ENGINEERING SERVICES AGREEMENT

THIS AGREEMENT is made and entered by and between COLLIN COUNTY, TEXAS, a political subdivision of the State of Texas, hereinafter referred to as "County", and, JACOBS ENGINEERING GROUP, INC., a _____ Corporation, hereinafter referred to as "Engineer", to be effective from and after the date as provided herein.

WITNESSETH:

WHEREAS, the County desires to engage the services of the Engineer for 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 3B from east of Preston Road (SH 289) to Custer Road (FM 2478) "Project"; and

WHEREAS, the Engineer desires to render such engineering services for the County 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:

1. Retention of the Engineer

The County 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 County. 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 County.

2.2 The Engineer will serve as County’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 County and its contractors to help facilitate efficient construction of the Project and maintain the Project schedule.

2.3 The Engineer shall advise the County 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 County concerning the results of same. Such survey, test, and investigations shall be furnished to the County.

2.4 The presence or duties of the Engineer's personnel at a construction site, whether as on-site representatives or otherwise, do not make the Engineer or its personnel in any way responsible for those duties that belong to County's construction contractors or other entities, and do not relieve the construction contractors or any other entity of their obligations, duties, and responsibilities, including but not limited to, all construction methods, means, techniques, sequences and procedures necessary for completing all portions of the construction work in accordance with the Contract Documents and any health or safety precautions required by such construction work. The Engineer and its personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions.

2.5 The Engineer will make periodic recommendations for periodic construction progress payments to the construction contractor. Recommendations by the Engineer to the County for periodic construction progress payments to the construction contractor will be based on the Engineer's knowledge, information, and belief from sampling and observation that the work has progressed to the point indicated. Such recommendations do not represent that there are not other matters at issue between the County and the construction contractor that affect the amount that should be paid.

2.6 The Engineer agrees to provide a complete and coordinated set of drawings and specifications for the construction of the Project, 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. Construction drawings, specifications, and other construction documents prepared by the Engineer or its consultants and submitted to the County for approval or contractors for bidding or negotiation purposes shall be complete and capable of construction "as is". While the utility of communications between design professionals and construction contractors for the purpose of clarifying design intent is recognized, the Project should be capable of construction without the necessity of formal revisions or contract modifications to provide missing design information after construction contracts are awarded. Said documents shall comply with all applicable codes, ordinances, statutes, and regulations governing the design of the Project.

2.7 The Engineer shall assist the County 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 County, 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 County 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 County, County's employees, or separate contractors employed by the County, 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 County pending arbitration, or by other causes which the County and Engineer agree may justify delay, then the Contract Time shall be reasonably extended by Contract Amendment. The County 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 County for final approval. The County shall not be independently liable to the Engineer for any delay or interference caused by circumstances beyond the County'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 County:

A. Invoice and Payment

(1) The Engineer shall provide the County 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 County 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 bv the County

5.1 The County 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 County 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 County shall disclose, to the extent known to the County, 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 County,

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 County 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

Engineer agrees to indemnify the County to the fullest extent allowed by section 271.904 of the Texas Local Government Code, including payment of the County's reasonable attorneys' fees to the extent such is allowed under 271.904(b).

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 County.

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 County. 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 County as provided by this Agreement.

XI. Audits and Records/Prohibited Interest

11.1 The Engineer agrees that at any time during normal business hours, and as often as County may deem necessary, Engineer shall make available to representatives of the County for examination all of its records with respect to all matters covered by this Agreement, and will permit such representatives of the County 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 County 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 County 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 County 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 County 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 County in the event of the County'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 County 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 County, and Engineer may not use the drawings and specifications for any purpose not relating to the Project without County's consent. County shall be furnished with such reproductions of drawings and specifications as County 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 during construction as per the marked-up prints, drawings, and other data furnished to the Engineer by or through the County or Contractor. Engineer will promptly furnish the County with one (1) complete set of reproducible record prints. All such reproductions shall be the property of the County 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. The aforementioned revisions will be based upon information supplied by the County's construction contractor and will be assumed by Engineer to be complete and accurate. As such, Engineer shall not be responsible for errors or omissions resulting therefrom. Prints shall be furnished, as an additional service, at any other time requested by County. The County 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 County 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 County'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 County 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 County permitted or required under this Agreement shall be addressed to the County at the following address:

Mr. Clarence Daugherty, P.E.
Collin County Engineering
4690 Community Ave., Suite 200
McKinney, TX 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. Justin D. Beaird, P.E.
Jacobs Engineering Group, Inc.
1999 Bryan Street, Ste. 1200
Dallas, TX 75201

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 County, 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

County 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 County 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 County 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.

I. Expenses for Enforcement

In the event either Party hereto is required to employ an attorney to enforce the provisions of this Agreement or is required to commence legal proceedings to enforce the provisions hereof, the prevailing Party shall be entitled to recover from the other, reasonable attorney's fees and court costs incurred in connection with such enforcement, including collection.

WITNESS OUR HANDS AND SEALS on the date indicated below.

COLLIN COUNTY, TEXAS

Date: _____

By: _____
Michalyn Rains, CPPO, CPPB
Purchasing Agent
Court Order No. _____

_____

Date: _____

By: _____

_____
Print Name

Title: _____

ACKNOWLEDGMENT

STATE OF TEXAS }
}
COUNTY OF COLLIN }

BEFORE ME, _____ on this day personally appeared _____, of _____, a _____ Corporation, known to me (or proved to me on the oath of _____ or through Texas Drivers License (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 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 _____ day of _____, 2019.

_____
Notary Public, State of Texas

_____
Printed Name

My Commission expires on the _____ day of _____, _____.

STATE OF TEXAS }
}
COUNTY OF COLLIN }

BEFORE ME, _____ on this day personaly appeared Michalyn Rains, Purchasing Agent 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, TEXAS, for the purposes and consideration therein expressed and in the capacity therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, this _____ day of _____, 2019.

_____
Notary Public, State of Texas

_____
Printed Name

My Commission expires on the _____ day of _____, _____.

EXHIBIT "A"

SCOPE OF SERVICES

Collin County Outer Loop Segment 3B Access Road Plan, Specification and Estimate Preparation from east of Preston Road (SH 289) to Custer Road (FM 2478)

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 3B from east of Preston Road (SH 289) to Custer Road (FM 2478) (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, County Road 88, Coit Road, and FM 2478. 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 20 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) Coit Road
c) FM 2478

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.

The ENGINEER shall consider options for shifting the roadway from the ultimate EBFR to the WBFR. If the COUNTY decides to shift the alignment of the interim roadway, the engineering design and plan preparation efforts for this change will be considered Incremental Services (see below).

Intersection Layout Sheets (Assumed 3 plan sheets)

The ENGINEER shall develop contour plans and intersection details for three (3) intersections (CR 88, Coit Road and FM 2478). Layouts will be at a scale of 1" =20'.

Driveway Profiles / Details Summary (Assumed 2 plan sheets)

The ENGINEER shall analyze up to three (3) 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) Wilson Creek

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 Wilson Creek 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) Wilson Creek

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 Wilson Creek 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 1 plan sheet)

Prepare one (1) 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 17 plan sheets)

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.

Wilson Creek Channel Layout Sheets (Assumed 2 plan sheet)

The ENGINEER shall prepare channel grading layout sheets at 1"=50' scale along the limits of Wilson Creek grading improvements showing proposed grading contours, typical channel section, and limits of grading. Earthwork associated with proposed Wilson Creek 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 17 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 9 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.

ILLUMINATION

The ENGINEER will refer to TxDOT's *Highway Illumination Manual* and other deemed necessary State approved manuals for design of safety lighting at the Coit Road and Custer Road intersections. The ENGINEER will prepare circuit wiring diagrams showing the number of luminaires on each circuit, electrical conductors, length of runs, and service pole assemblies.

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

WILSON CREEK

The ENGINEER shall produce complete Bridge Layouts and Structural Details for the proposed Wilson Creek Bridge. The structure is approximately 425' long and 47' 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 I-girder details. TxDOT standards shall be used if possible. Prestressed concrete I-Girder units shall be designed to be continuous slab, with no integral concrete end diaphragms. Bents shall be standard TxDOT multi-column bents with standard circular columns and rectangular bent caps and shall not include aesthetic details. The ENGINEER should size the bridge to meet drainage requirements.

BRIDGE LAYOUTS

The ENGINEER shall prepare bridge layouts in accordance with TxDOT's Bridge Division Manuals. The ENGINEER shall determine the location of each soil boring needed for foundation design in accordance with the TxDOT Geotechnical Manual.

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% Design Status and Coordination 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

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.

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 3.1 miles from east of SH 289 to Custer Road:

1. The Surveyor will provide detailed topographic survey in the area of the proposed connection to County Road 88.

2. The Surveyor will provide detailed topographic survey at Wilson Creek.

3. The Surveyor will provide detailed topographic survey of the unnamed tributary near the future Roseland Road intersection.

4. The Surveyor will provide detailed topographic survey at the Coit Road and Custer Road intersections.

5. If any easements are required, the Surveyor will coordinate with the County to amend previously prepared parcel documents.

6. Surveyor shall obtain Right-of-Entry permission prior to physically accessing any private property for the 12 parcels affected by the topographic survey locations identified above. 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. 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 Task

1. 2D topographic data in Microstation v8i format.

2. 3D Digital Terrain Model (DTM) in Microstation v8i format.

3. Horizontal and Vertical Control Sheet.

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 Licensed Professional Engineer.

Field Investigation

The field investigation will consist of drilling two (2) bridge borings. One bridge boring will be drilled on each end of the proposed bridge. The field investigation will also consist of drilling two (2) embankment borings to depths of 40 feet and drilling sixteen (20) pavement borings to depths of 15 feet below the existing ground surface.

The bridge borings will be drilled until 20 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 60 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 20 feet into unweathered rock.

Sixteen (16) of the pavement borings will be drilled at a spacing of 1000 feet along the proposed roadway alignment.

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 assist the county in obtaining 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 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 and one-dimensional consolidation testing may be performed for the slope stability and settlement analyses of 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. 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 fill and compaction recommendations.

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. ROADWAY DESIGN (CROSSOVER DESIGN)

During the project it is anticipated that the COUNTY may wish to shift the roadway from the ultimate EBFR to the ultimate WBFR to assist in ROW acquisition negotiations. The Engineer will perform the engineering design and plan preparation for this Crossover in accordance with the scope items described above under BASIC SERVICES, including roadway, drainage and traffic engineering. The total not to exceed amount for this effort shall be $50,000.00 and will be billed to the COUNTY at the labor category rates set forth in the fee estimate.

IS2. SUBSURFACE UTILITY ENGINEERING (SUE)

Assumptions

The following assumptions were made for the preparation of this Scope of Services. If these assumptions do not prove correct, a modification to the scope and budget for this project may be required.

- This proposal and fee is based on the assumption that SAM, Inc. (SAM) crews will be able to proceed unimpeded. Down time or additional mobilization or demobilization caused by restricted access, project changes, weather or other factors that are outside of SAM's control may be charged to Jacobs per the attached rate schedule.
- SAM will not perform any work outside of the scope of services herein without written authorization.
- Subsurface Utility Engineering services include comprehensive record research/collection of all known existing utility systems, survey of all visible utility surface features, and field designating using various geophysical equipment for detecting underground utilities. The lowest confidence level of data collected is record information and the highest confidence level is utilities found via excavation. All of the collected information is analyzed and combined to prepare a detailed utility map showing utilities of record that could not be found, active/inactive utilities, utilities that were found using geophysical equipment and precise utility locations that were uncovered.
- The accuracy of depth readings of utilities taken from electromagnetic geophysical equipment depends greatly on soil type, soil moisture content, depth of utility, proximity to other utilities, material of the conduit, etc. It is because of this that the equipment manufactures do not warrant and/or guarantee the accuracy of the equipment's depth readings. The only method of ensuring an accurate depth is to expose the utility for measurement.
- Suitability maps show GPR effectiveness is low in the project area. SAM will utilize GPR during the utility investigation and will note on the deliverables whether the radar had success detecting known utilities or not.
- SAM may utilize the following geophysical equipment on the project:
    - Radiodetection RD8100
    - Vivax-Metrotech VM-810
    - Sensit Ultra-Trac APL
    - IDS Opera DUO
    - Tonable rodder
    - Sonde

- All equipment may not be used on each site as equipment is selected based upon geophysical application necessary to find a target utility
- Normal traffic control, for Subsurface Utility Engineering services, is considered standard placement of traffic cones, freestanding warning signage and vehicle-mounted traffic directional sign. Traffic control requiring lane closures, traffic detouring, flagpersons, police, etc., is considered special traffic control. SAM assumes 3 days of special traffic control is to be provided by SAM. This service will be subcontracted to an approved subcontractor and billed to the Client at cost plus 10%.
- Sanitary and Storm Drain systems will be shown as QL-C based on surveyed invert data.

- It is assumed that no contaminated materials are encountered. If contaminated materials or soils are encountered the client will be notified immediately and any remediation will be the clients responsibility and at the clients cost.
- Paint markings placed on the ground by SAM are to be used for design purposes only and not for construction purposes. The use of QL-B information provided does not relieve any contractor or the Client from the duty to comply with applicable utility damage prevention laws and regulations, including, but not limited to, giving notification to utility owners or the Texas One Call System before excavation.
- Non-metallic piping, inactive electric, and/or communication lines may or may not be found by electromagnetic, sonic, or acoustical designating practices. SAM does not warrant and/or guarantee that all existing utilities will be found.
- Client will provide SAM with record information and profile drawings of all the utilities within the project site the Client has already collected.
- All work will be performed during daytime hours.
- SAM will be notified, prior to mobilizing to the Project, of any special requirements for access and the performance of the work.
- SAM personnel will have unrestricted access to the work areas on a ten (10) hour per day basis for each day approved to perform work.
- Jacobs shall provide all Right-of-Entry if required for the project.

SAM will provide all the following Subsurface Utility Engineering (SUE) services to the standard of care applicable in the SUE profession. The services meet the standard guidelines of ASCE C-I 38-02 circular for “Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data”. Irrigation systems and electrical wiring for landscape lighting are excluded from the scope of this proposal.

Quality Level A (QL-A) Test Hole Services – Test Hole services is to locate the accurate horizontal and vertical position of subsurface utilities by excavating a test hole using vacuum excavation techniques and equipment that is non-destructive to utilities. In performing test-hole services, SAM will:

- **Provide up to twenty-five (25) test holes.**
- Test hole locations will be chosen by Jacobs during final PS&E.
- SAM will use designating equipment to lay out the test hole locations.
- The test holes will be surveyed by SAM.
- Provide all equipment, personnel and supplies required to perform locating services. SAM shall determine which equipment, personnel and supplies are required to perform such services.
- Excavate test hole to expose the utility to be measured in such a manner that ensures the safety of the excavation and the integrity of the utility to be measured. In performing such excavations, SAM shall comply with applicable utility damage prevention laws. Excavations will be performed using specially developed vacuum excavation equipment that is non-destructive to existing facilities. If contaminated soils are discovered during the excavation process, SAM will notify the Client.
- Furnish and install survey markers directly above the centerline of utility structure.
- Investigate, evaluate, measure and record:

    - Actual depth to top of utility referenced to a survey marker installed directly above the centerline of the exposed utility structure.
    - Outside diameter of utility and configuration of non-encased, multi conduit systems.
- Backfill around the exposed facility using the excavated materials compacted in six inch lifts.
- In grass and landscape areas, restoration shall be as reasonably possible to the condition that existed prior to excavation.
- Any permitting fees will be invoiced to the Client at cost plus 10%.

All areas where test holes are required shall be accessible by standard driving with vacuum excavation vehicle plus the range of a 15-ft hose.

SUE DELIVERABLES

A SUE CAD file depicting the QL-A test hole locations will be prepared for this project. A Test Hole Report and a data summary form will be prepared. The Test Hole Report will be signed and sealed by a Registered Professional Engineer. The utilities will be referenced by the type of utility, color coded to American Public Works Association (APWA) standards.

All electronic project files created, and/or modified by SAM will be transmitted via email, or delivered on a CD if requested by the Client. All CAD files will be created in AutoCAD / Civil 3D 2015 or MicroStation V8 format and will utilize Client's CAD standards when provided in advance of deliverable preparation.

ESTIMATED FEES

SAM will provide the services as described above on a **time and materials** fee basis based on the rate schedule below. SAM estimates the services needed on the project are **not to exceed** $50,000.00.

STANDARD SUE RATE SCHEDULE

Effective June 1, 2017

(Rates subject to Re-negotiation/CPI adjustment at the beginning of each calendar year)

SUBSURFACE UTILITY ENGINEERING (SUE) SERVICES:

Principal	$207.00 per hour
Sr. Project Manager	$190.00 per hour
Project Manager	$175.00 per hour
Sr. Engineer (PE)	$161.00 per hour
Engineer	$130.00 per hour
Graduate Engineer	$110.00 per hour
Senior Utility Coordinator	$159.00 per hour
Utility Coordinator	$136.00 per hour
Jr. Utility Coordinator	$110.00 per hour
Sr. Engineer Tech	$120.00 per hour
Engineer Tech	$99.00 per hour
Field Coordinator (Not Including Office Support)	$110.00 per hour
2-Man Utility Survey Crew	$141.00 per hour
1-Man Designating Crew	$ 93.00 per hour
Administrative Assistant	$68.00 per hour

VACUUM EXCAVATION SERVICES

DESCRIPTION	UNIT	RATE
VAC CREW RATE (includes 1 Unit with 2-Man Crew)	PER HOUR	$258.00
OVERTIME RATE (Weekends & work exceeding 8 hours per day)	PER HOUR	$277.00
MOBILIZATION	PER HOUR	$157.00
BACKFILL MATERIAL (Delivered to site if hydro vac)	CU YARD	Cost plus 10%
BACKFILL LABOR (includes pneumatic tamping in 6-in lifts)	PER HOUR / PER MAN	$89.00
CHASE TRUCK (required for safety and/or materials)	PER HOUR	$21.00
TRAFFIC CONTROL (standard cones and warning signs)	PER DAY	$104.00
***PER DIEM** (required if work requires overnight accommodations)	PER NIGHT / PER MAN	$141.00

*Per Diem rates may change depending on location and availability of accommodations. This is a general number to be used for estimate purposes.

See Also "**SPECIAL NOTES FOR HYDRO EXCAVATION SERVICES**"

OTHER DIRECT COSTS:

Ground Penetrating Radar (Adder to Designating Crew Rate)	$415.00 / Day
Specialty Equipment (Sonde, Radio Beacon, Duct Rodder)	$37.00 / Day
Flashing Arrow Board, warning signs w/stands and traffic cones	$40.00 / Day
Geophysical Locating Equipment	$21.00 / Day
GPS Receiver	$26.00 / Day
ATV or Utility Vehicle	$78.00 / Day
Environmental Supplies (Paint, Flags, Lath, Stakes)	$26.00 / Day
Agency As-built Information (Reproduction) Fees	$10.00 / Copy
Additional Vehicle (Required for safety or materials)	$209.00 / Day
Mobilization/Demobilization Fee (Less than 200 miles)	$600.00 each
Mobilization/Demobilization Fee (Greater than 200 less than 400 miles)	$1130.00 each
Mobilization/Demobilization Fee (Greater than 400 miles)	$3.13 per mile
Metered Water for Hydro-Vac Services	At Cost plus 10%
Imported or Select Backfill Material	At Cost plus 10%
Flowable Fill Backfill Material	At Cost plus 10%
Hydro Vac Spoils Containment & Processing	At Cost plus 10%
Specialized Traffic Control	At Cost plus 10%
Excavation/Designating Permit Fees	At Cost plus 10%
Other SUE related Activities	At Cost plus 10%

Local Mobilization / Demobilization Fee Applies at the rate of once per project assignment. Minor / Standard Traffic Control is included (consists of warning signs and cones). Lane Closures requiring Flashing Arrow Board(s) is additional. Complex or Specialized Traffic Control is additional.

It is the client's responsibility to provide a dump site or a vacuum box/containment vessel for removal of Hydro Vac spoils if no dump site is provided by Client.

Paved areas may require coring to perform vacuum excavation services. In such cases SAM will provide a Core Rig and Operator. Core rig rate includes materials & equipment to replace and set core (keyhole) following vacuum excavation completion.

SPECIAL NOTES FOR HYDRO EXCAVATION SERVICES

Hydro Vac Services will require metered water recharge fees and authorized spoils disposal locations. All excavated material remains the exclusive property of the client or project owner upon whose land, easement or ROW wherein the excavations are performed. The project owner understands and acknowledges that Hydro Excavation indicates and includes the use of water to aid in the vacuum excavation process and that the resulting excavated materials may be oversaturated with water as a result of the hydro vac process.

If the project requires backfilling with material other than the material excavated via the hydro vac process, such as flowable fill or select backfill, the project owner will be required to provide a spoils box, vacuum box, or stockpiling location within or reasonably close to the project site for the purpose of holding the hydro vac excavated materials. SAM can provide a vacuum box/containment vessel from a third party environmental services company for removal of Hydro Vac spoils if no dump site is provided by Client. SAM will request a fee proposal from environmental services company and the cost of vac box and spoils disposal will be passed through to client at cost plus 10% based on the fee proposal provided by the environmental services company.

The project owner is required to disclose any known or suspected information regarding the project site and its underlying soil conditions such as; chemical, petrochemical, hydrocarbon, asbestos, naturally

occurring radioactive materials (NORM) or any other known or suspected contamination within the project site.

When performing hydro excavation in known, suspected or encountered contamination areas, SAM staff shall don additional Personal Protective Equipment (PPE). All costs associated with the use of additional PPE dictated by the site conditions and deemed reasonable and prudent, including wash-down, decontamination or disposal of said PPE, shall be charged to the client/project owner as a direct pass through cost. Examples of additional PPE may include but not be limited to; dust masks, respirators, face shields, protective coveralls, protective gloves and rubber boots.

Pothole or Test Hole Option:

Potholes are strictly the excavation and exposure of the subject facility with a measurement of depth and notation of facility size, type and composition painted on the ground and/or provided in a non-certified report. This report will be provided by Vac Crew onsite upon completion of potholes and typically is handwritten.

Test holes provide the same level of information as pot holes, and are surveyed for a precision x,y & z coordinate and are provided in a test hole report, signed and sealed by an Engineer. Test Holes require survey and Engineer review. Vac Crew, Survey and Engineer fees will be in accordance with the above rates.

IS3. 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. Jacobs will provide up to two (2) team members at each meeting. Provide status updates on design progress, schedule, and relocation needs. Provide 60%, 90% and 100% design plans to the franchise utilities for review.

Design Exhibits – Prepare any necessary design exhibits in CAD or PDF which may provide clarification and/or assist franchise utilities with understanding project impacts or relocation needs.

Site Visits – Perform up to three (3) site visits with the COUNTY and/or impacted franchise utility representatives.

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.

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 under a separate contract.

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

Additional Construction Services

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

EXHIBIT "B"

FINAL DESIGN
COMPLETION SCHEDULE

Refer to the attached schedule for deliverable/milestone dates

Preliminary Design Coordination Review

Roll plot of 30% design
Attend design coordination / review meeting with the County.

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 Report for Wilson Creek 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

Six (6) Paper sets of 11" x 17" plan sheets with 95% Comments addressed
PDF Portfolio of 11" x 17" signed and sealed
Final Estimate of construction cost
Final Construction Schedule

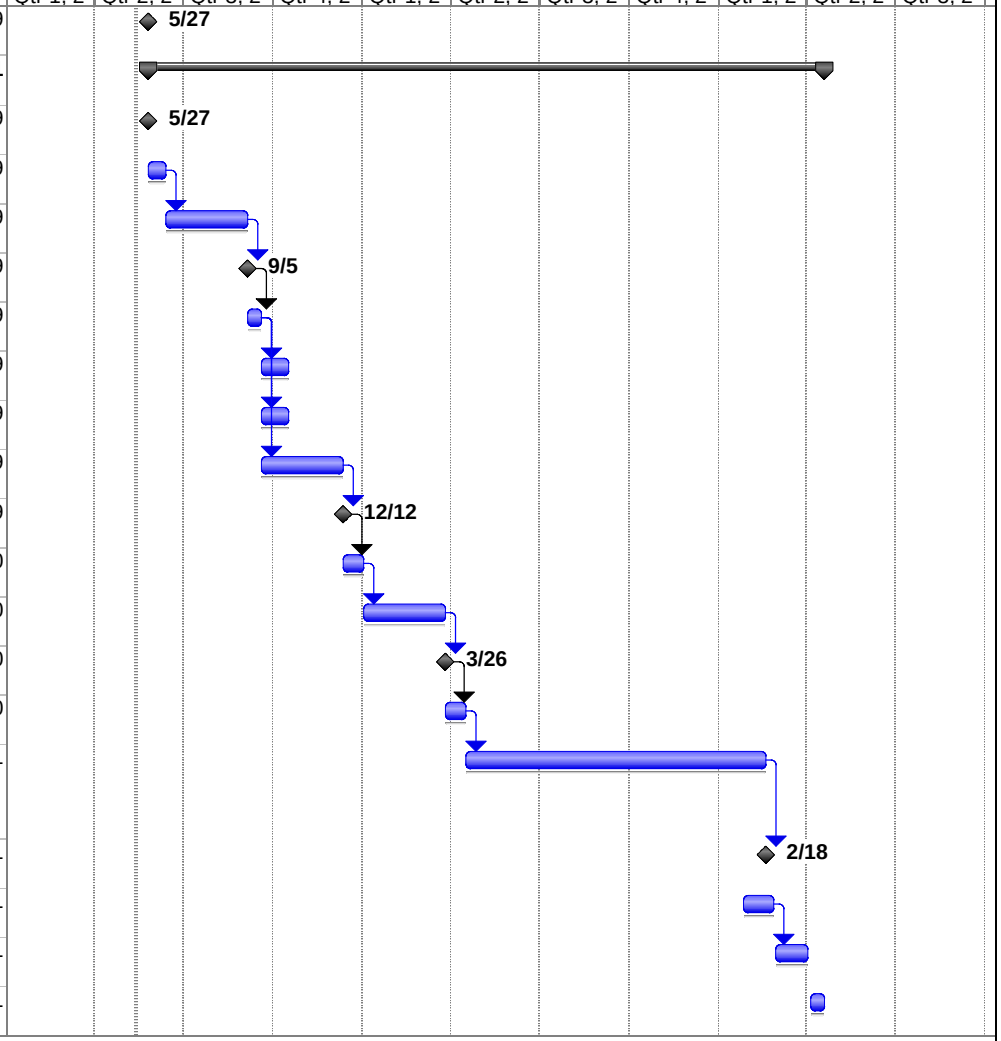
Final Hydraulic Report for Wilson Creek
HEC-HMS/RAS Models on CD
Final Specification, Bid Form, General Notes and Contract Document
ENGINEER'S internal QAQC mark-up set
CD of Final drawings including GPK files for the COUNTY
1 sets of 11" X 17" 1" = 50'(H), 1" = 20'(V) final cross sections (Paper)
PDF of Final Cross Sections

Calculations

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

COLLIN COUNTY OUTER LOOP SEGMENT 3B FINAL DESIGN SCHEDULE

ID	Task Name	Duration	Start	Finish
1	NTP from County	0 days	Mon 5/27/19	Mon 5/27/19
2	**FINAL DESIGN**	**496 days?**	**Mon 5/27/19**	**Mon 4/19/21**
3	Begin PS&E Design	0 days	Mon 5/27/19	Mon 5/27/19
4	Data Collection / Design Criteria	14 days?	Mon 5/27/19	Thu 6/13/19
5	Preliminary Plan Development	3 mons	Fri 6/14/19	Thu 9/5/19
6	Preliminary Concept Submittal (	0 days	Thu 9/5/19	Thu 9/5/19
7	Preliminary Design Coordinatior	2 wks	Fri 9/6/19	Thu 9/19/19
8	Supplemental Field Survey	1 mon	Fri 9/20/19	Thu 10/17/19
9	Geotechnical Investigations	1 mon	Fri 9/20/19	Thu 10/17/19
10	60% Plan Development	3 mons	Fri 9/20/19	Thu 12/12/19
11	60% Plan Submittal	0 days	Thu 12/12/19	Thu 12/12/19
12	60% Plan Review	3 wks	Fri 12/13/19	Thu 1/2/20
13	95% Plan Development	3 mons	Fri 1/3/20	Thu 3/26/20
14	95% Submittal	0 days	Thu 3/26/20	Thu 3/26/20
15	95% Plan Review	3 wks	Fri 3/27/20	Thu 4/16/20
16	Incorporate Minor Changes During ROW Acquisition	11 mons	Fri 4/17/20	Thu 2/18/21
17	100% Submittal	0 days	Thu 2/18/21	Thu 2/18/21
18	Bid Preparation	23 days?	Wed 1/27/21	Fri 2/26/21
19	Advertisement	25 days?	Mon 3/1/21	Fri 4/2/21
20	Award Construction Contract	2 wks	Tue 4/6/21	Mon 4/19/21



Project: COLLIN COUNTY OUTER LC
Date: Mon 5/13/19

Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

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

JACOBS ENGINEERING GROUP, INC.

Collin County Outer Loop Segment 3B: East of SH 289 to Custer Road

Collin County Outer Loop Segment 3B East of SH 289 to Custer Road		
BASIC SERVICES		
Jacobs Engineering Group (Engineering Design)	$	629,991.49
Total Basic Services	$	629,991.49
SPECIAL SERVICES		
Jacobs Engineering Group (Field Survey and Geotech)	$	45,859.08
Professional Services Industries, Inc. (Geotechnical Testing and Engineering)	$	75,276.00
Total Special Services	$	121,135.08
INCREMENTAL SERVICES		
Jacobs Engineering Group (Crossover Design and Utility Coordination)	$	59,898.86
SAM, Inc. (Subsurface Utility Engineering)	$	50,000.00
Total Incremental Services *	$	109,898.86

* Incremental Services are Time and Materials Basis, Not to Exceed

FEE PROPOSAL
JACOBS ENGINEERING GROUP, INC.
Collin County Outer Loop Segment 3B: East of SH 289 to Custer Road

Collin County Outer Loop E. of SH 289 to FM 2478	Project Manager	Senior Engineer	Project Engineer	EIT	CAD Technician	Clerical	
Rate	$ 201.04	$ 175.50	$ 137.21	$ 111.71	$ 110.00	$ 73.01	
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	16
Task 1 Total Hours	0	0	20	4	0	8	32
Task 1 Total Labor Costs	$ -	$ -	$ 2,744.20	$ 446.84	$ -	$ 584.08	$ 3,775.12
Task 2 - Roadway Design							
A. GENERAL							
Title Sheet	8				24		32
Index of Sheets	8		8		24		40
Project Layout Sheets	2		10	20	80		112
Typical Sections (Existing & Proposed)			10	20	80		110
Quantity Summary Sheets			10	30	16		56
B. TRAFFIC CONTROL							
Traffic Control General Notes and Narrative	2		16		16		34
Traffic Control Advance Warning Layout	2		14	16	16		48
Traffic Control Typical Sections	8		60	80	120		268
Traffic Control Plan Sheets	8		80	80	160		328
Assembly of Traffic Control Standards			8		8		16
C. ROADWAY DESIGN							
Horizontal Alignment Data Sheet			10	30	16		56
Removal Plan Sheets			20	40	40		100
Roadway Plan & Profile Sheets	8		120	80	200		408
Cross Street Plan & Profile Sheets			40	80	80		200
Intersection Layout Sheets	8		40	40	80		168
Driveway Profiles / Details / Summary			8	20	16		44
Miscellaneous Roadway Details	2		20	8	20		50
Roadway Cross Sections	8		40	40	80		168
Assembly of Roadway Standards			8		8		16
D. BID PREPARATION (ROADWAY)							
Determination of Roadway Quantities	8		16	24	16		64
Roadway General Notes (60%, 95%, Final)	2		16	8			26
Roadway Cost Estimates (60%, 95%, Final)	2		16	8			26
Roadway Specs, Bid Form and Contract Docs (95% and Final)	20					4	24
E. QUALITY CONTROL (ROADWAY)							
Roadway QA/QC Plan Review	10		50	40		4	104
Task 2 Total Hours	106	0	620	664	1100	8	2498
Task 2 Total Labor Costs	$ 21,310.24	$ -	$ 85,070.20	$ 74,175.44	$ 121,000.00	$ 584.08	$ 302,139.96
Task 3 - Drainage Design							
A. HYDROLOGY							

FEE PROPOSAL
JACOBS ENGINEERING GROUP, INC.
Collin County Outer Loop Segment 3B: East of SH 289 to Custer Road

Collin County Outer Loop E. of SH 289 to FM 2478	Project Manager	Senior Engineer	Project Engineer	EIT	CAD Technician	Clerical	Totals
Rate	$ 201.04	$ 175.50	$ 137.21	$ 111.71	$ 110.00	$ 73.01	
Offsite Drainage Area Map			32				32
Storm Sewer Drainage Area Map			40	40	16		96
Runoff Computations and Sheet Tabulations			16		16		32
B. HYDRAULIC DESIGN							
Culvert Hydraulic Data Sheet		2	16		16		34
Inlet Computations and Sheet Tabulations			120		40		160
Storm Sewer Hydraulic Data and Sheet Tabulations			120	16	40		176
Wilson Creek Hydraulic Data Sheet		8	8		24		40
Wilson Creek HEC-RAS Final Design		8	8	8	8		32
Wilson Creek HEC-RAS Floodway Final Design			8	8			16
Wilson Creek Scour Analysis	2	8	8		2		20
C. DRAINAGE STRUCTURE DESIGN							
Culvert Layouts (Non-Bridge Class)	2	2	8	8	16		36
Storm Sewer Plan & Profile Sheets	4	8	60		120		192
Miscellaneous Drainage Details	1		4	8			13
Assembly of Drainage Standards	1		4	8	4		17
D. OPEN CHANNEL DESIGN							
Ditch / Channel Layout Sheets	2		16	16	20		54
Wilson Creek Channel Layout Sheets	2		16	16	20		54
E. SW3P							
SW3P Data Sheet				8	8		16
SW3P Layouts				16	16		32
F. BID PREPARATION (DRAINAGE)							
Determination of Drainage Quantities	1		8	8	8		25
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			4	14
G. QUALITY CONTROL (DRAINAGE)							
Drainage QA/QC Plan Review	4	32	8	8	8	4	64
Task 3 Total Hours	26	68	527	174	382	8	1185
Task 3 Total Labor Costs	$ 5,227.04	$ 11,934.00	$ 72,309.67	$ 19,437.54	$ 42,020.00	$ 584.08	$ 151,512.33
Task 4 - Traffic Design							
A. SIGNING & PAVEMENT MARKING							
Signing & Pavement Marking Layout	1	10	20	60	80		171
Summary of Small Signs	1	2	4	8	8		23
Assembly of Sign and Marking Standards		2	4	8	8		22
B. ILLUMINATION							
Safety Lighting at Coit and Custer Intersections	2	4	8	16	16		46
C. BID PREPARATION (TRAFFIC)							
Determination of Traffic Quantities		2	4	8	8		22
Traffic General Notes (60%, 95%, Final)	1	1	2	4			8

FEE PROPOSAL
JACOBS ENGINEERING GROUP, INC.
Collin County Outer Loop Segment 3B: East of SH 289 to Custer Road

Collin County Outer Loop E. of SH 289 to FM 2478	Project Manager	Senior Engineer	Project Engineer	EIT	CAD Technician	Clerical	Totals
Rate	$ 201.04	$ 175.50	$ 137.21	$ 111.71	$ 110.00	$ 73.01	
Traffic Cost Estimates (30%, 60%, 95%, Final)	1	4	8	8			21
Traffic Specifications (95% and Final)	1	1	2	4		4	12
D. QUALITY CONTROL (TRAFFIC)							
Traffic QA/QC Plan Review	2	12	8	8		4	34
Task 4 Total Hours	9	38	60	124	120	8	359
Task 4 Total Labor Costs	$ 1,809.36	$ 6,669.00	$ 8,232.60	$ 13,852.04	$ 13,200.00	$ 584.08	$ 44,347.08
Task 5 - Bridge Design							
A. WILSON CREEK							
Bridge Layouts	2	8	16	24	24		74
Summary of Quantities		4	4	6	6		20
Control Elevations		2	6	8			16
Foundation Design		2	8	16			26
Beam Design		2	8	16			26
Boring Details		1	6	12	16		35
Abutment Details		1	12	24	24		61
Bent Details		1	12	16	24		53
Framing Plans		1	12	16	16		45
Slab Plans		1	12	20	24		57
Prepare Bridge Calculations	2	4	8	24			38
Bridge Cost Estimates	2	4	6	12			24
Bridge Specs, Bid Form, and Contract Docs	2	12	12	20			46
B. BID PREPARATION (BRIDGE)							
Bridge Cost Estimates (60%, 95%, Final)	4	8	12	24			48
Bridge Specifications (95% and Final)	2	8	12	24		4	50
C. QUALITY CONTROL (BRIDGE)							
Bridge QA/QC Plan Review	4	24	12	12		4	56
Task 5 Total Hours	18	83	158	274	134	8	675
Task 5 Total Labor Costs	$ 3,618.72	$ 14,566.50	$ 21,679.18	$ 30,608.54	$ 14,740.00	$ 584.08	$ 85,797.02
Task 6 - Project Management							
A. PROJECT MANAGEMENT							
Schedule, Progress Reports, and Invoices (18 months)	36					90	126
Progress Meetings (4)	12	12	12			6	42
Miscellaneous Coordination Meetings (18)	54	18	54			8	134
Task 6 Total Hours	102	30	66	0	0	104	302
Task 6 Total Labor Costs	$ 20,506.08	$ 5,265.00	$ 9,055.86	$ -	$ -	$ 7,593.04	$ 42,419.98
Total Hours (Basic Services)	261	219	1451	1240	1736	144	5051
Total Labor Costs (Basic Services)	$ 52,471.44	$ 38,434.50	$ 199,091.71	$ 138,520.40	$ 190,960.00	$ 10,513.44	$ 629,991.49
	8%	6%	32%	22%	30%	2%	100%

SPECIAL SERVICES

FEE PROPOSAL
JACOBS ENGINEERING GROUP, INC.
Collin County Outer Loop Segment 3B: East of SH 289 to Custer Road

Collin County Outer Loop E. of SH 289 to FM 2478	Project Manager	Senior Engineer	Project Engineer	EIT	CAD Technician	Clerical	Totals
Rate	$ 201.04	$ 175.50	$ 137.21	$ 111.71	$ 110.00	$ 73.01	
Task SS1 - Survey							
A. TOPOGRAPHIC SURVEY	REFER TO SURVEY SHEET						
Topographic Survey							
B. RIGHT OF ENTRY							
Right of Entry							
Task SS1 Totals							
Task SS2 - Geotechnical							
A. GEOTECHNICAL INVESTIGATION	REFER TO GEOTECH SHEET						
Geotechnical Investigation							
B. RIGHT OF ENTRY							
Right of Entry Coordination	8		16			20	44
Task SS2 Totals	8	0	16	0	0	20	44
Total Hours (Special Services)	8	0	16	0	0	20	44
Total Labor Costs (Special Services)	$ 1,608.32	$ -	$ 2,195.36	$ -	$ -	$ 1,460.20	$ 121,135.08

INCREMENTAL SERVICES							
Task IS1 - Roadway Design (Crossover)							
Roadway, Drainage and Traffic Engineering	REFER TO RATES ABOVE						
Task IS1 Total Cost (Not to Exceed)							$ 50,000.00
Task IS2 - Subsurface Utility Engineering							
Subsurface Utility Engineering	REFER TO SAM, INC. RATES IN SCOPE						
Task IS1 Total Cost (Not to Exceed)							$ 50,000.00
Task IS3 - Utility Coordination							
Utility Coordination	2		40				42
Utility Agreements	2		10	20			32
Task IS3 Total Cost (Not to Exceed)	4		50	20			$ 9,898.86
Total Costs (Incremental Services)							$ 109,898.86

Reimbursable Direct Expenses	Unit	Quantity	Rate	Total
8.5" x 11" Copies	Each	1500	$ 0.10	$ 150.00
11" x 17" Copies	Each	3000	$ 0.15	$ 450.00
Mileage	Mile	1500	$ 0.58	$ 870.00
Postage (Express Mail)	Each	40	$ 0.55	$ 22.00
Total Reimbursable Direct Expenses				$ 1,492.00
Total Markup on Subconsultants (10%)				$ 7,527.60
Total Jacobs Fee				$ 684,870.17

SURVEY FEE ESTIMATE
JACOBS ENGINEERING GROUP, INC.
Collin County Outer Loop Segment 3B: East of SH 289 to Custer Road

TASK/LABOR	SENIOR SURVEY STAFF	SENIOR SURVEY PROJECT MANAGER	SURVEY PROJECT MANAGER	SURVEY PRODUCTION MANAGER	SENIOR SURVEY/LASER SCANNING TECHNICIAN	SURVEY TECHNICIAN	FIELD COORDINATOR	CLERICAL / ADMIN	ABSTRACTOR (IN-HOUSE)	ONE-MAN FIELD CREW	TWO-MAN FIELD CREW	TOTAL PER TASK
Detailed Topographic Survey of CR 88 Connection			2	2		5					10	$ 2,585.00
Detailed Topo of Wilson Creek			2	10		12					70	$ 13,740.00
Detailed Topo of Un-Named Tributary			2	2		10					20	$ 4,610.00
Detailed Topo of Coit Road Intersection			2	2		10					30	$ 6,210.00
Detailed Topo of Custer Road Intersection			2	2		10					30	$ 6,210.00
Obtain Right-Of-Entry for 12 Parcels			4			8		8				$ 1,920.00
												$ -
												$ -
												$ -
TOTAL HOURS	0	0	14	18	0	55	0	8	0	0	160	255
HOURLY RATE			$ 160.00	$ 120.00	$ 95.00	$ 85.00	$ 120.00	$ 75.00	$ 60.00	$ 85.00	$ 160.00	$ 35,275.00

DIRECT EXPENSES	RATE	QUANTITY	ESTIMATE
Mileage	$ 0.58	2400	$ 1,392.00
Survey Equipment Fees	$ 24.00	160	$ 3,840.00
Postage	$ 0.55	12	$ 6.60
Certified Letter	$ 6.80	12	$ 81.60
			$ -
			$ -
			$ -
TOTAL DIRECT EXPENSES			$ 5,320.20

TOTAL ESTIMATE	$ 40,595.20

Field
Office
PM
ODE

GEOTECHNICAL FEE ESTIMATE
PROFESSIONAL SERVICES INDUSTRIES, INC.
Collin County Outer Loop Segment 3B: East of SH 289 to Custer Road

PROVIDER NAME: PROFESSIONAL SERVICES INDUSTRIES, INC.

		PRINCIPAL	PROJECT MANAGER	SENIOR ENGINEER	PROJECT ENGINEER	DESIGN ENGINEER	ENGINEER-IN-TRANING	ENGINEER TECH	ADMIN / CLERICAL	TOTAL HRS. & COSTS	COST PER TASK
	CONTRACT RATE PER HOUR	$ 215.00	$ 150.00	$ 165.00	$ 135.00	$ 110.00	$ 90.00	$ 75.00	$ 60.00		
	GEOTECHNICAL BORINGS AND INVESTIGATIONS										
	PROJECT PLANNING										
1	PROJECT PLANNING, SCHEDULING and KICKOFF		2	1					1	4	$ 525.00
2	PREPARING FIELD INVESTIGATION PLAN			1	1					2	$ 300.00
3	COORDINATION WITH DRILLING SUBCONTRACTORS				1			2		3	$ 285.00
	FIELD INVESTIGATION COORDINATION										
4	ACCESS AND ROE COORDINATION		1		1			2		4	$ 435.00
5	STAKING AND UTILITY CLEARANCE FOR BORING LOCATIONS						2	4		6	$ 480.00
6	SITE CLEARING FOR DRILL RIG ACCESS						2	8		10	$ 780.00
	FIELD INVESTIGATION										
7	DRILLING COORDINATION (SUBCONTRACTORS, WORK SCHEDULES, ASSIGNMENTS, ETC.)		1		1			2		4	$ 435.00
8	DRILLING OVERSIGHT/LOGGING				1		5	60		66	$ 5,085.00
	GEOTECHNICAL LABORATORY DATA EVALUATION										
9	SAMPLE REVIEW/VISUAL CLASSIFICATION				1		4			5	$ 495.00
10	ASSIGN LAB TESTING				1		2			3	$ 315.00
11	REVIEW LABORATORY TEST DATA			1	2					3	$ 435.00
	GEOTECHNICAL ENGINEERING & ANALYSES										
12	SOIL BORING LOGS				1		6		8	15	$ 1,155.00
13	GENERATE SUBSURFACE SOIL PROFILES BASED ON BORING LOGS				4		8			12	$ 1,260.00
14	PREPARE SOIL PROPERTY PROFILES AND SELECTION OF DESIGN SOIL PARAMETERS	1		1	2		4			8	$ 1,010.00
15	MSE WALL EXTERNAL STABILITY ANALYSES (BEARING, SLIDING, OVERTURNING, GLOBAL STABILITY)									0	$ -
16	DESIGN SOIL PARAMETERS FOR CAST IN PLACE RETAINING WALLS INCLUDING GLOBAL STABILITY									0	$ -
17	EMBANKMENT DESIGN/ANALYSES - BEARING PRESSURES, SLOPE STABILITY, SETTLEMENTS	1		4	8		2			15	$ 2,135.00
18	CULVERTS CROSSING - BEARING AND EMBEDMENT AND RETAINING WALLS									0	$ -
19	BRIDGE FOUNDATION RECOMMENDATIONS - AXIAL CAPACITY AND LATERAL SOIL PARAMETERS	1		4	8		2			15	$ 2,135.00
20	PVR ANALYSES AND SUBGRADE PREPARATION FOR ROADWAY TO MITIGATE MOVEMENTS	1		8	16		4			29	$ 4,055.00
21	CONCRETE PAVEMENT DESIGN AND THICKNESS ALTERNATIVES (AASHTO Design Methodology)	1		4	12		2			19	$ 2,675.00
	GEOTECHNICAL REPORT										
22	PREPARATION OF PRELIMINARY GEOTECHNICAL REPORT	2		4	16		8		2	32	$ 4,090.00
23	PREPARATION OF FINAL GEOTECHNICAL REPORT	1	1	2	4					8	$ 1,235.00
	HOURS SUB-TOTALS	8	5	30	80	0	51	78	11	263	$ 29,320.00
24	CONTRACT RATE PER HOUR	$ 215.00	$ 150.00	$ 165.00	$ 135.00	$ 110.00	$ 90.00	$ 75.00	$ 60.00		
25	TOTAL LABOR COSTS	$ 1,720.00	$ 750.00	$ 4,950.00	$ 10,800.00	$ -	$ 4,590.00	$ 5,850.00	$ 660.00		
	SUBTOTAL FOR LABOR										$ 29,320.00

	OTHER DIRECT EXPENSES	UNIT	QUANTITY	RATE							TOTAL
	GEOTECHNICAL FIELD EXPLORATION										
26	Mobilization/Demobilization of Drilling Rig	LUMP SUM	1	$ 2,000.00							$ 2,000.00
28	Site clearing for drill rig access	DAY	2	$ 3,000.00							$ 6,000.00
29	Soil Boring/Rock Coring without TCP<60 ft	PER FOOT	300	$ 32.00							$ 9,600.00
30	Soil Boring/Rock Coring with TCP<60 ft	PER FOOT	200	$ 38.00							$ 7,600.00
31	Soil Boring/Rock Coring with TCP>60 ft	PER FOOT	0	$ 42.00							$ -
32	Borehold Grouting - Bentonite Chips	PER FOOT	600	$ 8.00							$ 4,800.00
37	Daily Trips - Sample Transportation	DAY	7	$ 150.00							$ 1,050.00
	GEOTECHNICAL LABORATORY TESTING										
38	Determination of Moisture Content in Soils	EACH	170	$ 8.00							$ 1,360.00
39	Liquid Limit (LL), Plastic Limits (PL) and Plasticity Index (PI) of Soils	EACH	52	$ 50.00							$ 2,600.00
40	Amount of Minus No. 200 Sieve Material of Soils	EACH	52	$ 40.00							$ 2,080.00
41	Determination of Particle Size Analysis of Soils Test (Part I) - Retained +40	EACH	2	$ 48.00							$ 96.00
42	Determination of Particle Size Analysis of Soils Test (Part II) - Hydrometer Analysis	EACH	2	$ 125.00							$ 250.00

GEOTECHNICAL FEE ESTIMATE
PROFESSIONAL SERVICES INDUSTRIES, INC.
Collin County Outer Loop Segment 3B: East of SH 289 to Custer Road

43	Unconfined Compressive Strength (Soil)	EACH	28	$ 55.00							$ 1,540.00
44	Unconfined Compressive Strength (Rock)	EACH	6	$ 65.00							$ 390.00
45	Triaxial Compression Test for Undisturbed Soils (UU) or ASTM D2850	EACH	4	$ 75.00							$ 300.00
46	One Dimensional Consolidation Properties of Soil	EACH	1	$ 450.00							$ 450.00
47	Consolidated Undrained Triaxial Test or ASTM D4767 (includes moisture, PI, -200 and unit weight/each)	EACH	1	$ 1,200.00							$ 1,200.00
48	Soil pH	EACH	4	$ 35.00							$ 140.00
49	Soil Resistivity	EACH	4	$ 80.00							$ 320.00
50	Soil Conductivity	EACH	4	$ 30.00							$ 120.00
51	Lime/pH	EACH	4	$ 90.00							$ 360.00
52	Sulphate Determination in Soils	EACH	20	$ 50.00							$ 1,000.00
53	One Dimensional Free Swell	EACH	10	$ 75.00							$ 750.00
54	CBR Testing	EACH	2	$ 550.00							$ 1,100.00
55	Organic Content of Soils	EACH	10	$ 85.00							$ 850.00
	SUBTOTAL OTHER DIRECT EXPENSES										$ 45,956.00

	TOTAL FOR LABOR PLUS EXPENSES										$ 75,276.00

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):

1. Assist the Engineer, as necessary, in order to obtain the required data and information from other local, regional, State and Federal agencies.
2. Assist in Coordinating Right of Entry for all properties within or adjacent to project limits.
3. Available existing and future right-of-way plans for entire project.
4. Perform all requirements of ROW acquisition including appraisals, negotiations, eminent domain, relocation and property management.
5. Assist the Engineer in negotiations with all local, state and federal agencies, utility companies and railroads for agreements and/or relocations required.
6. 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
    - Topographic contours (2') (To be provided by the County)

EXHIBIT "E"

INSURANCE REQUIREMENTS

1.1 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.

1.1.1 Commercial General Liability insurance at minimum combined single limits of ($1,000,000 per-occurrence and $2,000,000 general aggregate) for bodily injury and property damage, which coverage shall include products/completed operations at $2,000,000 per occurrence. Coverage must be written on an occurrence form.

1.1.2 Workers Compensation insurance at statutory limits, including employers liability coverage at $500,000. In addition to these, the contractor must meet each stipulation below as required by the Texas Department of Insurance, Division of Workers' Compensation. (Note: If you have questions concerning these requirements, you are instructed to contact the DWC at (512)440-3789).

1.1.2.1 Definitions: Certificate of coverage ("certificate"); A copy of a certificate of authority of self-insure issued by the commission, or a coverage agreement (DWC-81, DWC-82, DWC-83, OR DWC-84), showing statutory workers compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

Duration of the project includes the time from the beginning of the work on the project until the contractor's/person's work on the project has been completed and accepted by the governmental entity.

Persons providing services on the project ("subcontractor" in 406.096) includes all persons or entities performing all or part of the services the contractor has undertaken to perform on the project, regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

1.1.2.2 The contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the contractor providing services on the project, for the duration of the project.

1.1.2.3 The Contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.

1.1.2.4 If the coverage period shown on the contractor's current certificate of coverage ends during the duration of the project, the contractor must,

prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended.

1.1.2.5 The contractor shall obtain from each person providing services on a project, and provide to the governmental entity:

1.1.2.5.1 A certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and

1.1.2.5.2 no later than seven (7) days after receipt by the contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

1.1.2.6 The contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.

1.1.2.7 The contractor shall notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.

1.1.2.8 The contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.

1.1.2.9 The contractor shall contractually require each person with whom it contracts to provide services on a project, to:

1.1.2.9.1 provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees providing services on the project, for the duration of the project;

1.1.2.9.2 provide to the contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

1.1.2.9.3 provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

1.1.2.9.4 obtain from each other person with whom it contracts, and provide to the contractor:

1.1.2.9.4.1 a certificate of coverage, prior to the other person beginning work on the project; and

1.1.2.9.4.2 a new certificate of coverage showing extension of coverage, prior to the end of the coverage

period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

1.1.2.9.5 retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

1.1.2.9.6 notify the governmental entity in writing by certified mail or personal delivery, within ten (10) days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

1.1.2.9.7 contractually require each person with whom it contracts, to perform as required by paragraphs 1.1.2.1 through 1.1.2.7, with the certificates of coverage to be provided to the person for whom they are providing services.

1.1.2.10 By signing this contract or providing or causing to be provided a certificate of coverage, the contractor is representing to the governmental entity that all employees of the contractor who will provide services on the project will be covered by workers compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

1.1.2.11 The contractor's failure to comply with any of these provisions is a breach of contract by the contractor which entitles the governmental entity to declare the contract void if the contractor does not remedy the breach within ten (10) days after receipt of notice of breach from the governmental entity.

1.1.3 Commercial Automobile Liability insurance shall be no less than $1,000,000 combined single limits per accident for bodily injury and property damage, including owned, non-owned, and hired vehicle coverage.

1.1.4 Professional Liability Insurance at minimum limits of $1,000,000. This policy must have a two (2) year extended period of coverage, (i.e. tail coverage). If you choose to have project coverage endorsed onto your base policy, this would be acceptable.

1.2 The required limits may be satisfied by any combination of primary, excess or umbrella liability insurances, provided the primary policy complies with the above requirements and the excess umbrella is following form. The vendor may maintain reasonable and customary deductibles, subject to approval by County.

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

1.3.1 A waiver of subrogation in favor of County, its officials, employees, volunteers and officers shall be contained in all policies.

1.3.2 The vendor's insurance coverage shall name County as additional insured under the General Liability policy.

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

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

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

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

1.5 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:

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

1.5.2 Sets forth the notice of cancellation or termination to County.

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 Firm: _____

Title of Officer: _____

Signature of Officer: _____

Print Name: _____

Date: _____

ACKNOWLEDGMENT

STATE OF TEXAS }
}
COUNTY OF _____ }

BEFORE ME, on this day personally appeared_____ , 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 _____ day of_____, 2019.

_____
Notary Public, State of Texas

_____
Printed Name

My Commission expires on the _____ day of_____, _____.