		48
Assembly of Railroad Standards		2		2	3			2		9
D. BID PREPARATION (TRAFFIC)										
Determination of Traffic Quantities		2		4	8			8		22
Traffic General Notes (60%, 95%, Final)		2		16						18
Traffic Cost Estimates (30%, 60%, 95%, Final)		2		8	24					34
Traffic Specifications (95% and Final)		2		8						10
E. QUALITY CONTROL (TRAFFIC)										
Traffic QA/QC Plan Review		12	20	12						44
Task 4 Totals		50	44	126	99	18	0			337
Task 5 - Bridge Design										
A. DOE BRANCH										
Bridge Layouts		6	16	48	32			48		150
Summary of Quantities		1	4	4	16					25
Foundation Design		1		4	12					17
Beam Design		1	8	24	24					57
Foundation Plan		1		24	12			32		69
Abutment Details		1	2	16	16			16		51
Bent Details		3	3	24	12			32		74
Framing Plan		2	12	24	24			24		86

Gollin County Outer Loop to E. of SH 289		DNT		Project Manager	Senior Engineer	Project Engineer	EIT	Senior Designer	Clerical	Totals
Rate		\$195.18	\$170.39	\$133.21	\$108.46	\$132.53	\$70.88			
Span Details		2	12	24	16	16				70
Prepare Bridge Calculations				20		20				48
Bridge Cost Estimates		1	8	8		8		8		17
Bridge Specs, Bid Form, and Contract Docs		1	8	8		8				17
B. BID PREPARATION (BRIDGE)										
Bridge Cost Estimates (30%, 60%, 95%, Final)		2		16	16					34
Bridge Specifications (95% and Final)		2		8						10
C. QUALITY CONTROL (BRIDGE)										
Bridge QA/QC Plan Review		4	24							28
Task 5 Totals		28	97	252	180	188		8		753
Task 6 - Project Management										
A. PROJECT MANAGEMENT										
Schedule, Progress Reports, and Invoices (12 months)		24							60	84
Progress Meetings (4)		12	12	12				6		42
Miscellaneous Coordination Meetings (12)		36	12	36						84
Task 6 Totals		72	24	48	0	0		66		210
Total Hours (Basic Services)		282	409	918	884	565		110		3,168
Total Labor Costs (Basic Services)		\$55,041	\$69,690	\$122,287	\$95,879	\$74,879		\$7,797		\$425,572
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
Task SS2 - Geotechnical										
A. GEOTECHNICAL INVESTIGATION										
Geotechnical Investigation										REFER TO ALLIANCE GEOTECHNICAL FEE
B. RIGHT OF ENTRY										
Right of Entry Coordination		8		16				20		44
Task SS2 Totals		8	0	16	0	0		20		44
Task SS3 - Ultimate Design Concept										
A. ULTIMATE DESIGN CONCEPT										
Dallas North Tollway at Outer Loop Ultimate Geometric Concept Design		8	40	20	40					108
Preston Road (SH 289) at Outer Loop Ultimate Geometric Concept Design		8	40	20	40					108
CR 88 at Outer Loop EBFR Ultimate Geometric Concept Design		4	10	6	10					30
Coordination with NTTA and TxDOT		8	4	4	10					16
Modification of Design Schematic				20	20					40
Task SS3 Totals		28	94	70	140	0		0		302
Task SS4 - Utility Coordination										
A. UTILITY COORDINATION										
Utility Coordination		16	20	40	40					116
Utility Agreements		4	8	16						28
Task SS4 Totals		20	28	56	40	0		0		144

<i>Collin County Outer Loop</i> <i>to E. of SH 289</i>	<i>DNT</i>	Project Manager	Senior Engineer	Project Engineer	EIT	Senior Designer	Clerical	Totals	
Rate		\$195.18	\$170.39	\$133.21	\$108.46	\$132.53	\$70.88		
Total Hours (Special Services)		56	122	142	150	0	20	490	
Total Labor Costs (Special Services)		\$10,930	\$20,788	\$18,916	\$16,269	\$0	\$1,418	\$68,320	
INCREMENTAL SERVICES									
<i>Task IS1 - Subsurface Utility Engineering</i>									
A. SUE									
Subsurface Utility Engineering									
REFER TO SCOPE OF SERVICES - IS1, SUBSURFACE UTILITY ENGINEERING									
Task IS1 Total Cost (Not To Exceed)									
								\$38,400.00	
Total Costs (Incremental Services)								\$38,400	
<i>Reimbursable Direct Expenses</i>									
					Unit	Quantity	Rate	Total	
8.5" x 11" Copies						EA	1,000	\$0.10	\$100
11" x 17" Copies						EA	2,500	\$0.15	\$375
Mileage						MILE	1,500	\$0.56	\$840
White Mylar (11" x 17")						EA	500	\$1.50	\$750
Postage (Express Mail)						EA	40	\$3.00	\$120
Total Reimbursable Direct Expenses								\$2,185	
Total Markup on Subconsultants (10%)								\$24,009	
Total CH2M HILL FEE								\$520,086	

**FEE PROPOSAL (BROWN & GAY ENGINEERS)
CH2M HILL, INC.
Collin County Outer Loop Segment 3A: DNT to E. of SH 289**

Collin County Outer Loop to E. of SH 289		DNT	Sheets	Hours/Sheet	Project Manager	Senior Engineer	Project Engineer	ERT	Senior Designer	Clerical	Totals
Rate					\$190.00	\$160.00	\$120.00	\$105.00	\$130.00	\$60.00	
Task 1 - Project Management											
Project Coordination											
Data Management											
Invoicing											
Meetings											
Creation of Construction Timeline using Microsoft Project											
Task 1 Totals											
Task 2 - Roadway Design											
B. TRAFFIC CONTROL											
Traffic Control General Notes and Narrative											
Traffic Control Advance Warning Layout (2 phases)											
Traffic Control Typical Sections (2 phases)											
Traffic Control Plan Sheets (5 intersections @ 2 phases each)											
Assembly of Traffic Control Standards											
Preparation of Quantities and Estimate (8 hours each (3) submittals)											
Task 2 Totals											
Task 3 - Drainage Design											
E. SWSP											
SWSP Data Sheet											
SWSP Layouts (200 scale)											
Temporary Drainage (no hydraulic computations)											
Task 3 Totals											
Task 4 - Traffic Design											
A. SIGNING & PAVEMENT MARKING											
Signing & Pavement Marking Layout (100 scale)											
Summary of Small Signs (assuming 2 sheets)											
Assembly of Sign and Marking Standards											
Task 4 Totals											
Total Hours											
					31	46	114	244	174	0	611
					5.1%	7.9%	18.7%	39.9%	28.5%		
Total Labor Costs					\$5,890	\$7,680	\$13,680	\$25,620	\$22,620	\$0	\$75,490
Reimbursable Direct Expenses											
								Unit	Quantity	Rate	Total
8 1/2 x 11" Copies								EA	0	\$0.10	\$0
11" x 17" Copies								EA	100	\$0.15	\$15
Mileage								MILE	150	\$0.55	\$83
White Mylar (11" x 17")								EA	70	\$1.50	\$105
Postage (Express Mail)								EA	20	\$3.00	\$60
Total Reimbursable Direct Expenses											\$263



EBER, Colton County Outer Loop
 P14-0733E (revised)
 August 15, 2014

ITEMIZED FEES

	Estimated Units	Estimated Unit Cost	Estimated Cost
FIELD INVESTIGATION			
ROE Coordination, hr	23	\$125.00	\$2,875.00
Site Reconnaissance, hr	6	\$125.00	\$750.00
Boring Staking, hr	6	\$95.00	\$570.00
Trimble Tech GPS Rental, day	1	\$125.00	\$125.00
Utility Clearance Coordination, hr	10	\$95.00	\$950.00
Drilling Coordination, hr	4	\$95.00	\$380.00
	2	\$125.00	\$250.00
Trip Charges, ea	8	\$40.00	\$320.00
Mobilization of Truck Rig, is	1	\$325.00	\$325.00
Mobilization of ATV Buggy, is	1	\$450.00	\$450.00
Daily Crew Travel, day	3	\$175.00	\$525.00
Soil Drilling, ft	350	\$14.00	\$4,900.00
Rock Coring, ft	45	\$30.00	\$1,350.00
Hollow Stem Auger Casing, ft	130	\$6.00	\$720.00
Buggy Surcharge, ft	55	\$4.00	\$220.00
TCP Penetration Tests, ea	33	\$35.00	\$1,155.00
SPT Penetration Tests, ea	24	\$25.00	\$600.00
Pavement Penetrations, ea	7	\$85.00	\$170.00
Pavement Patching, ea	2	\$55.00	\$110.00
Traffic Control	1	\$1,550.00	\$1,550.00
ESTIMATED FIELD SUBTOTAL			\$18,295.00
TREE CLEARING			
Tree Clearing for Middle Bridge Boring, is	1	\$4,500.00	\$4,500.00
ESTIMATED TREE CLEARING SUBTOTAL			\$4,500.00
LABORATORY TESTING			
Moisture Content, ea	75	\$7.50	\$562.50
Aterberg, ea	42	\$55.00	\$2,310.00
Sieve Analysis, ea	33	\$45.00	\$1,485.00
Hydrometer, ea	1	\$100.00	\$100.00
Percent Passing #200 Sieve, ea	10	\$40.00	\$400.00
Swell Tests, ea	10	\$85.00	\$850.00
Compressive Strength Testing - Soil, ea	6	\$45.00	\$270.00
Compressive Strength Testing - Rock, ea	12	\$55.00	\$660.00
Sulfate Testing, ea	16	\$85.00	\$1,360.00
Lime - PI Series Testing, ea	7	\$765.00	\$5,355.00
CU Triaxial Testing, ea	2	\$2,400.00	\$4,800.00
Edging Soil Samples, hr	4	\$125.00	\$500.00
ESTIMATED LABORATORY SUBTOTAL			\$13,827.50



EBER, Colton County Outer Loop
 P14-0733E (revised)
 August 15, 2014

ENGINEERING, ANALYSES & REPORTING			
Prepare WinCore Logs	10	\$55.00	\$550.00
	5	\$125.00	\$750.00
Bridge Recommendations	6	\$125.00	\$750.00
	2	\$165.00	\$330.00
PVTR Calculations	6	\$95.00	\$570.00
	2	\$125.00	\$250.00
Pavement Recommendations	4	\$125.00	\$500.00
	2	\$165.00	\$330.00
	4	\$55.00	\$220.00
Slope Stability Analyses	5	\$125.00	\$750.00
	2	\$165.00	\$330.00
Embankment Recommendations	4	\$125.00	\$500.00
	2	\$165.00	\$330.00
	6	\$45.00	\$270.00
Reporting	12	\$125.00	\$1,500.00
	2	\$165.00	\$330.00
Meetings, QA/QC Review & Addressing Comments	12	\$125.00	\$1,500.00
	8	\$165.00	\$1,320.00
ESTIMATED ENGINEERING SUBTOTAL			\$11,080.00
ESTIMATED TOTAL			\$47,702.50

EXHIBIT "D"

INFORMATION TO BE PROVIDED BY THE COUNTY

The COUNTY will furnish the Engineer the following items upon request, if available no later than 30 days from Notice to Proceed (NTP):

- Assist the Engineer, as necessary, in order to obtain the required data and information from other local, regional, State and Federal agencies.
- Assist in Coordinating Right of Entry for all properties within or adjacent to project limits.
- Available existing and future right-of-way plans for entire project.
- Perform all requirements of ROW acquisition including appraisals, negotiations, eminent domain, relocation and property management.
- Assist the Engineer in negotiations with all local, state and federal agencies, utility companies and railroads for agreements and/or relocations required.
- Assist the Engineer, as necessary, in order to obtain the following data:
 - Utility plans and documents from appropriate municipalities and utility companies.
 - Readily available plan sets for crossing sections and improvement plans within the Project Limits.
 - Readily available flood plain information, studies and models from the Federal Emergency Management Agency, FEMA, the Corps of Engineers and/or other governmental agencies.
 - Readily available GIS Data
 - Readily available drainage reports
 - Readily available aerial mapping and soil data for the designated area.
 - Prior environmental studies and reports

EXHIBIT "E"

3.0 INSURANCE REQUIREMENTS

3.1 Before commencing work, the vendor shall be required, at its own expense, to furnish the Collin County Purchasing Agent with certified copies of all insurance certificate(s) indicating the coverage to remain in force throughout the term of this contract.

3.1.1 **Commercial General Liability** insurance including but not limited to the coverage indicated below. Coverage shall not exclude or limit Products/Completed Operations, Contractual Liability, or Cross Liability. Coverage must be written on occurrence form.

- Each Occurrence: \$1,000,000
- Personal Injury & Adv. Injury: \$1,000,000
- Products/Completed Operation Aggregate: \$2,000,000
- General Aggregate: \$2,000,000

3.1.2 **Workers Compensation** insurance as required by the laws of Texas, and Employers' Liability.

Employers' Liability

- Liability, Each Accident: \$500,000
- Disease-Each Employee: \$500,000
- Disease – Policy Limit: \$500,000

3.1.3 **Commercial Automobile Liability** insurance which includes any automobile (owned, non-owned, and hired vehicles) used in connection with the contract.

- Combined Single Limit – Each Accident: \$1,000,000

3.1.4 **Professional/Errors & Omissions Liability** insurance with a two (2) year extended reporting period. If you choose to have project coverage endorsed onto your base policy, this would be acceptable.

- Each Occurrence/Aggregate: \$1,000,000

3.2 With reference to the foregoing insurance requirement, the vendor shall endorse applicable insurance policies as follows:

3.2.1 A waiver of subrogation in favor of Collin County Toll Road Authority, its officials, employees, volunteers and officers shall be provided for General Liability, Commercial Automobile Liability, and Workers' Compensation.

3.2.2 The vendor's insurance coverage shall name Collin County Toll Road Authority as additional insured under the General Liability policy, the Automobile Liability policy and any Umbrella/Excess Liability policy.

3.2.3 All insurance policies shall be endorsed to require the insurer to immediately notify Collin County of any decrease in the insurance coverage limits.

3.2.4 All insurance policies shall be endorsed to the effect that Collin County Toll Road Authority will receive at least thirty (30) days notice prior to cancellation, non-renewal or termination of the policy.

3.2.5 All copies of Certificates of Insurance shall reference the project/contract number.

3.3 All insurance shall be purchased from an insurance company that meets the following requirements:

3.3.1 A financial rating of A-VII or higher as assigned by the BEST Rating Company or equivalent.

3.4 Certificates of Insurance shall be prepared and executed by the insurance company or its authorized agent, and shall contain provisions representing and warranting the following:

3.4.1 Sets forth all endorsements and insurance coverages according to requirements and instructions contained herein.

3.4.2 Sets forth the notice of cancellation or termination to Collin County Toll Road Authority.

EXHIBIT "F"

AFFIDAVIT OF REGULATION OF CONFLICTS OF INTEREST

The undersigned declares and affirms that during the term of this contract they will maintain compliance as defined in Vernon's Texas Codes Annotated, Local Government Code Title 5, Section C, Chapter 171.

I further understand and acknowledge that the existence of a conflict of interest at any time during the term of this contract will render the contract voidable.

Name of Engineer Philip S. Yerby
 Title of Officer Vice President
 Signature of Officer [Handwritten Signature]
 Date: 02/18/2015

ACKNOWLEDGMENT

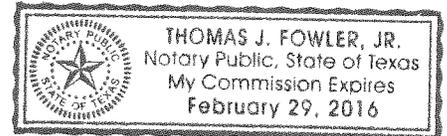
STATE OF TEXAS }
 COUNTY OF COLLIN }

BEFORE ME, on this day personally appeared Philip S. Yerby, known to me (or proved to me on the oath of or through (description of identity card or other document) to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same for the purposes and consideration therein expressed.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this the 18th day of February, 20 15.

[Handwritten Signature]
Notary Public, State of Texas

Thomas J. Fowler Jr.
Printed Name



My Commission expires on the 29th day of February, 20 16.