

THE STATE OF TEXAS §

COUNTY OF TRAVIS §

**CONTRACT FOR ENGINEERING SERVICES
Cost Plus Fixed Fee,
Unit Cost, Lump Sum, or Specified Rate
Specific Deliverable with Work Authorizations**

THIS CONTRACT FOR ENGINEERING SERVICES is made by and between the State of Texas acting by and through the Texas Department of Transportation, 125 E. 11th St., Austin, Texas 78701, hereinafter called "State," and Stantec Consulting Services, Inc., having its principal business address at 500 Jefferson Street, Suite 1670, Houston, Texas 77002, hereinafter called "Engineer," for the purpose of contracting for engineering services.

WITNESSETH

WHEREAS, Government Code, Chapter 2254, Subchapter A, "Professional Services Procurement Act," provides for the procurement of engineering services; and

WHEREAS, 43 Texas Administrative Code §9.30 et seq. establishes the Texas Department of Transportation's policies and procedures for contracting for engineering services; and,

WHEREAS, the State desires to contract for engineering services generally described as preparation of plans, specifications and estimates (PS&E) and related documents, for the following project: Freeway reconstruction for IH 35 from US 77 (North of Denton) (0195-02-074) to 0.7 miles north of FM 3002 in Cook County, Texas. The services to be provided shall include, but are not limited to, preparing roadway and bridge design, hydrologic and hydraulic design, traffic signal design, survey, and geotechnical data collection, and if requested, provide design support and testify as the Engineer of Record at Right of Way hearings, and construction phase services necessary to support the design process; and,

WHEREAS, the State has selected the Engineer to provide the needed services and the Engineer has agreed to provide the services subject to the terms and conditions hereinafter set forth.

NOW, THEREFORE, the State and the Engineer, in consideration of the mutual covenants and agreements herein contained, do hereby mutually agree as follows.

AGREEMENT

ARTICLE 1. SCOPE OF SERVICES. The State and the Engineer will furnish items and perform those services for fulfillment of the contract as identified in Attachment B, Services to be Provided by the State and Attachment C, Services to be Provided by the Engineer. All services provided by the Engineer will conform to standard engineering practices and applicable rules and regulations of the Texas Engineering Practices Act and the rules of the Texas Board of Professional Engineers.

ARTICLE 2. CONTRACT PERIOD. This contract becomes effective when fully executed by all parties hereto and it shall terminate at the close of business on September 30, 2024 unless the contract period is: (1) modified by written supplemental agreement prior to the date of termination as set forth in Attachment A, General Provisions, Article 6, Supplemental Agreements; (2) extended due to a work suspension as provided for in Attachment A, Article 3, Paragraph C; or (3) otherwise terminated in accordance with Attachment A, General Provisions, Article 15, Termination. Any work performed or cost incurred before or after the contract period shall be ineligible for reimbursement.

ARTICLE 3. COMPENSATION.

A. Maximum Amount Payable. The maximum amount payable under this contract without modification is shown in Attachment E, Fee Schedule. Payment under this contract beyond the end of the current fiscal biennium is subject to availability of appropriated funds. If funds are not appropriated, this contract shall be terminated immediately with no liability to either party.

B. Basis of Payment. The basis of payment is identified in Attachment E, Fee Schedule. Reimbursement of costs incurred under a work authorization shall be in accordance with Attachment E, Fee Schedule.

C. Reimbursement of Eligible Costs. To be eligible for reimbursement, the Engineer's costs must (1) be incurred in accordance with the terms of a valid work authorization; (2) be in accordance with Attachment E, Fee Schedule; and (3) comply with cost principles set forth at 48 CFR Part 31, Federal Acquisition Regulation (FAR 31). Satisfactory progress of work shall be maintained as a condition of payment.

D. Engineer Payment of Subproviders. No later than ten (10) days after receiving payment from the State, the Engineer shall pay all subproviders for work performed under a subcontract authorized hereunder. The State may withhold all payments that have or may become due if the Engineer fails to comply with the ten-day payment requirement. The State may also suspend the work under this contract or any work authorization until subproviders are paid. This requirement also applies to all lower tier subproviders, and this provision must be incorporated into all subcontracts.

ARTICLE 4. PAYMENT REQUIREMENTS

A. Monthly Billing Statements. The Engineer shall request reimbursement of costs incurred by submitting the original and one copy of an itemized billing statement in a form acceptable to the State. The Engineer is authorized to submit requests for reimbursement no more frequently than monthly and no later than ninety (90) days after costs are incurred.

B. Billing Statement. The billing statement shall show the work authorization number for each work authorization included in the billing, the total amount earned to the date of submission, and the amount due and payable as of the date of the current billing statement for each work authorization. The billing statement shall indicate if the work has been completed or if the billing is for partial completion of the work. The fixed fee will be paid in proportion to the percentage of work completed per work authorization.

C. Overhead Rates. The Engineer shall use the provisional overhead rate indicated in Attachment E. If a periodic escalation of the provisional overhead rate is specified in Attachment E, the effective date of the revised provisional overhead rate must be included. For lump sum contracts, the overhead rate remains unchanged for the entire contract period.

D. Thirty Day Payments. Upon receipt of a billing statement that complies with all invoice requirements set forth in this Article, the State shall make a good faith effort to pay the amount which is due and payable within thirty (30) days.

E. Withholding Payments. The State reserves the right to withhold payment of the Engineer's billing statement in the event of any of the following: (1) If a dispute over the work or costs thereof is not resolved within a thirty day period; (2) pending verification of satisfactory work performed; (3) the Engineer becomes a delinquent obligor as set forth in Section 231.006 of the Family Code; (4) required reports are not received; or (5) the State Comptroller of Public Accounts will not issue a warrant to the Engineer. In the event that payment is withheld, the State shall notify the Engineer and give a remedy that would allow the State to release the payment.

F. Required Reports.

(1) As required in Attachment H, Disadvantaged Business Enterprise or Historically Underutilized Business Program Requirements, the Engineer shall submit Progress Assessment Reports to report actual payments made to Disadvantaged Business Enterprises or Historically Underutilized Businesses. One copy shall be submitted with each billing statement and one copy shall be submitted to the address included in Attachment H, Disadvantaged Business Enterprise or Historically Underutilized Business Program Requirements.

(2) Prior to contract closeout, the Engineer shall submit a Final Report (Exhibit H-4) to the address set forth in Attachment H.

(3) The Engineer shall submit a separate report with each billing statement showing the percent completion of the work accomplished during the billing period and the percent completion to date, and any additional written report requested by the State to document the progress of the work.

G. Subproviders and Suppliers List. Pursuant to requirements of 43 Texas Administrative Code §9.350 et seq., the Engineer must provide the State a list (Exhibit H-5/DBE or Exhibit H-6/HUB) of all Subproviders and

suppliers that submitted quotes or proposals for subcontracts. This list shall include subproviders and suppliers names, addresses, telephone numbers, and type of work desired.

H. Debt to the State. If the State Comptroller of Public Accounts is prohibited from issuing a warrant or initiating an electronic funds transfer to the Engineer because of a debt owed to the State, the State shall apply all payment due the Engineer to the debt or delinquent tax until the debt or delinquent tax is paid in full.

I. Audit. The state auditor may conduct an audit or investigation of any entity receiving funds from the state directly under the contract or indirectly through a subcontract under the contract. Acceptance of funds directly under the contract or indirectly through a subcontract under this contract acts as acceptance of the authority of the state auditor, under the direction of the legislative audit committee, to conduct an audit or investigation in connection with those funds. An entity that is the subject of an audit or investigation must provide the state auditor with access to any information the state auditor considers relevant to the investigation or audit.

ARTICLE 5. WORK AUTHORIZATIONS. The State will issue work authorizations using the form included in Attachment D (Work Authorizations and Supplemental Work Authorizations) to authorize all work under this contract. The Engineer must sign and return a work authorization within seven (7) working days after receipt. Refusal to accept a work authorization may be grounds for termination of the contract. The State shall not be responsible for actions by the Engineer or any costs incurred by the Engineer relating to work not directly associated with or prior to the execution of a work authorization. Terms and conditions governing the use of work authorizations are set forth in Attachment A, General Provisions, Article 1.

ARTICLE 6. SIGNATORY WARRANTY. The undersigned signatory for the Engineer hereby represents and warrants that he or she is an officer of the organization for which he or she has executed this contract and that he or she has full and complete authority to enter into this contract on behalf of the firm. These representations and warranties are made for the purpose of inducing the State to enter into this contract.

ARTICLE 7. All notices to either party by the other required under this agreement shall be delivered personally or sent by certified or U.S. mail, postage prepaid, addressed to such party at the following addresses:

Engineer:	State:
<p style="text-align: center;">Vice President Stantec Consulting Services, Inc. 500 Jefferson Street, Suite 1670 Houston, Texas 77002</p>	<p style="text-align: center;">Director, Professional Engineering Procurement Services Texas Department of Transportation 125 E. 11th Street Austin, Texas 78701</p>

All notices shall be deemed given on the date so delivered or so deposited in the mail, unless otherwise provided herein. Either party may change the above address by sending written notice of the change to the other party. Either party may request in writing that such notices shall be delivered personally or by certified U.S. mail and such request shall be honored and carried out by the other party.

ARTICLE 8. INCORPORATION OF PROVISIONS. Attachments A through H are attached hereto and incorporated into this contract as if fully set forth herein.

IN WITNESS WHEREOF, the **State** and the **Engineer** have executed this contract.

THE ENGINEER

DocuSigned by:

Nick Bokaie

(Signature)

Nick Bokaie

(Printed Name)

Vice President

(Title)
9/25/2017

(Date)

THE STATE OF TEXAS

DocuSigned by:

James M Bass

(Signature)

James M. Bass

(Printed Name)

Executive Director

(Title)
10/5/2017

(Date)

**Attachments and Exhibits to Contract for Engineering Services
 Incorporated into the Contract by Reference**

Attachments	Title
A	General Provisions
B	Services to Be Provided by the State
C	Services to Be Provided by the Engineer
D	Work Authorization and Supplemental Work Authorization
E	Fee Schedule
F	Work Schedule
G	Computer Graphics Files for Document and Information Exchange, if applicable
H-FG	Disadvantaged Business Enterprise (DBE) for Federal Funded Professional or Technical Services Contracts – See Attachment H Instructions Not Applicable
H – FN	Disadvantaged Business Enterprise (DBE) for Race-Neutral Professional or Technical Services Contracts – See Attachment H Instructions Not Applicable
H – SG	Historically Underutilized Business (HUB) Requirements for State Funded Professional or Technical Services Contracts – State of Texas HUB. Subcontracting plan required – See Attachment H Instructions
H – SN	Historically Underutilized Business (HUB) Requirements for State Funded Professional or Technical Services Contracts – No State of Texas HUB Not Applicable
Exhibits	Title
H – 1	Subprovider Monitoring System Commitment Worksheet
H – 2	Subprovider Monitoring System Commitment Agreement
H – 3	Monthly Progress Assessment Report - Not Applicable
H - 4	Subprovider Monitoring System Final Report
H - 5	Federal Subproviders and Supplier Information - Not Applicable
H - 6	HUB Subcontracting Plan (HSP) Prime Contractor Progress Assessment Report

ATTACHMENT A

GENERAL PROVISIONS

INDEX TO PROVISIONS

Article	Title
1	Work Authorizations
2	Progress
3	Suspension of Work
4	Additional Work
5	Changes in Work
6	Supplemental Agreements
7	Ownership of Data
8	Public Information
9	Personnel, Equipment and Material
10	License for TxDOT Logo Use
11	Subcontracting
12	Inspection of Work
13	Submission of Reports
14	Violation of Contract Terms
15	Termination
16	Compliance with Laws
17	Indemnification
18	Engineer's Responsibility
19	Non-collusion
20	Insurance
21	Gratuities
22	DBE/HUB Requirements
23	Maintenance, Retention and Audit of Records
24	Nepotism Disclosure
25	Civil Rights Compliance
26	Patent Rights
27	Computer Graphics Files
28	Child Support Certification
29	Disputes
30	Successors and Assigns
31	Severability
32	Prior Contracts Superseded
33	Conflict of Interest
34	Office of Management and Budget (OMB) Audit Requirements
35	Debarment Certifications
36	E-Verify Certification
37	Restrictions on Employment of Former State Officer or Employee
38	Pertinent Non-Discrimination Authorities
39	Boycott Israel

ATTACHMENT A

GENERAL PROVISIONS

ARTICLE 1. WORK AUTHORIZATIONS

A. Use. The Engineer shall not begin any work until the State and the Engineer have signed a work authorization. Costs incurred by the Engineer before a work authorization is fully executed or after the completion date specified in the work authorization are not eligible for reimbursement. All work must be completed on or before the completion date specified in the work authorization, and no work authorization completion date shall extend beyond the contract period set forth in Article 2 of the contract (Contract Period).

B. Contents. Each work authorization will include: (1) types of services to be performed; (2) a period of performance with a beginning and ending date; (3) a full description of the work to be performed; (4) a work schedule with milestones; (5) a cost not to exceed amount, (6) the basis of payment whether cost plus fixed fee, unit cost, lump sum, or specified rate; and (7) a work authorization budget calculated using fees set forth in Attachment E, Fee Schedule. The Engineer is not to include additional contract terms and conditions in the work authorization. In the event of any conflicting terms and conditions between the work authorization and the contract, the terms and conditions of the contract shall prevail and govern the work and costs incurred.

C. Work Authorization Budget. A work authorization budget shall set forth in detail (1) the computation of the estimated cost of the work as described in the work authorization, (2) the estimated time (hours/days) required to complete the work at the hourly rates established in Attachment E, Fee Schedule; (3) a work plan that includes a list of the work to be performed, (4) a stated maximum number of calendar days to complete the work, and (5) a cost-not-to-exceed-amount or unit or lump sum cost and the total cost or price of the work authorization. The State will not pay items of cost that are not included in or rates that exceed those approved in Attachment E.

D. No Guaranteed Work. Work authorizations are issued at the discretion of the State. While it is the State's intent to issue work authorizations hereunder, the Engineer shall have no cause of action conditioned upon the lack or number of work authorizations issued.

E. Incorporation into Contract. Each work authorization shall be signed by both parties and become a part of the contract. No work authorization will waive the State's or the Engineer's responsibilities and obligations established in this contract. The Engineer shall promptly notify the State of any event that will affect completion of the work authorization.

F. Supplemental Work Authorizations. Before additional work may be performed or additional costs incurred, a change in a work authorization shall be enacted by a written supplemental work authorization in the form identified and attached hereto as Attachment D. Both parties must execute a supplemental work authorization within the period of performance specified in the work authorization. The State shall not be responsible for actions by the Engineer or any costs incurred by the Engineer relating to additional work not directly associated with the performance or prior to the execution of the work authorization. The Engineer shall allow adequate time for review and approval of the supplemental work authorization by the State prior to expiration of the work authorization. Any supplemental work authorization must be executed by both parties within the time period established in Article 2 of the contract, (Contract Period). Under no circumstances will a work authorization be allowed to extend beyond the contract's expiration date or will the total amount of funds exceed the maximum amount payable set forth in Article 3A of the contract (Compensation).

F-1. More Time Needed. If the Engineer determines or reasonably anticipates that the work authorized in a work authorization cannot be completed before the specified completion date, the Engineer shall promptly notify the State. The State may, at its sole discretion, extend the work authorization period by execution of supplemental authorization, using the form attached hereto as Attachment D.

F-2. Changes in Scope. Changes that would modify the scope of the work authorized in a work authorization must be enacted by a written supplemental work authorization. The Engineer must allow adequate time for the State to review and approve any request for a time extension prior to expiration of the work authorization. If the change in scope affects the amount payable under the work authorization, the Engineer shall prepare a revised work authorization budget for the State's approval.

G. New Work Authorization. If the Engineer does not complete the services authorized in a work authorization before the specified completion date and has not requested a supplemental work authorization, the work authorization shall terminate on the completion date. At the sole discretion of the State, it may issue a new work authorization to the Engineer for the incomplete work using the unexpended balance of the preceding work authorization for the project. If approved by the State, the Engineer may calculate any additional cost for the incomplete work using the rates set forth in the preceding work authorization and in accordance with Attachment E, Fee Schedule.

H. Emergency Work Authorizations. The State, at its sole discretion, may accept the Engineer's signature on a faxed copy of the work authorization as satisfying the requirements for executing the work authorization, provided that the signed original is received by the State within five business days from the date on the faxed copy.

I. Deliverables. Upon satisfactory completion of the work authorization, the Engineer shall submit the deliverables as specified in the executed work authorization to the State for review and acceptance.

ARTICLE 2. PROGRESS

A. Progress meetings. The Engineer shall from time to time during the progress of the work confer with the State. The Engineer shall prepare and present such information as may be pertinent and necessary or as may be requested by the State in order to evaluate features of the work.

B. Conferences. At the request of the State or the Engineer, conferences shall be provided at the Engineer's office, the office of the State, or at other locations designated by the State. These conferences shall also include evaluation of the Engineer's services and work when requested by the State.

C. Inspections. If federal funds are used to reimburse costs incurred under this contract, the work and all reimbursements will be subject to periodic review by the U. S. Department of Transportation.

D. Reports. The Engineer shall promptly advise the State in writing of events that have a significant impact upon the progress of a work authorization, including:

1. problems, delays, adverse conditions that will materially affect the ability to meet the time schedules and goals, or preclude the attainment of project work units by established time periods; this disclosure will be accompanied by statement of the action taken or contemplated, and any State or federal assistance needed to resolve the situation; and
2. favorable developments or events which enable meeting the work schedule goals sooner than anticipated.

E. Corrective Action. Should the State determine that the progress of work does not satisfy the milestone schedule set forth in a work authorization, the State shall review the work schedule with the Engineer to determine the nature of corrective action needed.

ARTICLE 3. SUSPENSION OF WORK AUTHORIZATION

A. Notice. Should the State desire to suspend a work authorization but not terminate the contract, the State may verbally notify the Engineer followed by written confirmation, giving (30) thirty days notice. Both parties may waive the thirty-day notice in writing.

B. Reinstatement. A work authorization may be reinstated and resumed in full force and effect within sixty (60) business days of receipt of written notice from the State to resume the work. Both parties may waive the sixty-day notice in writing.

C. Contract Period Not Affected. If the State suspends a work authorization, the contract period as determined in Article 2 of the contract (Contract Period) is not affected and the contract and the work authorization will terminate on the date specified unless the contract or work authorization is amended to authorize additional time.

D. Limitation of Liability. The State shall have no liability for work performed or costs incurred prior to the date authorized by the State to begin work, during periods when work is suspended, or after the completion date of the contract or work authorization.

ARTICLE 4. ADDITIONAL WORK

A. Notice. If the Engineer is of the opinion that any assigned work is beyond the scope of this contract and constitutes additional work, it shall promptly notify the State in writing, presenting the facts of the work authorization and showing how the work authorization constitutes additional work.

B. Supplemental Agreement. If the State finds that the work does constitute additional work, the State shall so advise the Engineer and a written supplemental agreement will be executed as provided in General Provisions, Article 6, Supplemental Agreements.

C. Limitation of Liability. The State shall not be responsible for actions by the Engineer or any costs incurred by the Engineer relating to additional work not directly associated with or prior to the execution of a supplemental agreement.

ARTICLE 5. CHANGES IN WORK

A. Work Previously Submitted as Satisfactory. If the Engineer has submitted work in accordance with the terms of this contract but the State requests changes to the completed work or parts thereof which involve changes to the original scope of services or character of work under the contract, the Engineer shall make such revisions as requested and as directed by the State. This will be considered as additional work and paid for as specified under Article 4, Additional Work.

B. Work Does Not Comply with Contract. If the Engineer submits work that does not comply with the terms of this contract, the State shall instruct the Engineer to make such revision as is necessary to bring the work into compliance with the contract. No additional compensation shall be paid for this work.

C. Errors/Omissions. The Engineer shall make revisions to the work authorized in this contract which are necessary to correct errors or omissions appearing therein, when required to do so by the State. No additional compensation shall be paid for this work.

ARTICLE 6. SUPPLEMENTAL AGREEMENTS

A. Need. The terms of this contract may be modified if the State determines that there has been a significant increase or decrease in the duration, scope, cost, complexity or character of the services to be performed. A supplemental agreement will be executed to authorize such significant increases or decreases. Significant is defined to mean a cost increase of any amount and a cost decrease of twenty percent (20%) or more of the original estimated project cost.

B. Compensation. Additional compensation, if appropriate, shall be calculated as set forth in Article 3 of the contract (Compensation). Significant changes affecting the cost or maximum amount payable shall be defined to include but not be limited to new work not previously authorized or previously authorized services that will not be performed. The parties may reevaluate and renegotiate costs at this time.

C. When to Execute. Both parties must execute a supplemental agreement within the contract period specified in Article 2 of the contract (Contract Period).

ARTICLE 7. OWNERSHIP OF DATA

A. Work for Hire. All services provided under this contract are considered work for hire and as such all data, basic sketches, charts, calculations, plans, specifications, and other documents created or collected under the terms of this contract are the property of the State.

B. Disposition of Documents. All documents prepared by the Engineer and all documents furnished to the Engineer by the State shall be delivered to the State upon request by the State. The Engineer, at its own expense, may retain copies of such documents or any other data which it has furnished the State under this contract, but further use of the data is subject to permission by the State.

C. Release of Design Plan. The Engineer (1) will not release any roadway design plan created or collected under this contract except to its subproviders as necessary to complete the contract; (2) shall include a provision in all subcontracts which acknowledges the State's ownership of the design plan and prohibits its use for any use other than the project identified in this contract; and (3) is responsible for any improper use of the design plan by its employees, officers, or subproviders, including costs, damages, or other liability resulting

from improper use. Neither the Engineer nor any subprovider may charge a fee for the portion of the design plan created by the State.

ARTICLE 8. PUBLIC INFORMATION AND CONFIDENTIALITY

A. Public Information. The State will comply with Government Code, Chapter 552, the Public Information Act, and 43 Texas Administrative Code §3.10 et seq. in the release of information produced under this contract.

B. Confidentiality. The Engineer shall not disclose information obtained from the State under this contract without the express written consent of the State.

C. Access to Information. The Engineer is required to make any information created or exchanged with the state pursuant to this contract, and not otherwise excepted from disclosure under the Texas Public Information Act, available in a format that is accessible by the public at no additional charge to the state.

ARTICLE 9. PERSONNEL, EQUIPMENT AND MATERIAL

A. Engineer Resources. The Engineer shall furnish and maintain quarters for the performance of all services, in addition to providing adequate and sufficient personnel and equipment to perform the services required under the contract. The Engineer certifies that it presently has adequate qualified personnel in its employment for performance of the services required under this contract, or it will be able to obtain such personnel from sources other than the State.

B. Removal of Contractor Employee. All employees of the Engineer assigned to this contract shall have such knowledge and experience as will enable them to perform the duties assigned to them. The State may instruct the Engineer to remove any employee from association with work authorized in this contract if, in the sole opinion of the State, the work of that employee does not comply with the terms of this contract or if the conduct of that employee becomes detrimental to the work.

C. Replacement of Key Personnel. The Engineer must notify the State in writing as soon as possible, but no later than three business days after a project manager or other key personnel is removed from association with this contract, giving the reason for removal.

D. State Approval of Replacement Personnel. The Engineer may not replace the project manager or key personnel without prior consent of the State. The State must be satisfied that the new project manager or other key personnel is qualified to provide the authorized services. If the State determines that the new project manager or key personnel is not acceptable, the Engineer may not use that person in that capacity and shall replace him or her with one satisfactory to the State within forty-five (45) days.

E. Ownership of Acquired Property. Except to the extent that a specific provision of this contract states to the contrary, the State shall own all intellectual property acquired or developed under this contract and all equipment purchased by the Engineer or its subcontractors under this contract. All intellectual property and equipment owned by the State shall be delivered to the State when the contract terminates, or when it is no longer needed for work performed under this contract, whichever occurs first.

ARTICLE 10. LICENSE FOR TxDOT LOGO USE

A. Grant of License; Limitations. The Engineer is granted a limited revocable non-exclusive license to use the registered TxDOT trademark logo (TxDOT Flying "T") on any deliverables prepared under this contract that are the property of the State. The Engineer may not make any use of the registered TxDOT trademark logo on any other materials or documents unless it first submits that request in writing to the State and receives approval for the proposed use. The Engineer agrees that it shall not alter, modify, dilute, or otherwise misuse the registered TxDOT trademark logo or bring it into disrepute.

B. Notice of Registration Required: The Engineer's use of the Flying 'T' under this article shall be followed by the capital letter R enclosed within a circle (®) that gives notice that the Flying 'T' is registered in the United States Patent and Trademark Office (USPTO).

C. No Assignment or Sublicense. The Engineer may not assign or sublicense the rights granted by this article without the prior written consent of the State.

D. Term of License. The license granted to the Engineer by this article shall terminate at the end of the term specified in Article 2 of this contract.

ARTICLE 11. SUBCONTRACTING

A. Prior Approval. The Engineer shall not assign, subcontract or transfer any portion of professional services related to the work under this contract without prior written approval from the State.

B. DBE/HUB Compliance. The Engineer's subcontracting program shall comply with the requirements of Attachment H of the contract (DBE/HUB Requirements).

C. Required Provisions. All subcontracts for professional services shall include the provisions included in Attachment A, General Provisions, and any provisions required by law. The Engineer is authorized to pay subproviders in accordance with the terms of the subcontract, and the basis of payment may differ from the basis of payment by the State to the Engineer.

D. Prior Review. Subcontracts for professional services in excess of \$25,000 may be reviewed by the State prior to performance of work thereunder.

E. Engineer Responsibilities. No subcontract relieves the Engineer of any responsibilities under this contract.

ARTICLE 12. INSPECTION OF WORK

A. Review Rights. The State and the U. S. Department of Transportation, when federal funds are involved, and any of their authorized representatives shall have the right at all reasonable times to review or otherwise evaluate the work performed hereunder and the premises in which it is being performed.

B. Reasonable Access. If any review or evaluation is made on the premises of the Engineer or a subprovider, the Engineer shall provide and require its subproviders to provide all reasonable facilities and assistance for the safety and convenience of the state or federal representatives in the performance of their duties.

ARTICLE 13. SUBMISSION OF REPORTS

All applicable study reports shall be submitted in preliminary form for approval by the State before a final report is issued. The State's comments on the Engineer's preliminary report must be addressed in the final report.

ARTICLE 14. VIOLATION OF CONTRACT TERMS

A. Increased Costs. Violation of contract terms, breach of contract, or default by the Engineer shall be grounds for termination of the contract, and any increased or additional cost incurred by the State arising from the Engineer's default, breach of contract or violation of contract terms shall be paid by the Engineer.

B. Remedies. This agreement shall not be considered as specifying the exclusive remedy for any default, but all remedies existing at law and in equity may be availed of by either party and shall be cumulative.

ARTICLE 15. TERMINATION

A. Causes. The contract may be terminated before the stated completion date by any of the following conditions.

1. By mutual agreement and consent, in writing from both parties.
2. By the State by notice in writing to the Engineer as a consequence of failure by the Engineer to perform the services set forth herein in a satisfactory manner.
3. By either party, upon the failure of the other party to fulfill its obligations as set forth herein.
4. By the State for reasons of its own, not subject to the mutual consent of the Engineer, by giving thirty business days notice of termination in writing to the Engineer.
5. By the State, if the Engineer violates the provisions of Attachment A, General Provisions Article 21, Gratuities, or Attachment H, Disadvantaged Business Enterprise/Historically Underutilized Business Requirements.

6. By satisfactory completion of all services and obligations described herein.

B. Measurement. Should the State terminate this contract as herein provided, no fees other than fees due and payable at the time of termination shall thereafter be paid to the Engineer. In determining the value of the work performed by the Engineer prior to termination, the State shall be the sole judge. Compensation for work at termination will be based on a percentage of the work completed at that time. Should the State terminate

this contract under paragraph (4) or (5) above, the Engineer shall not incur costs during the thirty-day notice period in excess of the amount incurred during the preceding thirty days.

C. Value of Completed Work. If the Engineer defaults in the performance of this contract or if the State terminates this contract for fault on the part of the Engineer, the State will give consideration to the following when calculating the value of the completed work: (1) the actual costs incurred (not to exceed the rates set forth in Attachment E, Fee Schedule) by the Engineer in performing the work to the date of default; (2) the amount of work required which was satisfactorily completed to date of default; (3) the value of the work which is usable to the State; (4) the cost to the State of employing another firm to complete the required work; (5) the time required to employ another firm to complete the work; and (6) other factors which affect the value to the State of the work performed.

D. Calculation of Payments. The State shall use the fee schedule set forth in Attachment E to the contract (Fee Schedule) in determining the value of the work performed up to the time of termination. In the case of partially completed engineering services, eligible costs will be calculated as set forth in Attachment E, Fee Schedule. The sum of the provisional overhead percentage rate for payroll additives and for general and administrative overhead costs during the years in which work was performed shall be used to calculate partial payments. Any portion of the fixed fee not previously paid in the partial payments shall not be included in the final payment.

E. Excusable Delays. Except with respect to defaults of subproviders, the Engineer shall not be in default by reason of any failure in performance of this contract in accordance with its terms (including any failure to progress in the performance of the work) if such failure arises out of causes beyond the control and without the default or negligence of the Engineer. Such causes may include, but are not restricted to, acts of God or the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather.

F. Surviving Requirements. The termination of this contract and payment of an amount in settlement as prescribed above shall extinguish the rights, duties, and obligations of the State and the Engineer under this contract, except for those provisions that establish responsibilities that extend beyond the contract period.

G. Payment of Additional Costs. If termination of this contract is due to the failure of the Engineer to fulfill its contract obligations, the State may take over the project and prosecute the work to completion, and the Engineer shall be liable to the State for any additional cost to the State.

ARTICLE 16. COMPLIANCE WITH LAWS

The Engineer shall comply with all applicable federal, state and local laws, statutes, codes, ordinances, rules and regulations, and the orders and decrees of any court, or administrative bodies or tribunals in any manner affecting the performance of this contract, including, without limitation, worker's compensation laws, minimum and maximum salary and wage statutes and regulations, nondiscrimination, and licensing laws and regulations. When required, the Engineer shall furnish the State with satisfactory proof of its compliance therewith.

ARTICLE 17. INDEMNIFICATION

A. Indemnification. The Engineer shall indemnify the State and the State's officers and employees against liability for damage to the extent that the damage is caused by or results from an act of negligence, intentional tort, intellectual property infringement, or failure to pay a subcontractor or supplier committed by the Engineer, the Engineer's agent, or another entity over which the Engineer exercises control.

B. Attorney Fees. The Engineer shall reimburse, in proportion to Engineer's liability, TxDOT's reasonable attorney's fees incurred defending TxDOT against a claim based wholly or partly on the negligence of, fault of,

or breach of contract by Engineer, Engineer's agent, or another entity over which Engineer exercises control.

ARTICLE 18. ENGINEER'S RESPONSIBILITY

A. Accuracy. The Engineer shall be responsible for the accuracy of work and shall promptly make necessary revisions or corrections resulting from its errors, omissions, or negligent acts without compensation.

B. Errors and Omissions. The Engineer's Responsibility for all questions arising from design errors or omissions will be determined by the State. All decisions shall be in accordance with the State's "Consultant Errors & Omissions Correction and Collection Procedures" and Texas Government Code §2252.905. The Engineer will not be relieved of the responsibility for subsequent correction of any such errors or omissions or for clarification of any ambiguities until after the construction phase of the project has been completed.

C. Professionalism. The Engineer shall perform the services it provides under the contract: (1) with the professional skill and care ordinarily provided by competent engineers practicing under the same or similar circumstances and professional license and (2) as expeditiously as is prudent considering the ordinary professional skill and care of a competent engineer.

D. Seal. The responsible Engineer shall sign, seal and date all appropriate engineering submissions to the State in accordance with the Texas Engineering Practice Act and the rules of the Texas Board of Professional Engineers.

E. Resealing of Documents. Once the work has been sealed and accepted by the State, the State, as the owner, will notify the party to this contract, in writing, of the possibility that a State engineer, as a second engineer, may find it necessary to alter, complete, correct, revise or add to the work. If necessary, the second engineer will affix his seal to any work altered, completed, corrected, revised or added. The second engineer will then become responsible for any alterations, additions or deletions to the original design including any effect or impacts of those changes on the original engineer's design.

ARTICLE 19. NONCOLLUSION

A. Warranty. The Engineer warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Engineer, to solicit or secure this contract and that it has not paid or agreed to pay any company or engineer any fee, commission, percentage, brokerage fee, gifts, or any other consideration, contingent upon or resulting from the award or making of this contract.

B. Liability. For breach or violation of this warranty, the State shall have the right to annul this contract without liability or, in its discretion, to deduct from the contract price or compensation, or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee.

ARTICLE 20. INSURANCE

The Engineer certifies that it has insurance on file with Contract Services of the Texas Department of Transportation in the amount specified on Form 1560-CS, Certificate of Insurance, as required by the State. No other proof of insurance is acceptable to the State. The Engineer certifies that it will keep current insurance on file with that office for the duration of the contract period. If insurance lapses during the contract period, the Engineer must stop work until a new certificate of insurance is provided.

ARTICLE 21. GRATUITIES

A. Employees Not to Benefit. Texas Transportation Commission policy mandates that employees of the Texas Department of Transportation shall not accept any benefit, gift or favor from any person doing business with or who reasonably speaking may do business with the State under this contract.

B. Liability. Any person doing business with or who reasonably speaking may do business with the State under this contract may not make any offer of benefits, gifts or favors to department employees. Failure on the part of the Engineer to adhere to this policy may result in the termination of this contract.

ARTICLE 22. DISADVANTAGED BUSINESS ENTERPRISE OR HISTORICALLY UNDERUTILIZED BUSINESS REQUIREMENTS

The Engineer agrees to comply with the requirements set forth in Attachment H, Disadvantaged Business Enterprise or Historically Underutilized Business Subcontracting Plan Requirements with an assigned goal or a

zero goal, as determined by the State.

ARTICLE 23. MAINTENANCE, RETENTION AND AUDIT OF RECORDS

A. Retention Period. The Engineer shall maintain all books, documents, papers, accounting records and other evidence pertaining to costs incurred and services provided (hereinafter called the Records). The Engineer shall make the records available at its office during the contract period and for seven (7) years from the date of final payment under this contract, until completion of all audits, or until pending litigation has been completely and fully resolved, whichever occurs last.

B. Availability. The State or any of its duly authorized representatives, the Federal Highway Administration, the United States Department of Transportation, Office of Inspector General, and the Comptroller General shall have access to the Engineer's Records which are directly pertinent to this contract for the purpose of making audits, examinations, excerpts and transcriptions.

ARTICLE 24. NEPOTISM DISCLOSURE

A. In this section the term "relative" means:

- (1) a person's great grandparent, grandparent, parent, aunt or uncle, sibling, niece or nephew, spouse, child, grandchild, or great grandchild, or
- (2) the grandparent, parent, sibling, child, or grandchild of the person's spouse.

B. A notification required by this section shall be submitted in writing to the person designated to receive official notices under this contract and by first-class mail addressed to Contract Services, Texas Department of Transportation, 125 East 11th Street, Austin Texas 78701. The notice shall specify the Engineer's firm name, the name of the person who submitted the notification, the contract number, the district, division, or office of TxDOT that is principally responsible for the contract, the name of the relevant Engineer employee, the expected role of the Engineer employee on the project, the name of the TxDOT employee who is a relative of the Engineer employee, the title of the TxDOT employee, the work location of the TxDOT employee, and the nature of the relationship.

C. By executing this contract, the Engineer is certifying that the Engineer does not have any knowledge that any of its employees or of any employees of a subcontractor who are expected to work under this contract have a relative that is employed by TxDOT unless the Engineer has notified TxDOT of each instance as required by subsection (b).

D. If the Engineer learns at any time that any of its employees or that any of the employees of a subcontractor who are performing work under this contract have a relative who is employed by TxDOT, the Engineer shall notify TxDOT under subsection (b) of each instance within thirty days of obtaining that knowledge.

E. If the Engineer violates this section, TxDOT may terminate the contract immediately for cause, may impose any sanction permitted by law, and may pursue any other remedy permitted by law.

ARTICLE 25. CIVIL RIGHTS COMPLIANCE

A. Compliance with Regulations: The Engineer will comply with the Acts and the Regulations relative to Nondiscrimination in Federally-assisted programs of the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), as they may be amended from time to time, which are herein incorporated by reference and made part of this agreement.

B. Nondiscrimination: The Engineer, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The Engineer will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

C. Solicitations for Subcontracts, Including Procurement of Materials and Equipment: In all solicitations either by competitive bidding or negotiation made by the Engineer for work to be performed under a subcontract, including procurement of materials or leases of equipment, each potential subcontractor or

supplier will be notified by the Engineer of the Engineer's obligations under this contract and the Acts and Regulations relative to Nondiscrimination on the grounds of race, color, or national origin.

D. Information and Reports: The Engineer will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto, and will permit access to its books, records, accounts, other sources of information, and facilities as may be determined by the State or the FHWA to be pertinent to ascertain compliance with such Acts, Regulations or directives. Where any information required of the Engineer is in the exclusive possession of another who fails or refuses to furnish this information, the Engineer will so certify to the State or the Federal Highway Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

E. Sanctions for Noncompliance: In the event of the Engineer's noncompliance with the Nondiscrimination provisions of this contract, the State will impose such contract sanctions as it or the FHWA may determine to be appropriate, including, but not limited to:

- (1) withholding of payments to the Engineer under the contract until the Engineer complies and/or
- (2) cancelling, terminating, or suspending of the contract, in whole or in part.

F. Incorporation of Provisions: The Engineer will include the provisions of paragraphs (A) through (F) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The Engineer will take such action with respect to any subcontract or procurement as the State or the FHWA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the Engineer becomes involved in, or is threatened with, litigation with a subcontractor or supplier because of such direction, the Engineer may request the State to enter into such litigation to protect the interests of the State. In addition, the Engineer may request the United States to enter into such litigation to protect the interests of the United States.

ARTICLE 26. PATENT RIGHTS

The State and the U. S. Department of Transportation shall have the royalty free, nonexclusive and irrevocable right to use and to authorize others to use any patents developed by the Engineer under this contract.

ARTICLE 27. COMPUTER GRAPHICS FILES

The Engineer agrees to comply with Attachment G, Computer Graphics Files for Document and Information Exchange, if determined by the State to be applicable to this contract.

ARTICLE 28. CHILD SUPPORT CERTIFICATION

Under Section 231.006, Texas Family Code, the Engineer certifies that the individual or business entity named in this contract, bid, or application is not ineligible to receive the specified grant, loan, or payment and acknowledges that this contract may be terminated and payment may be withheld if this certification is inaccurate. If the above certification is shown to be false, the Engineer is liable to the state for attorney's fees, the cost necessary to complete the contract, including the cost of advertising and awarding a second contract, and any other damages provided by law or the contract. A child support obligor or business entity ineligible to receive payments because of a payment delinquency of more than thirty (30) days remains ineligible until: all arrearages have been paid; the obligor is in compliance with a written repayment agreement or court order as to any existing delinquency; or the court of continuing jurisdiction over the child support order has granted the obligor an exemption from Subsection (a) of Section 231.006, Texas Family Code, as part of a court-supervised effort to improve earnings and child support payments.

ARTICLE 29. DISPUTES

A. Disputes Not Related to Contract Services. The Engineer shall be responsible for the settlement of all contractual and administrative issues arising out of any procurement made by the Engineer in support of the services authorized herein.

B. Disputes Concerning Work or Cost. Any dispute concerning the work hereunder or additional costs, or any non-procurement issues shall be settled in accordance with 43 Texas Administrative Code §9.2.

ARTICLE 30. SUCCESSORS AND ASSIGNS

The Engineer and the State do each hereby bind themselves, their successors, executors, administrators and

assigns to each other party of this agreement and to the successors, executors, administrators and assigns of such other party in respect to all covenants of this contract. The Engineer shall not assign, subcontract or transfer its interest in this contract without the prior written consent of the State.

ARTICLE 31. SEVERABILITY

In the event any one or more of the provisions contained in this contract shall for any reason, be held to be invalid, illegal, or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision thereof and this contract shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.

ARTICLE 32. PRIOR CONTRACTS SUPERSEDED

This contract constitutes the sole agreement of the parties hereto for the services authorized herein and supersedes any prior understandings or written or oral contracts between the parties respecting the subject matter defined herein.

ARTICLE 33. CONFLICT OF INTEREST

A. Representation by Engineer.

The Engineer represents that its firm has no conflict of interest that would in any way interfere with its or its employees' performance of services for the department or which in any way conflicts with the interests of the department. The Engineer further certifies that this agreement is not barred because of a conflict of interest pursuant to Texas Government Code, Section 2261.252, between it and the State. Specifically, the Engineer certifies that none of the following individuals, nor any or their family members within the second degree of affinity or consanguinity, owns 1% or more interest, or has a financial interest as defined under Texas Government Code, Section 2261.252(b), in the Engineer: any member of the Texas Transportation Commission, TxDOT's Executive Director, General Counsel, Chief of Procurement and Field Support Operations, Director of Procurement, or Director of Contract Services. The firm shall exercise reasonable care and diligence to prevent any actions or conditions that could result in a conflict with the department's interests.

B. Certification Status. The Engineer certifies that it is not:

1. a person required to register as a lobbyist under Chapter 305, Government Code;
2. a public relations firm; or
3. a government consultant.

C. Environmental Disclosure. If the Engineer will prepare an environmental impact statement or an environmental assessment under this contract, the Engineer certifies by executing this contract that it has no financial or other interest in the outcome of the project on which the environmental impact statement or environmental assessment is prepared.

D. Commencement of Final Design. This contract does not obligate the State to proceed with final design for any alternative. On completion of environmental documentation, the State will consider all reasonable alternatives in a fair and objective manner. Notwithstanding anything contained elsewhere in the contract or in any work authorization, the Engineer may not proceed with final design until after all relevant environmental decision documents have been issued.

E. Restrictions on Testing. If the Engineer will perform commercial laboratory testing under this contract, on any project the Engineer may not perform more than one of the following types of testing:

1. verification testing;
2. quality control testing; or
3. independent assurance testing.

ARTICLE 34. OFFICE OF MANAGEMENT AND BUDGET (OMB) AUDIT REQUIREMENTS

The parties shall comply with the requirements of the Single Audit Act of 1984, P.L. 98-502, ensuring that the single audit report includes the coverage stipulated in 2 CFR 200.

ARTICLE 35. DEBARMENT CERTIFICATIONS

The parties are prohibited from making any award at any tier to any party that is debarred or suspended or

otherwise excluded from or ineligible for participation in Federal Assistance Programs under Executive Order 12549, "Debarment and Suspension." By executing this agreement, the Engineer certifies that it is not currently debarred, suspended, or otherwise excluded from or ineligible for participation in Federal Assistance Programs under Executive Order 12549. The parties to this contract shall require any party to a subcontract or purchase order awarded under this contract to certify its eligibility to receive Federal funds and, when requested by the State, to furnish a copy of the certification.

ARTICLE 36. E-VERIFY CERTIFICATION

Pursuant to Executive Order RP-80, Engineer certifies and ensures that for all contracts for services, Engineer shall, to the extent permitted by law, utilize the United States Department of Homeland Security's E-Verify system during the term of this agreement to determine the eligibility of:

1. All persons employed by Engineer during the term of this agreement to perform duties within the State of Texas; and
2. All persons, including subcontractors, assigned by Engineer to perform work pursuant to this agreement.

Violation of this provision constitutes a material breach of this agreement.

ARTICLE 37. RESTRICTIONS ON EMPLOYMENT OF FORMER STATE OFFICER OR EMPLOYEE

The Engineer shall not hire a former state officer or employee of a state agency who, during the period of state service or employment, participated on behalf of the state agency in this agreement's procurement or its negotiation until after the second anniversary of the date of the officer's or employee's service or employment with the state agency ceased.

ARTICLE 38. PERTINENT NON-DISCRIMINATION AUTHORITIES

During the performance of this contract, the Engineer, for itself, its assignees, and successors in interest agree to comply with the following nondiscrimination statutes and authorities; including but not limited to:

A. Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.

B. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects).

C. Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), as amended, (prohibits discrimination on the basis of sex).

D. Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.) as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27.

E. The Age Discrimination Act of 1975, as amended, (49 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age).

F. Airport and Airway Improvement Act of 1982, (49 U.S.C. Chapter 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex).

G. The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, subrecipients and contractors, whether such programs or activities are Federally funded or not).

H. Titles II and III of the Americans with Disabilities Act, which prohibits discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38.

I. The Federal Aviation Administration's Nondiscrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex).

J. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations.

K. Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, the parties must take reasonable steps to ensure that LEP persons have meaningful access to the programs (70 Fed. Reg. at 74087 to 74100).

L. Title IX of the Education Amendments of 1972, as amended, which prohibits the parties from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq.).

ARTICLE 39. BOYCOTT ISRAEL

A. Meaning: "Boycott Israel" means refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations specifically with Israel, or with a person or entity doing business in Israel or in an Israeli-controlled territory, but does not include an action made for ordinary business purposes.

B. Certification and Prohibition: The Engineer hereby certifies it does not boycott Israel and shall not boycott Israel during the term of the contract.

ATTACHMENT B

SERVICES TO BE PROVIDED BY THE STATE

Freeway reconstruction for IH 35 from US 77 (North of Denton) (0195-02-074) to 0.7 miles north of FM 3002 in Cook County, Texas.

For each negotiated Work Authorization, the State will designate a Project Manager to represent the State and will provide the following information or services as listed below by Function Code (FC).

Subject to availability, the services to be provided or performed by the State will include, but not be limited to, the following items:

Route and Design Studies

- Provide As-built Plans.
- Provide Preliminary Cost Estimate, Project Information and other Documentation.
- Provide soil boring logs for inclusion in the final plans, if applicable.
- Provide available Environmental Documentation.
- Provide Map File, Topographic (Planimetric) Base File and Aerial Photography.
- Provide approved traffic data.
- Provide DCIS project information.
- Provide Design Summary Report.
- Provide Value Engineering Report, if available and applicable.

Social, Economic and Environmental Studies and Public Involvement

- Provide available project development documents, environmental Documentation, schematics, typical sections, public involvement records, etc.
- Review and process each necessary environmental and public involvement document prior to letting of the construction contract.
- Provide Environmental Permits Issues and Commitments (EPIC) sheets.

Right-of-Way Data and Utility

- Provide available existing right of way plans for the proposed project location.
- Conduct all right-of-way appraisals and acquisitions, if applicable.
- Any coordination on approvals required with the General Land Office (GLO) when crossing state owned lands or navigable waters.
- Conduct utility coordination meetings with the various utility companies and public utility agencies.
- Prepare utility agreements.

- If available, Subsurface Utility Engineering (SUE) data and utility ownership/facility data; and
- Planimetric layouts and related information.

Design Surveys and Construction Surveys

- Provide survey control points such as horizontal control points, benchmark elevations and descriptions for vertical control, and listing of horizontal alignment coordinates for baseline control only, if available.
- Provide aerial photographs (contact prints) of the proposed project area, if available.
- Provide MicroStation DGN files for approved schematic layout and for adjacent projects.
- Provide any LiDAR data, from terrestrial, mobile or aerial, if available.
- Furnish a Digital Terrain Model (DTM&TIN) files to generate Cross Sections and contours, if available.
- Provide TxDOT seed files or District Working files, working unit, DGN Library files.

Roadway Design Controls

- Provide applicable Preliminary Design Concept Conference, schematic layout and Plans, Specifications and Estimate (PS&E) package checklists for use by the Engineer.
- Provide As-built plans of the existing project facilities, if available.
- Provide Pavement Design Report.
- Provide standard GEOPAK design cross section criteria files developed by the State.

Drainage

- Provide existing hydraulic and hydrologic studies associated with the project and project area if available.
- Provide areas of wetlands delineation to be surveyed by the Engineer.
- Provide data, if available, including “as-built plans”, existing cross sections, existing channel and drainage easement data.

Signing, Pavement Markings and Signalization (Permanent)

- Furnish traffic signal justification warrants, if applicable.

- Available traffic counts, traffic projects and accident data, if available.

Miscellaneous (Roadway)

- Provide example estimates, district general notes and standards, sample specification lists and related hard copy documentation for the Engineer's use in preparing the preliminary estimate, general notes and specifications.
- Provide a maximum project cost to be used in the preparation of the preliminary design.
- Furnish tabulation of current applicable bid process, if applicable.
- Negotiate with each project utility company for relocation agreements or required relocation as applicable.

Project Management and Administration

- Review, approve and update Project Design Criteria.
- Prompt Review of Deliverables.
- Provide copies of preferred District Details to be used.
- Provide copies of preferred District Standards to be used.
- Prepare final General Notes and final Specification Data Sheets.

Bridge Design

- Furnish as-built plans of existing structures, National Bridge Inventory (NBI), and applicable BRINSAP report.
- Review and provide written approval of each preliminary bridge layout before bridge design work begins.

Construction Phase Services

- Shop drawings and related submittals received from the contractor or fabricators.
- Request for applicable change order plan modifications that are based on changed conditions or a request by the State to modify the design based on field conditions or applicable updates to the State's standards and criteria.

Additional Responsibilities

- Provide design criteria for roadway, structures, drainage, and hydraulics.
- Interface with local, regional, State and Federal agencies or other entities on behalf of Engineer.
- Coordinate and notify in writing with Emergency Medical Services (EMS), school system, United State (U.S.) Mail, etc. for any detour routes and roadway

closures. Upon request by the State, the Engineer shall prepare the necessary exhibits.

- Provide the Engineer with timely reviews in accordance with Exhibit C, "Work Schedule" of the Work Authorization and decisions to enable the Engineer to maintain the project schedule as approved by the State.
- Provide paper prints or electronic copies of design files containing, for example, a sample title sheet, plan profile sheet, plan sheet, sheet quantities and storm water pollution prevention plan (SW3P) sheet, if available and applicable.
- Provide milestone guidelines as applicable to the district the work is being performed.
- Secure all required permits and agreements.
- Provide the "Guide for Determining Time Requirements for Traffic Signal Preemptions at Highway-rail Crossings."

DRAFT ATTACHMENT C

SERVICES TO BE PROVIDED BY THE ENGINEER

The Engineer shall provide engineering services required for the preparation of plans, specifications and estimates (PS&E) and related documents, for the following project: Freeway reconstruction for IH 35 from US 77 (North of Denton) (0195-02-074) to 0.7 miles north of FM 3002 in Cook County, Texas. The services to be provided shall include, but are not limited to, preparing roadway and bridge design, hydrologic and hydraulic design, traffic signal design, survey, and geotechnical data collection, and if requested, provide design support and testify as the Engineer of Record at Right of Way hearings, and construction phase services necessary to support the design process.

GENERAL REQUIREMENTS

1.1. Design Criteria. The Engineer shall prepare all work in accordance with the latest version of applicable State's procedures, specifications, manuals, guidelines, standard drawings, and standard specifications or previously approved special provisions and special specifications, which include: the *PS&E Preparation Manual*, *Roadway Design Manual*, *Hydraulic Design Manual*, the *Texas Manual on Uniform Traffic Control Devices (TMUTCD)*, *Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges (latest Edition)*, and other State approved manuals. When design criteria are not identified in State manuals, the Engineer shall notify the State and refer to the American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Street*, (latest Edition). In addition, the Engineer shall follow the State's District guidelines in developing the Plan, Specification, and Estimate (PS&E) package. The Engineer shall prepare each PS&E package in a form suitable for letting through the State's construction contract bidding and awarding process.

The Engineer shall identify, prepare exhibits and complete all necessary forms for each Design Exception and Waiver required within project limits prior to the 30% project completion submittal. The Engineer shall submit each exception and waiver to the State for coordination and processing of approvals. If subsequent changes require additional exceptions, the Engineer shall notify the State in writing as soon as possible after identification of each condition that may warrant a design exception or waiver.

1.2. Right-of-Entry and Coordination. The Engineer shall notify the State and secure permission to enter private property to perform any surveying, environmental, engineering or geotechnical activities needed off State right-of-way. In pursuance of the State's policy with the general public, the Engineer shall not commit acts which would result in damages to private property, and the Engineer shall make every effort to comply with the wishes and address the concerns of affected private property owners. The Engineer shall contact each property owner prior to any entry onto the owner's property and shall request concurrence from the State prior to each entry.

The Engineer shall notify the State and coordinate with adjacent engineers on all controls at project interfaces. The Engineer shall document the coordination effort, and each engineer shall provide written concurrence regarding the agreed project controls and interfaces. In the event the Engineer and the other adjacent engineers are unable to agree, the Engineer and each adjacent engineer shall meet jointly with the State for resolution. The State will have authority over the Engineer's disagreements and the State's decision will be final.

The Engineer shall prepare each exhibit necessary for approval by each railroad, utility, and other governmental or regulatory agency in compliance with the applicable format and guidelines required by each entity and as approved by the State. The Engineer shall notify the State in writing prior to beginning any work on any outside agency's exhibit.

1.3. Progress Reporting and Invoicing. The Engineer shall invoice according to Function Code breakdowns shown in Attachment "C" of the Contract for Engineering Services and Exhibit "D" - *Fee Schedule*, of each Work Authorization. The Engineer shall submit each invoice in a format acceptable to the State.

With each invoice, the Engineer shall include a completed Projected vs. Actual Contract Invoices form. The Engineer shall submit a monthly written progress report to the State's Project Manager regardless of whether the Engineer is invoicing for that month. The Engineer's written progress report shall describe activities during the reporting period; activities planned for the following period; problems encountered and actions taken to remedy them; list of meetings attended; and overall status, including a per cent complete by task.

The Engineer shall prepare a design time schedule and an estimated construction contract time schedule, using the latest version of Primavera software or any State's approved programs. The schedules shall indicate tasks, subtasks, critical dates, milestones, deliverables and review requirements in a format that depicts the interdependence of the various items. The Engineer shall provide assistance to State personnel in interpreting the schedules. The Engineer shall schedule milestone submittals at 30%, 60%, 95% and final project completion phases. The Engineer shall advise the State in writing if the Engineer is not able to meet the scheduled milestone review date.

Once the project goes to letting, all electronic files shall be delivered within 30 days of written request in conformance with the latest version of the State's Document and Information Exchange (Attachment G).

Final payment is contingent upon the State's receipt and confirmation by the State's Project Manager that the electronic files run and is formatted in accordance with Attachment G of the contract and all review comments are addressed.

The Engineer shall prepare a letter of transmittal to accompany each document submittal to the State. At a minimum, the letter of transmittal must include the State's Control-Section-Job (CSJ) number, the highway number, County, project limits, State's contract number, and State's work authorization number.

1.4. Traffic Control. The Engineer shall provide all planning, labor, and equipment to develop and to execute each Traffic Control Plan (TCP) needed by the Engineer to perform services under each Work Authorization. The Engineer shall comply with the requirements of the most recent edition of the TMUTCD. The Engineer shall submit a copy of each TCP to the State for approval prior commencing any work on any State roadway. The Engineer shall provide all signs, flags, and safety equipment needed to execute the approved TCP. The Engineer shall notify the State in writing twenty-four (24) hours in advance of executing each TCP requiring a lane closure, and shall have received written concurrence from the State prior to beginning the lane closure. The Engineer's field crew shall possess a copy of the approved TCP on the job site at all times and shall make the TCP available to the State for inspection upon request. The Engineer shall assign charges for any required traffic control to the applicable function code.

1.5. State-Controlled Waters. The placement of a new structure or modification of an existing structure(s) within State-Controlled waters will require confirmation that said structure(s) lie within the General Land Office (GLO) state owned land and whether the crossing is tidally influenced or not. Consequently, the Engineer shall request, as early in the design process as possible, that the State determine whether the proposed improvements are found within the tidal GLO, is a submerged GLO property or a non-tidal GLO property. The State may request assistance from the Engineer to prepare an exhibit demonstrating the location of the proposed improvements on the GLO State Owned Map for the project location of an assigned State's District.

1.6. Coordination. The Engineer shall coordinate issues and communications with State's internal resource areas through the State's Project Manager. The State will communicate the resolution of issues and provide the Engineer direction through the State's Project Manager.

1.7. Level of Effort. For each work authorization, the Engineer shall base the level of effort at each phase on the prior work developed in earlier phases without unnecessary repetition or re-study. As directed by the State, the Engineer shall provide written justification regarding whether or not additional or repeated level of effort of earlier completed work is warranted, or if additional detail will be better addressed at a later stage in the project development.

1.8. Quality Assurance (QA) and Quality Control (QC). The Engineer shall provide peer review at all levels. For each deliverable, the Engineer shall have some evidence of their internal review and mark-up of that deliverable as preparation for submittal. A milestone submittal is not considered complete unless the required milestone documents and associated internal red-line mark-ups are submitted. The State's

Project Manager may require the Engineer to submit the Engineer’s internal mark-up (red-lines) or comments developed as part the Engineer’s quality control step. When internal mark-ups are requested by the State in advance, the State, at its sole discretion, may reject the actual deliverable should the Engineer fail to provide the evidence of quality control. The Engineer shall clearly label each document submitted for quality assurance as an internal mark-up document.

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

1.9. Use of the State’s Standards. The Engineer shall identify and insert as frequently as is feasible the applicable, current State’s Standard Details, District Standard Details, or miscellaneous details that have been approved for use in the plan. The Engineer shall sign, seal, and date each Standard and miscellaneous detail if the Standard selected has not been adopted for use in a District. The Engineer shall obtain approval for use of these details during the early stages of design from the State Project Manager or designated State Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment. The Engineer shall retain the responsibility for the appropriate selection of each Standard identified for use within their design.

1.10. Organization of Plan Sheets. The PS&E shall be complete and organized in accordance with the latest edition of the State’s PS&E Preparation Manual. The PS&E package shall be suitable for the bidding and awarding of a construction contract, and in accordance with the latest State’s policies and procedures, and the District’s PS&E Checklist.

1.11. Limited Access to State’s DCIS. The Engineer shall receive limited access to the State’s DCIS to update responsible engineer information, sign, seal and date, build specification list and develop Project estimate.

As shown on the table below, the Engineer shall access and update DCIS with the following function codes.

DCIS Update Screens	Required Criteria for DCIS Access	Function Code
S01-Responsible Engineer Update S03-Sealing, Signing & Dating P04-Project Estimate	Consultant Registered Professional Engineer (PE)	CONENG

C03-Build Specifications		
P04-Project Estimate C03-Build Specifications	Consultant does not have to be a PE	CONEST

When requested by the State, the Engineer shall sign the following TxDOT forms: 1828, Information Security Compliance Agreement; 1980, Request for External Access to the State's Information Systems; 2110, Information Resources Confidentiality Agreement, and DR-IRI Information Access Request Form. These access rights will be revoked after the project is let.

1.12. Organization of Design Project Folder and Files (Electronic Project Files).

The Engineer shall organize the electronic project files in accordance with the State's File Management System (FMS) format. With the approval of the State, the Engineer may maintain the project files in the State's ProjectWise container.

1.13. Training Requirements. Each member of the Engineer's project team must take the following Environmental Management System (EMS) e-Learning courses prior to working on the project:

1. Environmental Management System: Awareness Training for the Contractor
2. Storm Water: Environmental Requirements During Construction

Both courses may be accessed at: <http://www.txdot.gov/insidetxdot/division/environmental/ems-courses.html>

TASK DESCRIPTIONS AND FUNCTION CODES

The Engineer shall categorize each task performed to correspond with the Function Codes (FC) and Task Descriptions.

FUNCTION CODE 102(110) – FEASIBILITY STUDIES

ROUTE AND DESIGN STUDIES

110.1. Data Collection and Field Reconnaissance

The Engineer shall collect, review, and evaluate data described below. The Engineer shall notify the State in writing whenever the Engineer finds disagreement with the information or documents:

1. Data, if available, from the State, including "as-built plans", existing schematics, right-of-way maps, Subsurface Utility Engineering (SUE) mapping, existing cross sections, existing planimetric mapping, environmental documents, existing channel and drainage easement data, existing traffic counts, accident data, Bridge Inspection records, Project Management Information system (PMIS) data, identified endangered

- species, identified hazardous material sites, current unit bid price information, current special provisions, special specifications, and standard drawings.
2. Documents for existing and proposed development along proposed route from local municipalities and local ordinances related to project development.
 3. Utility plans and documents from appropriate municipalities and agencies.
 4. Flood plain information and studies from the Federal Emergency Management Agency (FEMA), the United States Army Corps of Engineers (USACE), local municipalities, and other governmental agencies.
 5. Conduct field reconnaissance and collect data including a photographic record of notable existing features.

110.2. Design Criteria

The Engineer shall develop the roadway design criteria based on the controlling factors specified by the State (*i.e.* 4R, 3R, 2R, or special facilities), by use of the funding categories, design speed, functional classification, roadway class and any other set criteria as set forth in *PS&E Preparation Manual, Roadway Design Manual, Bridge Design Manual, Hydraulic Design Manual*, and other deemed necessary State approved manuals. In addition, the Engineer shall prepare the Design Summary Report (DSR) and submit it electronically. The Engineer shall obtain written concurrence from the State prior to proceeding with a design if any questions arise during the design process regarding the applicability of State's design criteria.

110.3. Preliminary Cost Estimates

The Engineer shall develop a preliminary cost estimate using the Average Low Bid Unit Price. The Engineer shall estimate the total project cost including preliminary engineering, final engineering, right-of-way (ROW) acquisition, environmental compliance and mitigation, construction, utility relocation, and construction engineering inspection (CEI).

110.4. Design Concept Conference

In accordance with the State's Project Development Process Manual, the Engineer, in cooperation with the State, shall plan, attend, and document the Design Concept Conference (DCC) to be held prior to the 30 percent milestone submittal. In preparation for the DCC, the Engineer shall complete a State's Design Summary Report to serve as a checklist for the minimum required design considerations. The conference will provide for a brainstorming session in which decision makers, stakeholders and technical personnel may discuss and agree on:

1. Roadway and drainage design parameters
2. Engineering and environmental constraints
3. Project development schedule
4. Other issues as identified by the State

5. Identify any Design Exceptions and Waivers
6. Preliminary Construction Cost Estimate

110.5. Geotechnical Borings and Investigations

The Engineer shall determine the location of proposed soil borings for bridge design, embankment settlement analysis, retaining walls, slope stability and along storm drain alignment in accordance with the latest edition of the State's Geotechnical Manual. The State will review and provide comments for a boring layout submitted by the Engineer showing the general location and depths of the proposed borings. Once the Engineer receives the State's review comments they shall perform soil borings (field work), soil testing and prepare the boring logs in accordance with the latest edition of the State's Geotechnical Manual and State District's procedures and design guidelines.

All geotechnical work should be performed in accordance with the latest version of the State's Geotechnical Manual. All testing shall be performed in accordance with the latest version of the State's Manual of Test Procedures. American Society for Testing Materials (ASTM) test procedures can be used only in the absence of the State's procedures. All soil classification should be done in accordance with the Unified Soil Classification System.

110.5.1. Borings

The Engineer shall incorporate soil boring data sheets prepared, signed, sealed, and dated by the Geotechnical Engineer. The soil boring sheets shall be in accordance with the State's WINCORE software as can be found on the Texas Department of Transportation (TxDOT) website.

The Engineer shall sign, seal and date soil boring sheets to be used in the PS&E package. The preparation of soil boring sheets must be in accordance with a State's District standards.

110.5.2. Retaining Walls

If applicable, the Engineer shall perform any retaining wall analyses to include the settlement analysis. This analysis must include the computation of the factor of safety for bearing capacity, global stability, overturning and sliding. In addition, the Engineer shall include allowable bearing pressure, passive earth pressure, friction factor, settlement analysis (consolidation report) and lateral earth pressure for the retaining walls.

110.5.3. Bridge, COSS Sign, and ITS CCTV Pole Foundations

If applicable, the Engineer shall perform soil borings, coring for pavement removal items, piezometric readings, testing and analysis to include slope stability analysis, settlement analysis, and foundation design recommendations along storm drain alignment, retaining walls, overhead sign structures, bridges, embankments and any temporary soil retaining systems.

Foundation Studies: The Engineer shall coordinate with the State to determine the location of soil borings to be drilled along the retaining wall alignments. The soil borings shall extend a minimum of 35 feet below the footing elevation or deeper as soil conditions warrant. Spacing of soil borings shall not exceed 500 feet. The Engineer shall provide a boring layout for the State's review and comment.

110.5.4. Geotechnical Report

The Engineer shall provide a signed, sealed and dated geotechnical report which contains, but is not limited to, soil boring locations, boring logs, laboratory test results, generalized subsurface conditions, ground water conditions, piezometer data, analyses and recommendations for settlement and slope stability of the earthen embankments, skin friction tables and design capacity curves including skin friction and point bearing. The skin friction tables and design capacity curves must be present for piling and drilled shaft foundation.

If applicable, the Engineer shall perform scour analysis to include Grain Size distribution curves with D50 value.

110.5.5. Geotechnical Task Management

The Engineer shall be responsible for all the geotechnical task management and attend all relevant and required meetings throughout the design project and provide necessary expert analysis and recommendations.

FUNCTION CODE 120(120) – SOCIAL/ECON/ENVIRON STUDIES

SOCIAL, ECONOMIC AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT

120.1. Informal Meetings

The Engineer shall provide technical assistance, preparation of exhibits for, and minutes of informal meetings requested by the public to discuss the pending impacts to neighborhoods and businesses due to roadway shutdowns, detours and access restrictions or as deemed necessary. This is not to be confused with the formal public meetings held during the National Environmental Policy Act (NEPA) process during schematic approval for Public Involvement. It is not anticipated that the Engineer's participation will be needed for the NEPA process. Assistance (exhibits, attendance, etc.) may be required for a formal public meeting/hearing associated with schematic approval work.

120.2. Environmental Permits

Environmental Permits Issues and Commitments (EPIC) Sheets. Not applicable, the State to provide these sheets.

120.3. Environmental Study Review

The State shall provide the draft and final environmental document to the Engineer for review and implementation into the PS&E package. The Engineer shall consider the constructability issues as it relates to the environmental impacts.

120.4. Environmental Exhibits

The Engineer shall prepare the necessary exhibits for the environmental study to be performed by others. The Engineer shall coordinate with the Environmental Project Manager and the State's Environmental Engineer for the preparation of these exhibits.

120.5. Cut and Fill Exhibits

If the information is available, the Engineer shall prepare cut and fill exhibits for delineated wetland.

FUNCTION CODE 130 – RIGHT-OF-WAY

All standards, procedures and equipment used by the Engineer's Surveyor shall be such that the results of the survey will be in accordance with Board Rule 663.15, as promulgated by the Texas Board of Professional Land Surveyors.

The Engineer shall locate the existing ROW within the project limits from the current project control monuments and prepare a layout map for the project.

130.1. Right-of-Way Map. The Engineer shall review and evaluate the proposed or existing right-of-way map to verify that all construction staging and alignment considerations have been taken into account. The Engineer shall make every effort to prevent detours and utility relocations from extending beyond the proposed right-of-way lines. The Engineer shall notify the State in writing if it is necessary to obtain additional construction easements or rights-of-entry and shall provide justification for such action. The Engineer shall be responsible for identifying and delineating any temporary construction easements in areas outside the State's Right of Way. The State shall secure the necessary legal instruments.

130.2. Utility Locations and Layouts. The Engineer shall coordinate with the State to determine the location of each existing and proposed utility and attend meetings with the various utility companies to discuss potential conflicts.

130.3. Access Management. The Engineer shall coordinate and evaluate access management within the project limits in accordance with the latest State Access Management Manual or as directed by the State.

FUNCTION CODE 145(145, 164) – MANAGING CONTRACTED/DONATED PE**PROJECT MANAGEMENT AND ADMINISTRATION**

The Engineer, in association with the State's Project Manager shall be responsible for directing and coordinating all activities associated with the project to comply with State policies and procedures, and to deliver that work on time. The project management and administration duration assumes a six (6) year period to execute the design phase of this project.

Project Management and Coordination. The Engineer shall coordinate all subconsultant activity to include quality of and consistency of plans and administration of the invoices and monthly progress reports. The Engineer shall coordinate with necessary local entities.

The Engineer shall:

- Prepare monthly written progress reports for each project.
- Develop and maintain a detailed project schedule to track project conformance to Exhibit C, Work Schedule, for each work authorization. The schedule submittals shall be hard copy and electronic format.
- Meet on a scheduled basis with the State to review project progress.
- Prepare, distribute, and file both written and electronic correspondence.
- Prepare and distribute meeting minutes.
- Document phone calls and conference calls as required during the project to coordinate the work for various team members.
- Coordination with but not limited to City of Denton, City of Sanger, BNSF Railway.
- Prepare submittal packages for pre-30%, 30%, 60%, bridge layout, 95%, resubmittal of 95%, and 100% plans and submit for State district review.

FUNCTION CODE 160 (150) – ROADWAY DESIGN**A. Design Surveys**

Design Surveys include performance of surveys associated with the gathering of survey data for topography, cross-sections, and other related work in order to design a project, or during layout and staking of projects for construction.

1. PURPOSE

The purpose of a design survey is to provide field data in support of transportation systems design.

2. DEFINITIONS

A design survey is defined as the combined performance of research, field work, analysis, computation, and documentation necessary to provide detailed topographic (3-dimensional) mapping of a project site. A design survey may include, but need not be limited to locating existing right-of-way, cross-sections or data to create cross-sections and Digital Terrain Models (DTM), horizontal and vertical location of utilities and improvements, detailing of bridges and other structures, review of right-of-way maps, establishing control points, etc.

A construction survey is defined as the combined performance of reconnaissance, field work, analysis, computation, and documentation necessary to provide the horizontal and vertical position of specific ground points to be used by the construction contractor for determining lines and grades.

3. TASKS TO BE COMPLETED

3.1. Design Surveys

The State will request design surveys on an as needed basis. The Engineer's Surveyor shall perform tasks including, but not limited to the following:

- i. Verify and collect data to create cross-sections, digital terrain models, and obscured areas as needed.
- ii. Locate and verify existing visible utilities.
- iii. Locate and verify topographical features and existing improvements.
- iv. Verify details of existing bridge structures.
- v. Verify details of existing drainage features (e.g., culverts, manholes, etc.)
- vi. Locate wetlands.
- vii. Establish additional control and verify existing control points. Horizontal and Vertical control ties must be made and tabulated, to other control points in the vicinity, which were established by other sources such as, the National Geodetic Survey (NGS), and the Federal Emergency Management Agency (FEMA), and any other local entities as directed by the State.
- viii. Locate apparent existing right-of-ways.
- ix. Not applicable.
- x. Locate boreholes up to 400.
- xi. Obtain additional channel sections for hydrographic surveys as needed.
- xii. Verify and update existing control data and prepare survey control data sheets, as directed by the State for inclusion into a construction plan set.

The Engineer's Surveyors shall also prepare a *Survey Control Index Sheet* and a *Horizontal and Vertical Control Sheet(s)*, signed, sealed and dated by the professional engineer in direct responsible charge of the surveying and the responsible RPLS for insertion into the plan set. The *Survey Control Index Sheet* shows an overall view of the project control and the relationship or primary monumentation and control used in the preparation of the project; whereas, the *Horizontal and Vertical Control sheet(s)* identifies the primary survey control and the survey control monumentation used in the preparation of the project. Both the *Survey Control Index Sheet* and the *Horizontal and Vertical Control Sheet(s)* must be used in conjunction with each other as a set. The State's forms for these sheets can be downloaded from the State's website.

The following information shall be shown on the *Survey Control Index Sheet*:

- Overall view of the project and primary control monuments set for control of the project
- Identification of the control points
- Baseline or centerline
- Graphic (Bar) Scale
- North Arrow
- Placement of note "*The survey control information has been accepted and incorporated into this PS&E*" which shall be signed, sealed and dated by a Texas Professional Engineer employed by the State
- RPLS signature, seal, and date
- The State's title block containing District Name, County, Highway, and CSJ

The following information shall be shown on all *Horizontal and Vertical Control Sheets*:

- Location for each control point, showing baseline or centerline alignment and North arrow.
- Station and offset (with respect to the baseline or centerline alignments) of each identified control point.
- Basis of Datum for horizontal control (base control monument/benchmark name, number, datum).
- Basis of Datum for the vertical control (base control monument, benchmark name, number, datum).
- Date of current adjustment of the datum.
- Monumentation set for Control (Description, District name/number and Location ties).
- Surface Adjustment Factor and unit of measurement.
- Coordinates (State Plan Coordinates [SPC] Zone and surface or grid).
- Relevant metadata.
- Graphic (Bar) Scale.
- Placement of note "*The survey control information has been accepted and incorporated into this PS&E*" which shall be signed, sealed and dated by a Texas Professional Engineer employed by the State.

- RPLS signature, seal and date.
- The State's title block containing District Name, County, Highway, and CSJ.

4. TECHNICAL REQUIREMENTS

- 4.1 Design surveys and construction surveys must be performed under the supervision of a RPLS currently registered with the TBPLS.
- 4.2 Horizontal ground control used for design surveys and construction surveys, furnished to the Engineer's Surveyor by the State or based on acceptable methods conducted by the Engineer's Surveyor, must meet the standards of accuracy required by the State.

Reference may be made to standards of accuracy for horizontal control traverses, as described in the TxDOT Survey Manual, latest edition, or the TSPS Manual of Practice for Land Surveying in the State of Texas, as may be applicable.

- 4.3 Vertical ground control used for design surveys and construction surveys, furnished to the Engineer's Surveyor by the State or based on acceptable methods conducted by the Engineer's Surveyor, must meet the standards of accuracy required by the State.

Reference may be made to standards of accuracy for vertical control traverses, as described in the TxDOT Survey Manual, latest edition, or the TSPS Manual of Practice for Land Surveying in the State of Texas, as may be applicable.

- 4.4 Side shots or short traverse procedures used to determine horizontal and vertical locations must meet the following criteria:
- i. Side shots or short traverses must begin and end on horizontal and vertical ground control as described above.
 - ii. Standards, procedures, and equipment (may be GPS Equipment, LiDAR, Total Stations, etc.) used must be such that horizontal locations relative to the control may be reported within the following limits:
 - Bridges and other roadway structures: less than 0.1 of one foot.
 - Utilities and improvements: less than 0.2 of one foot.
 - Cross-sections and profiles: less than 1 foot.
 - Bore holes: less than 3 feet.

- iii. Standards, procedures, and equipment (may be GPS Equipment, LiDAR, Total Stations, etc.) used must be such that vertical locations relative to the control may be reported within the following limits:
 - Bridges and other roadway structures: less than 0.02 of one foot.
 - Utilities and improvements: less than 0.1 of one foot.
 - Cross-sections and profiles: less than 0.2 of one foot.
 - Bore holes: less than 0.5 of one foot.

5. AUTOMATION REQUIREMENTS

- 5.1. Planimetric design files (DGN) must be fully compatible with the State's *MicroStation V8i* graphics program without further modification or conversion.
- 5.2. Electronically collected and processed field survey data files must be fully compatible with the State's computer systems without further modification or conversion. All files must incorporate only those feature codes currently being used by the State.
- 5.3. DTM must be fully compatible with the State's *GEOPAK* system without further modification or conversion. All DTM must be fully edited and rectified to provide a complete digital terrain model with all necessary break lines.

DELIVERABLES

The deliverables to be specified in individual work authorizations for design surveys and construction surveys shall be any combination of the following:

1. Digital Terrain Models (DTM) and the Triangular Irregular Network (TIN) files in a format acceptable by the State.
2. Maps, plans, or sketches prepared by the Engineer's Surveyor showing the results of field surveys.
3. Computer printouts or other tabulations summarizing the results of field surveys.
4. Digital files or media acceptable by the State containing field survey data (ASCII Data files).
5. Maps, plats, plans, sketches, or other documents acquired from utility companies, private corporations, or other public agencies, the contents of which are relevant to the survey.

6. Field survey notes, as electronic and hard copies.
7. An 8 ½ inch by 11 inch survey control data sheet for each control point which must include, but need not be limited to, a location sketch, a physical description of the point including a minimum of two reference ties, surface coordinates, a surface adjustment factor, elevation, and the horizontal and vertical datums used. A pre-formatted survey control data sheet form in Microsoft Office Word 2010 format will be provided by the State.
8. A digital and hard copy of all computer printouts of horizontal and vertical conventional traverses, GPS analysis and results, and survey control data sheets.
9. All GEOPAK GPK files and/or OpenRoads GEOPAK files.
10. Survey reports in a format requested by the State.

FUNCTION CODE 160 (160) - ROADWAY DESIGN

ROADWAY DESIGN CONTROLS

The Engineer shall inform the State of changes made from previous initial meetings regarding each exception, waiver, and variance that may affect the design. The Engineer shall cease all work under this task until the exceptions, waivers, and variances have been resolved between the Engineer and the State unless otherwise directed by the State to proceed. The Engineer shall identify, prepare exhibits, and complete all necessary forms for Design Exceptions and Waivers within project limits prior to the 30% Submittal. These exceptions shall be provided to the State for coordination and processing of approvals.

160.1. Geometric Design

The Engineer shall review the schematic provided by the State to confirm their understanding of the project and to verify completeness and accuracy of the information. The Engineer shall refine the horizontal and vertical alignment of the design schematic in English units for main lanes, ramps, frontage roads, cross streets, including grade separation structures. The Engineer shall determine vertical clearances at grade separations and overpasses, taking into account the appropriate percent grade and super-elevation rate. Minor modifications in the alignment must be considered to provide optimal design. Modifications must be coordinated with the State and adjacent Engineers. The State must approve the refined schematic prior to the Engineer proceeding to the 30% milestone submittal, and prior to starting on the bridge layouts.

160.1.1. Horizontal Alignment Design

The Engineer shall provide roadway plan and profile drawings using CADD standards as required by the State. The drawings must consist of a planimetric file of existing features and files of the proposed improvements. The roadway base map must contain line work that depicts existing surface features obtained from the schematic drawing. Existing major subsurface and surface utilities must

be shown if requested by the State. Existing and proposed right-of-way lines must be shown. Plan and Profile must be shown on separate or same sheets (this depends upon width of pavement) for main lanes, frontage roads, and ramps.

The plan view must contain the following design elements:

1. Calculated roadway centerlines for mainlanes, ramps, cross streets and frontage roads, as applicable. Horizontal control points must be shown. The alignments must be calculated using GEOPAK.
2. Pavement edges for all improvements (mainlanes, direct connectors, ramps, cross streets, driveways and frontage roads, if applicable).
3. Lane and pavement width dimensions.
4. The geometrics of ramps, auxiliary and managed lanes.
5. Proposed structure locations, lengths, and widths.
6. Direction of traffic flow on all roadways. Lane lines and arrows indicating the number of lanes must also be shown.
7. Drawing scale shall be 1"=100'
8. Control of access line, ROW lines and easements.
9. Begin and end superelevation transitions and cross slope changes.
10. Limits of riprap, block sod, and seeding.
11. Existing utilities and structures.
12. Benchmark information.
13. Radii call outs, curb location, Concrete Traffic Barrier (CTB), guard fence, crash safety items and American with Disabilities Act Accessibility Guidelines (ADAAG) compliance items.

160.1.2. Vertical Alignment Design

The profile view must contain the following design elements:

1. Calculated profile grade for proposed mainlanes (cite direction), direct connectors, ramps, cross streets and frontage roads, if applicable. Vertical curve data, including "K" values must be shown.
2. Existing and proposed profiles along the proposed centerline of the mainlanes, the outside shoulder line of ramps, and the outside gutter line of the designated (north, south, east or west) bound frontage roads.
3. Water surface elevations at major stream crossing for 2, 5, 10, 25, 50, and 100 year storms.
4. Calculated vertical clearances at grade separations and overpasses, taking into account the appropriate superelevation rate, superstructure depth and required clearance.
5. The location of interchanges, mainlanes, grade separations and ramps (shall include cross sections of any proposed or existing roadway, structure, or utility crossing).
6. Drawing vertical scale to be 1"=10'.

160.1.3. Superelevation

The Engineer shall develop the super elevation calculation for the entire length of the project both for main line and frontage roads.

160.1.4. Cross Section Design

The Engineer shall develop an earthwork analysis to determine cut and fill quantities and provide final design cross sections at 100 feet intervals. Cross sections must be delivered in standard GEOPAK format on 11"x17" sheets or roll plots and electronic files. The Engineer shall provide all criteria and input files used to generate the design cross sections. Cross sections and quantities must include existing pavement removals. Annotation shall include at a minimum existing and proposed ROW, side slopes (front & back), profiles, etc.

The Engineer shall submit 5 sets of drawings at the 30%, 60%, and 95%, and final submittals, respectively.

160.1.5. Pavement Design

The Engineer shall incorporate the pavement design developed by the State for this project.

160.1.6. Miscellaneous Details

The Engineer shall provide the design of mainlanes with full shoulders, frontage roads, entrance and exit ramps, managed lanes and auxiliary lanes. The design must be consistent with the approved schematic or refined schematic and the current *TxDOT Roadway Design Manual*.

160.1.6.1. Intersection and Interchange Design

The Engineer shall be responsible for the complete design of the mainlanes and ramps, and auxiliary lanes as shown on the schematic. The interchange design must be consistent with the schematic design and must include a plan and profile of the thoroughfares, intersection layout, drainage structures, sidewalks, geometrics, signalization, turnaround details, and transitions to existing roadway.

160.1.6.2. Driveway Design

There is no driveway design anticipated.

160.1.6.3. Bicycle / Pedestrian Element Design

The Engineer shall remain responsible to design and include in the plans all pedestrian elements within the design limit. The Engineer shall coordinate with the State to incorporate pedestrian and bicycle facilities as required or shown on the project's schematic. All pedestrian and bicycle facilities must be designed in accordance with the latest Americans with Disabilities Act Accessibility Guidelines (ADAAG), the Texas Accessibility Standards (TAS), and the AASHTO Guide for the Development of Bicycle Facilities.

160.1.6.4. Removal Layouts

The Engineer shall perform the removal layout design. The plans shall clearly delineate the limits of the removal items.

160.1.6.5. Plan Preparation

The Engineer shall prepare roadway plans, profiles and typical sections for the proposed improvements. Prior to the 30% submittal, the Engineer shall schedule a workshop to review profiles, OpenRoads 3D models (if applicable) and cross-sections with the State. The profile and cross sections must depict the 2-, 5-, 10-, 25-, 50-, 100- and 500-year (if available) water surface elevations. The drawings will provide an overall view of the roadway and existing ground elevations with respect to the various storm design frequencies for the length of the project. This will enable the State to determine the most feasible proposed roadway profile. The State will approve the proposed profiles, 3D models (if applicable), and cross sections before the Engineer continues with the subsequent submittals. This scope of services and the corresponding cost proposal are based on the Engineer preparing plans to construct freeway mainlanes, direct connectors, ramps, frontage roads, and cross streets at intersections. The roadway plans must consist of the types and be organized in the sequence as described in the *PS&E Preparation Manual*.

From the information provided by the State, the wetland areas are to be staked, fenced and the delineation surveyed by the Engineer. The survey data must be electronically transferred to the Plan and Profile (P&P) sheets and the volumes calculated for the delineated areas.

160.1.7. Typical Sections:

The Engineer shall prepare typical sections for all proposed and existing roadways and structures. Typical sections must include width of travel lanes, shoulders, outer separations, border widths, curb offsets, managed lanes, and ROW. The typical section must also include Proposed Profile Grade Line (PGL), centerline, pavement design, longitudinal joints, side slopes, sodding or seeding limits, concrete traffic barriers and sidewalks, if required, station limits, common proposed and existing structures including retaining walls, existing pavement removal, riprap, limits of embankment and excavation, etc.

160.1.8. Roadway Design Exceptions

If any, design exceptions may require, the Engineer shall provide the necessary justification to TxDOT.

160.2. Quantity Summaries and Estimate

The Engineer shall prepare the summary bill of quantities for all roadway items and provide them in tabular format as part of the contract document. The Engineer shall also provide, using TxDOT system, estimate of the project.

- 1.6.2.1. Prepare Quantity Sheets
- 1.6.2.2. Load Data into DCIS

160.3. Standards Selection

Provide standards selection. Select any necessary standard details from State or District's list of standards for items such as Guard Rails, Concrete Barriers, Attenuators, and end treatments.

160.4. Conduct QC and QA Review

Conduct QA/QC for all the interim and final 30%, 60%, 95% and 100% PS&E submittals.

FUNCTION CODE 160(161) - ROADWAY DESIGN**DRAINAGE DESIGN**

All drainage design within IH 35 right of way shall follow TxDOT design criteria. All drainage design associated within the railroad Right-of-Way will follow specific railroad design criteria.

161.1. Review Reports

The Engineer shall review reports provided by TxDOT for concurrence.

161.2. Data Collection

If revisions of the provided report are required, the Engineer shall provide the following data collection services as directed:

1. Conduct field inspections to observe current conditions and the outfall channels, the cross-drainage structures, drainage easements, the tributary channel, and land development projects that contribute flow to the tributary. Document field inspections with digital photos.
2. Collect available applicable data including GIS data and maps, site survey data, construction plans, previous reports and studies, and readily available rainfall history for the area. Particular sources of data collected must include, but are not limited to, the State, County, and Federal Emergency Management Agency (FEMA).
3. Collect available Flood Insurance Rate Maps (FIRMs), Flood Insurance Study (FIS) study data, and models.
4. Review survey data and coordinate any additional surveying needs with State.
5. Meet with local government officials to obtain historical flood records. Interview local residents or local government employees to obtain additional high-water information if available. Obtain frequency of road closure and any additional high-water information from the District Maintenance office.
6. Submit a letter report to the State Project Manager detailing completion of data collection.

7. Conduct QA/QC for the Data Collection Task

161.3. Hydrologic Studies (4-Bridge Crossings, 7-Bridge Class Culvert Crossings, and 4-Non BC FEMA Stream Culverts)

If revisions of the provided report are required, the Engineer shall provide the following services as directed by the State:

1. Determine the drainage area boundaries and hydrologic parameters such as impervious covered areas, and overland flow paths and slopes from appropriate sources including, but are not limited to, topographic maps, GIS modeling, construction plans, and existing hydrologic studies. The Engineer shall not use existing hydrologic studies without assessing their validity. If necessary, obtain additional information such as local rainfall from official sites such as airports.
2. Calculate discharges using appropriate hydrologic methods and as approved by the State.
3. Incorporate in the hydrologic study a thorough evaluation of the methodology available, comparison of the results of two or more methods, and calibration of results against measured data, if available.
4. Consider the pre-construction and post-construction conditions in the hydrologic study, as required in the individual Work Authorization.
5. Include, at a minimum, the "design" frequency to be specified in the Work Authorization and the 1% Annual Exceedance Probability (AEP) storm frequency. The report must include the full range of frequencies (50%, 20%, 10%, 4%, 2%, 1%, and 0.2% AEP).
6. Compare calculated discharges to the effective FEMA flows. If calculated discharges are to be used in the model instead of the effective FEMA flows, full justification must be documented.
7. Prepare Hydrologic Data Sheets for Bridge, Bridge Class Culvert, and Non-Bridge Class Culvert FEMA Stream crossings.
8. Conduct QA/QC for Bridge, Bridge Class Culvert, and Non-Bridge Class FEMA stream Hydrologic Analyses prior to submittal of the Preliminary and Final Hydraulic Reports.

161.4. Complex Hydraulic Design and Documentation (4-Bridge Crossings, 7-Bridge Class Culvert Crossings, and 4-Non-Bridge Class FEMA Stream Culvert Crossings)

The Engineer shall perform Hydraulic design and analysis using appropriate hydraulic methods, which may include computer models such as HEC-RAS, unsteady HEC-RAS or 2D models such as HEC-RAS 2D or SWMM. 2D models shall not be developed without the express permission of the State. Data entry for appropriate hydraulic computer programs shall consist of a combination of both on-the-ground survey and other appropriate sources including but not limited to topographic maps, GIS modeling, and construction plans and existing hydrologic studies.

If revisions of the provided report are required, the Engineer shall provide the following services as directed by the State:

1. A combined HEC-RAS 1D-2D model will be developed to analyze the crossings at Pond Creek Tributary 1 and Pond Creek Tributary 2 in Cooke County where the floodplains and floodways intermingle and there are existing flooding issues. The FEMA Base Model data will be updated for existing and proposed conditions and utilized in the analysis. A proposed conditions combined HEC-RAS 1D-2D model will be developed by incorporating Proposed Project Design data and best available information to evaluate the conveyance and storage required to mitigate potential adverse impacts that may result from the proposed roadway design. The final existing and proposed conditions combined HEC-RAS 1D-2D models will be converted to HEC-RAS 1D models to facilitate revision of the FEMA Flood Insurance Rate Maps (FIRM's) by the local FPA.
2. Prepare hydraulic models for all stream crossings with bridges, bridge class culverts, and FEMA floodplain designations using HEC-RAS. A multiple opening analysis will be provided for the Clear Creek/Clear Creek Relief crossing. It is anticipated that there will be up to 15 HEC-RAS models for this project. The Engineer shall use the current effective FEMA models, where appropriate, as a base model for the analysis. If a "best available data" model is provided by the local floodplain administrator, it must be utilized accordingly for this analysis. Base models will be reviewed for correctness and updated as needed to create the corrected effective or pre-project model. If the provided effective model is not in a HEC-RAS format, it will be converted to HEC-RAS for this analysis. The existing/pre-project floodway analyses for FEMA Zone AE streams will be updated for streams with existing floodway delineations.
3. If the appropriate hydrologic model requires storage discharge relationships, develop HEC-RAS models or other State's approved models that will compute these storage discharge relationships along the channel.
4. Consider pre-construction, present and post-construction conditions, as well as future widening, as determined in the Work Authorization.
5. Develop proposed conditions HEC-RAS analysis. Quantify impacts, beneficial or adverse, in terms of increases in peak flow rates and water surface elevations for the above listed hydraulic conditions and hydrologic events. Impacts will be determined both upstream and downstream of the bridge crossings. Evaluate proposed conditions in order to develop mitigation scenarios that will minimize or eliminate adverse impacts to adjacent property owners. Provide a proposed conditions floodway analysis for all Zone AE streams that have existing floodway delineations.
6. If required in the individual Work Authorization, compute right of way corridor 1% AEP flood plain volumes for existing and proposed roadway elevations. The Engineer shall provide mitigation to offset a decrease in 1% AEP flood plain volumes.

7. Use hydrograph calculations and peak flows to determine the storage required.
8. If necessary, present mitigation measures along with the advantages and disadvantages of each. Each method must consider the effects on the entire area. Include approximate construction costs in the report.
9. Prepare Hydraulic Data Sheets for Bridges, Bridge Class Culverts, and Non-BC culverts at FEMA streams.
10. Prepare Culvert Layout Sheets for Bridge Class Culverts and Non-Bridge Class culverts at FEMA streams.
11. Prepare detailed Hydraulic Reports for each Bridge, Bridge Class Culvert, and FEMA Zone A/Zone AE crossing. This includes Preliminary and Final Reports for up to 15 crossings. There are no Conditional Letter of Map Revisions (CLOMR's) anticipated for this project or included in this scope. This scope does not include any Letter of Map Revision (LOMR) requests. Hydraulic Reports and models will be provided to the local FPA's for their use in requesting LOMR's, if applicable. One (1) hard copy and one (1) electronic copy of each hydraulic report (with models and supporting documentation) will be submitted to the state for the Preliminary and Final submittals. One (1) electronic copy of each hydraulic report (with models and supporting documentation) will be submitted to the FPA for the Preliminary and Final submittals.
12. Conduct QA/QC for Preliminary and Final Complex Hydraulic Design Task.

161.5. Storm Drains

The Engineer shall provide the following services:

1. Delineate drainage areas and provide name, number, and area for each. Assume up to 350 Sheets.
2. Calculate storm drain discharges.
3. Size inlets, laterals, trunk line and outfall. Develop designs that minimize the interference with the passage of traffic or incur damage to the highway and local property in accordance with the *State's Hydraulic Design Manual*, District criteria and any specific guidance provided by the State. Storm drain design software shall be selected as directed by the Work Authorization.
4. Determine hydraulic grade line starting at the outfall channel for each storm drain design. Use the design water surface elevation of the outfall as the starting basis (tailwater) for the design of the proposed storm drain system.
5. Limit discharge into existing storm drains and existing outfalls to the capacity of the existing system, which will be determined by the Engineer. Evaluate alternate flow routes or detention, if necessary, to relieve system overload. Determine the amount of the total detention storage to control storm drain runoff for the design frequency based on hydrograph routing for the full range of frequencies (50%, 20%, 10%, 4%, 2%, 1%, and 0.2%

AEP), as well as a rough estimate of the available on-site volume. When oversized storm drains are used for detention, the Engineer shall evaluate the hydraulic grade line throughout the whole system, within project limits, for the design frequency or frequencies. The Engineer shall coordinate with the State any proposed changes to the detention systems. The State will assess the effects of such changes on the comprehensive drainage studies.

6. Design and analyze storm drains using software as approved by the State. Design and provide storm drain profiles (up to 390 sheets).
7. Identify and delineate areas requiring trench protection.
8. Conduct QA/QC for 30/60/95/100% submittals.

161.6. Cross-Drainage Structures (15 Non-BC/Non-FEMA Crossings)

The Engineer shall provide the following services:

1. Determine drainage areas and flows for cross culvert drainage systems.
2. Determine the sizing of the drainage crossings. The scope may include extending, adjusting or replacing non bridge-class culvert crossing or crossings as specified in the Work Authorization. Develop designs that minimize the interference with the passage of traffic or cause damage to the highway and local property in accordance with the State's Hydraulic Design Manual, District criteria and any specific guidance provided by the State. Cross drainage design shall be performed using HY-8.
3. Prepare summary technical memorandum for cross drainage structures.
4. Prepare Culvert Layout Sheets for cross drainage structures.
5. Conduct QA/QC for 30/60/95/100% submittals.

161.7. Temporary Drainage Facilities

The Engineer shall provide the following services:

1. Determine all temporary drainage facilities necessary to allow staged construction of the project and to conform with the phasing of adjacent construction projects without significant impact to the hydraulic capacity of the area. Provide proposed temporary drainage structures, sizes, and locations to be shown on the SW3P sheets by others. Drainage area maps are not required for temporary drainage.
2. Conduct QA/QC reviews for 30/60/95/100% submittals.

161.8. Scour Analysis

The Engineer shall provide the following services if required:

1. Perform a scour analysis for each proposed bridge structure (up to 6 locations with 3 bridges per location). Using a State-approved methodology listed in the Work Authorization, the Engineer shall select the scour analysis methodology based on the site conditions such as the presence of cohesive or cohesionless soil, rock or depth of rock, proposed

- foundation type, and existing site performance. The Engineer shall follow the methodology outlined in the State Geotechnical Manual.
2. Provide the State the potential scour depths, envelope and any recommended countermeasures including bridge design modifications and/or revetment. Provide Scour Data Sheets, as necessary, for scour analysis.
 3. Conduct QA/QC reviews for Preliminary and Final Hydraulic Analysis submittals.

161.9. Plans, Specifications and Estimates (PS&E) Development for Hydraulics

The Engineer shall prepare and provide the PS&E package in accordance with the applicable requirements of the State's specifications, standards, and manuals, including the *PS&E Preparation Manual*. Include the sheets, documents and calculations, as listed in items 1 – 5.

1. Provide Drainage Area Computation Sheets.
2. Provide Inlet Computation Sheets.
3. Provide Storm Sewer Computation Sheets.
4. Provide Summary of Storm Sewer Drainage.
5. Provide Ditch Design and Calculations.
6. Address TxDOT 30% review comments.
7. Address TxDOT 60% review comments.
8. Address TxDOT 95% review comments.
9. Address TxDOT 100% review comments.
10. Conduct QA/QC for 30/60/95/100% submittals.
11. Provide standards selection. Select any necessary standard details from State or District's list of standards for items such as inlets, manholes, junction boxes and end treatments.

FUNCTION CODE 160 (162) - ROADWAY DESIGN

SIGNING, PAVEMENT MARKINGS AND SIGNALIZATION (PERMANENT)

162.1. Signing

The Engineer shall prepare drawings, specifications, and details for all signs. The Engineer shall coordinate with the State (and other Engineers as required) for overall temporary, interim and final signing strategies and placement of signs outside contract limits. The Engineer shall:

1. Prepare sign detail sheets for large guide signs showing dimensions, lettering, shields, borders, corner radii, etc., and shall provide a summary of large and small signs to be removed, relocated, or replaced.
2. Designate the shields to be attached to guide signs.
3. Illustrate and number the proposed signs on plan sheets, with leader line to proposed location.
4. Select each sign foundation from State Standards.

162.2. Pavement Marking and Delineation Layout The Engineer shall detail both permanent and temporary pavement markings and channelization devices on plan sheets. The Engineer shall coordinate with the State (and other Engineers as required) for overall temporary, interim, and final pavement marking strategies. The Engineer shall select pavement markings from the latest State standards.

The Engineer shall provide the following information on sign and pavement marking layouts:

1. Roadway layout.
2. Center line with station numbering.
3. Designation of arrow used on exit direction signs
4. Culverts and other structures that present a hazard to traffic.
5. Location of utilities.
6. Existing signs to remain, to be removed, to be relocated or replaced.
7. Proposed signs (illustrated and numbered with a leader to proposed location).
8. Proposed overhead sign bridges to remain, to be revised, removed, relocated, or replaced.
9. Proposed overhead sign bridges, indicating location by plan.
10. Proposed markings (illustrated and quantified) which include pavement markings, object markings and delineation.
11. Quantities of existing pavement markings to be removed.
12. Proposed delineators, object markers, and mailboxes.
13. The location of interchanges, mainlanes, grade separations, frontage roads and ramps.
14. The number of lanes in each section of proposed highway and the location of changes in numbers of lanes.
15. Right-of-way limits.
16. Direction of traffic flow on all roadways.

162.3. Traffic Signals

162.3.1. Traffic Warrant Studies

The Engineer shall prepare a traffic signal warrant study to support their recommendation for the continuous activation of an existing traffic signal or a proposed traffic signal based on projected volumes. Each warrant study must include addressing pedestrian signals along with obtaining both traffic and pedestrian counts.

The Engineer shall implement each proposed traffic signal improvement within existing State ROW unless otherwise approved by the State. The Engineer shall refer to latest version of the *TMUTCD*, *Traffic Signal Manual*, and The State's roadway (ramp) and traffic standards for work performed for either temporary or

permanent traffic signals. The Engineer shall develop and include a timing plan for each signal improvement.

162.3.2. Traffic Signal Timing

The Engineer shall develop traffic signal timing plans for each traffic signal improvement.

162.3.3. Permanent Traffic Signal Design

The Engineer shall develop traffic signal timing plans for each traffic signal improvement. Permanent Traffic Signal Locations are dependent on the outcome of the traffic warrant studies and shall include up to 9 diamond interchanges from the following intersections:

- IH 35 at US 77 North in Denton
- IH 35 at FM 455 in Sanger
- IH 35 at Ganzer
- IH 35 at Rector
- IH 35 at 5th Street
- IH 35 at Belz Rd
- IH 35 at Lois Rd
- IH 35 at View Rd
- IH 35 at Chisam Rd
- IH 35 at FM 3002

162.3.3.1. Traffic Signal Illumination

162.3.3.1.1 The Engineer shall confirm the power source for all traffic signals.

162.3.3.1.2 For new services, contact the local utility company to confirm electrical power for signal equipment and include power pole number, power company name, and phone number on plans.

162.3.4. Permanent Traffic Signal Plan

The Engineer shall develop traffic signal timing plans for each traffic signal improvement.

Prepare layouts for traffic signal plans to include poles, signal heads, luminaires, vehicle detectors, street name signs, regulatory signs, ground boxes, conductors, cables, conduits, pedestrian elements, pavement markings, phasing diagrams, power sources, electrical services and various charts and tables according to the latest version of the NEC and *TMUTCD* using District format and preferences and approved City recommendations.

162.4. Quantity Summaries and Estimate.

The Engineer shall develop all quantities, general notes, non-standard specifications and incorporate the appropriate agency standards to allow for a complete signal design. Traffic signal poles, luminaire fixtures, pedestrian elements, signs, vehicle detection and new services must be designed per TxDOT and City of Denton and Sanger recommendations and standards.

162.5. Standards Selection

Provide standards selection. Select any necessary standard details from State or District's list of standards for items such as Traffic Signal Poles, Foundations, electrical details, cabinets, ground boxes, and other appropriate details.

162.6. Conduct QC and QA Review

Conduct QA/QC for all the interim and final 30%, 60%, 95% and 100% PS&E submittals.

FUNCTION CODE 160 (163) - ROADWAY DESIGN**MISCELLANEOUS (ROADWAY)**

The Engineer shall provide the following services:

163.1. Retaining Walls**163.1.1 Retaining Wall Profile and Alignment**

The Engineer shall develop each retaining wall design and determine the location of each soil boring needed for the foundation design of each retaining wall in accordance with the *Geotechnical Manual*. Prior to preparation of retaining wall layouts, the Engineer shall prepare a comparative cost analysis of different types of retaining walls versus roadway embankment, pavement, soil stabilization, retaining walls type, and available ROW to determine optimum selection based on economics, construction time duration, ROW encroachments (need for construction easements) and construction feasibility. The Engineer shall submit early in the plan preparation the retaining wall layouts to obtain approval from the State. The Engineer shall incorporate all necessary information from above referenced manuals and respective checklists into the retaining wall layouts. For stage construction, the Engineer shall indicate limits of existing retaining walls for removal and reconstruction, and determine limits of temporary retaining walls to be shown on the TCP.

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

1. Spread Footing Walls (Low Footing Pressure Design). The Engineer shall select a spread footing wall for fill situation when considerable room behind the walls is available for forming, constructing, and backfilling the footings and stem. The Engineer shall notify the State when the quantity is less than 1000 square feet to have as an option in the plans to cast in place a spread footing wall design. This selection has to be approved to State.
2. Mechanically Stabilized Earth (MSE) Walls. The Engineer shall prepare the retaining wall layouts showing plan and profile or retaining walls for design by a State approved vendor. The Engineer is responsible for design of geometry and wall stability. The Engineer shall incorporate a slope of 4:1 or flatter from the existing and finished ground line elevation to the face of the retaining wall.
3. Concrete Block Walls (Structural and Landscape).
4. Tied Back Walls.
5. Soil Nailed Walls.
6. Rock Nailed Walls.
7. Drilled Shaft Walls.

The Engineer shall provide layouts (scale 1"=100'), elevations, quantity estimate, summary of quantities, typical cross sections and structural details of all retaining walls within the project. Approximate lengths of the retaining walls as shown on the schematic are listed as below. The Engineer shall determine if any additional walls are required and verify the need for and length of the retaining walls as shown on the schematic.

If applicable, the State will provide architectural standard drawings. The Engineer shall incorporate architectural standard drawings into design details. The specific requirements for each item are as follows:

1. Layout Plan
 - i. Designation of reference line
 - ii. Beginning and ending retaining wall stations
 - iii. Offset from reference line
 - iv. Horizontal curve data
 - v. Total length of wall
 - vi. Indicate face of wall
 - vii. All wall dimensions and alignment relations (alignment data as necessary)
 - viii. Soil boring locations
 - ix. Drainage, signing, lightning, etc. that is mounted on or passing through the wall.
 - x. Subsurface drainage structures or utilities which could be impacted by wall construction.
2. Elevation:
 - i. Top of wall elevations

- ii. Existing and finished ground line elevations
- iii. Vertical limits of measurement for payment
- iv. Type, limits and anchorage details of railing (only if Traffic Railing foundation standard is not being used on this project)
- v. Top and bottom of wall profiles plotted at correct station & elevation.
- vi. Underdrains
- vii. Any soil improvement, if applicable.
- viii. Drainage, signing, lighting etc. as noted above
- ix. Drainage structures and utilities as noted above

3. Sectional View:

- i. Reinforced volume
- ii. Underdrain location
- iii. Soil improvements, if applicable.

CSJ 0195-02-074

Retaining Walls	
Description	Square Face Foot
Retaining Wall (MSE) (at US 77) Location	42,367
Retaining Wall (MSE) RSNRZR/RNNGZR	22,195
Retaining Wall (MSE) Ganzer	52,271
Retaining Wall (MSE) RNXGZR	4,525
Retaining Wall (MSE) RSN3163	8,375
Retaining Wall (MSE) MILAM	16,760
Retaining Wall (MSE) RSN156	17,490
Retaining Wall (MSE) Moore's Branch	38,650
Retaining Wall (MSE) FM 156	28,224
Retaining Wall (MSE) Moore's Tributary	13,110
Retaining Wall (MSE) RNN156	4,600
Retaining Wall (MSE) Rector	7,910
Retaining Wall (MSE) RSXRTR/RNXRTR	17,740
Retaining Wall (MSE) Clear Creek (and Relief)	57,290
Retaining Wall (MSE) RSNRTR/RNXB35	28,590
Retaining Wall (MSE) BUS 35	46,620
Retaining Wall (MSE) RSN455/RNX455	19,605
Retaining Wall (MSE) RSXB35	4,090
Retaining Wall (MSE) FM 455	40,788
Retaining Wall (MSE) RNXB35	19,065

Retaining Wall (MSE) Belz	60,786
Retaining Wall (MSE) RSNBLZ/RNXLOS	4,000
Retaining Wall (MSE) RNNLOS/R SXBLZ	8,500
Retaining Wall (MSE) Lois	50,220
Retaining Wall (MSE) RSNVEW	11,500
Retaining Wall (MSE) View	50,472
Retaining Wall (MSE) RSNCSM/RNXCSM	11,515
Retaining Wall (MSE) Chisam	40,914
Retaining Wall (MSE) RNNCSM	5,525

163.1.3 Quantity Summaries and Estimate

The Engineer shall prepare the summary of bill of quantities for all retaining wall items and provide them in tabular format as part of the contract document. The Engineer shall also provide using TxDOT system, estimate of the project.

163.1.4 Standard Selection

The Engineer shall provide standards selection. Select any necessary standard details from State or District's list of standards for items such as Under Drain, Ground Stabilization, Riprap, mow strips etc.

163.2. Traffic Control Plan, Detours, Sequence of Construction. The Engineer shall prepare Traffic Control Plans (TCP) including TCP typical sections, for the project. The Engineer shall complete Form 2229-Significant Project Procedures along with Page 4 of Form 1002, specifically titled Accelerated Construction Procedures. A detailed TCP must be developed in accordance with the latest edition of the *TMUTCD*. The Engineer shall implement the current Barricade and Construction (BC) standards and TCP standards as applicable. The Engineer shall interface and coordinate phases of work, including the TCP, with adjacent Engineers. The Engineer shall:

1. Provide a written narrative of the construction sequencing and work activities per phase and determine the existing and proposed traffic control devices (regulatory signs, warning signs, guide signs, route markers, construction pavement markings, barricades, flag personnel, temporary traffic signals, etc.) to be used to handle traffic during each construction sequence. The Engineer shall show proposed traffic control devices at grade intersections during each construction phase (stop signs, flag person, signals, etc.). The Engineer shall show temporary roadways, ramps, structures (including railroad shoo-fly) and detours required to maintain lane continuity throughout the construction phasing.

Where temporary shoring is required, prepare layouts per the direction of the State and show the limits on the applicable TCP. If temporary roadways are required, prepare plan, profile and cross sections.

2. Coordinate with the State in scheduling a Traffic Control Workshop and submittal of the TCP for approval by the Traffic Control Approval Team (TCAT). The Engineer shall assist the State in coordinating mitigation of impacts to adjacent schools, emergency vehicles, pedestrians, bicyclists and neighborhoods.
3. Develop each TCP to provide continuous, safe access to each adjacent property during all phases of construction and to preserve existing access. The Engineer shall notify the State in the event existing access must be eliminated, and must receive approval from the State prior to any elimination of existing access.
4. Design temporary drainage to replace existing drainage disturbed by construction activities or to drain detour pavement. The Engineer shall show horizontal and vertical location of culverts and required cross sectional area of culverts.
5. Prepare each TCP in coordination with the State. The TCP must include interim signing for every phase of construction. Interim signing must include regulatory, warning, construction, route, guide signs, and changeable message boards. The Engineer shall interface and coordinate phases of work, including the TCP, with adjacent Engineers, which are responsible for the preparation of the PS&E for adjacent projects.
6. Maintain continuous access to abutting properties during all phases of the TCP. The Engineer shall develop a list of each abutting property along its alignment. The Engineer shall prepare exhibits for and attend meetings with the public, as requested by the State.
7. Make every effort to prevent detours and utility relocations from extending beyond the proposed Right-of-way lines. If it is necessary to obtain additional permanent or temporary easements and Right-of-Entry, the Engineer shall notify the State in writing of the need and justification for such action. The Engineer shall identify and coordinate with all utility companies for relocations required.
8. Describe the type of work to be performed for each phase of sequence of construction and any special instructions (e.g. storm drain, culverts, bridges, railing, illumination, signals, retaining walls, signing, paving surface sequencing or concrete placement, ROW restrictions, utilities, etc.) that the contractor should be made aware to include limits of construction, obliteration, and shifting or detouring of traffic prior to the proceeding phase.
9. Include the work limits, the location of channelizing devices, positive barrier, location and direction of traffic, work area, stations, pavement markings, and other information deemed necessary for each phase of construction.

10. Delineate areas of wetlands on traffic control plans.

163.3. Temporary Traffic Signals:

The Engineer shall immediately notify the State if the Engineer determines that an existing traffic signal will be affected by the project. The Engineer shall address the adjustment or realignment of traffic signal heads and the use of detection for mainlanes and side streets on the plans as directed by the State. The Engineer shall obtain traffic movement counts to address any new timing plans to minimize the impact during construction and to determine the storage length needed for left and right turn movements.

163.4. Illumination

Safety Lighting:

- IH 35 N of US 380 in Denton (New or Modification of Existing)
 - IH 35 at LP 288 Interchange in Denton (New to replace existing)
 - IH 35 at US 77 North in Denton (New if City requests in writing)
 - IH 35 at FM 156 in Denton (New if City requests in writing)
 - IH 35 at 5th St in Sanger (New to replace existing)
 - IH 35 at Bolivar Pedestrian Bridge in Sanger (New to replace existing)
 - IH 35 at FM 455 in Sanger (New if City requests in writing)
1. The Engineer shall refer to TxDOT's *Highway Illumination Manual*, the latest version of the NEC and other deemed necessary State approved manuals for design of safety lighting within the project limits using conventional poles and underpass fixtures.
 2. If the City of Denton requests high mast light poles at the LP 288 interchange instead of conventional poles, the Engineer shall prepare roll plots of preliminary pole locations with photometric lighting arrays for TxDOT and City reviews prior to beginning detailed plan design.
 3. The Engineer shall integrate existing illumination within the project limits into the proposed design. The Engineer shall coordinate with the City of Denton (US 380, LP 288, US 77 North and FM 156) and the City of Sanger (5th St, Bolivar Pedestrian Bridge and FM 455) to determine the location and type of proposed new light poles.

163.4.1. Lighting Layout

The Engineer shall prepare Illumination Plans to show all existing and proposed roadway light poles within the project limits along with ground boxes, conduit runs, conductors, circuit identification, power sources, electrical services, and various charts and tables using District format and preferences and approved City recommendations.

For new services, contact the local utility company to confirm electrical power for lighting circuits and include power pole number, power company name, and phone number on plans.

163.5. Storm Water Pollution Prevention Plans (SW3P)

The Engineer shall develop SW3P, on separate sheets from (but in conformance with) the TCP, to minimize potential impact to receiving waterways. The SW3P must include text describing the plan, quantities, type, phase and locations of erosion control devices and any required permanent erosion control.

163.5.1. Storm Water Pollution Prevention Plans

The Engineer shall produce storm water pollution prevention plans and will show locations of all erosion control devices and include applicable notes to support the placement and removal of the devices. The storm water pollution prevention plans will be phased according to the phasing sequencing shown in the traffic control plans.

163.5.2. Storm Water Pollution Prevention Standard Details

The Engineer will provide all applicable TxDOT Standards to support the erosion control devices shown in the storm water pollution prevention plans.

163.5.3. Storm Water Pollution Prevention Summary of Quantities

The Engineer will provide a summary of quantities sheet that accounts for all erosion control devices and will be broken out for each phase.

163.5.4. QAQC Storm Water Pollution Prevention Plans

The Engineer will perform internal Quality Control and Quality Assurance Checks for the plans and summary of quantities prior to each submittal to assure a quality product is provided to TxDOT and that all comments from previous submittals have been addressed.

163.6. Compute and Tabulate Quantities

The Engineer shall provide the summaries and quantities within all formal submittals.

163.7. Miscellaneous Structural Details

The Engineer shall provide necessary details required to supplement standard details.

163.8. Agreements (Railroad, etc.) and Layouts

The Engineer shall prepare each railroad or other agency agreement, exhibit, and layout sheet in accordance with the requirements of each railroad and as directed by the State. The Engineer shall coordinate with each railroad or agency and the State to determine submittal requirements, processing schedules, and exhibit formats. The Engineer shall submit each exhibit to the State for review and processing.

163.9. Estimate

The Engineer shall independently develop and report quantities necessary to construct the contract in standard State bid format at the specified milestones and Final PS&E submittals. The Engineer shall prepare each construction cost estimates using Estimator or any approved method. The estimate shall be provided at each milestone submittal or in DCIS format at the 95% and Final PS&E submittals per State's District requirement.

163.10. Contract Time Determination

The Engineer shall prepare a detailed construction contract time estimate to determine the approximate time required for construction of the project in calendar and working days (based on the State standard definitions of calendar and working days) at the 95% and Final PS&E milestone. A draft construction contract time estimate will be required at the 60% PS&E milestone. The schedule must include tasks, subtasks, critical dates, milestones, deliverables, and review requirements in Primavera format which depicts the interdependence of the various items and adjacent construction packages. The Engineer shall provide assistance to the State in interpreting the schedule.

163.11. Specifications and General Notes

The Engineer shall review the standard specifications, special specifications, special provisions, general notes and the appropriate reference items provided to them by the State. The Engineer will provide any additional special specifications and special provisions to be approved by the State.

163.12. Constructability Review

The Engineer shall provide Independent Quality Review of the constructability PS&E sets.

The Engineer shall perform constructability reviews at major project design milestones (e.g. 30%, 60%, 95%, and final plan) to identify potential constructability issues and options that would provide substantial time savings during construction. The constructability review must be performed for all roadway and structural elements such as Sequence of Work/Traffic Control, Drainage (Temporary and Permanent), Storm Water Pollution Prevention Plan (SW3P), Environmental Permits, Issues and Commitments (EPIC) addressed, identify Utility conflicts; ensuring accuracy and appropriate use of Items, Quantities, General Notes, Standard and Special Specifications, Special Provisions, Contract Time/Schedule, Standards; and providing detailed comments in an approved format. Reviews must be captured in a Constructability Log identifying areas of concern and potential conflict. The Engineer shall provide the results of all Constructability reviews and recommendations to the State at major project design milestone submittals.

FUNCTION CODE 160 (165) – ROADWAY DESIGN**TRAFFIC MANAGEMENT SYSTEMS (PERMANENT)**

165.1. ITS Locations

- IH 35 N of US 380 – Relocate Existing SB DMS (if necessary)
- IH 35 at Thunderbird Dr – Relocate Existing NB DMS (if necessary)
- IH 35 at Thunderbird Dr – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Thunderbird Dr – Install new Fiber Hub Cabinet
- IH 35 at LP 288 – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at LP 288 – Install new Fiber Hub Cabinet
- IH 35 at US 77 North – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at US 77 North – Install new Fiber Hub Cabinet
- IH 35 at Ganzer Rd – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Ganzer Rd – Install new Fiber Hub Cabinet
- IH 35 at Milam Rd – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Milam Rd – Install new Fiber Hub Cabinet
- IH 35 at Moore's Creek – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Moore's Creek – Install new Fiber Hub Cabinet
- IH 35 at FM 156 – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at FM 156 – Install new Fiber Hub Cabinet
- IH 35 at Rector Rd – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Rector Rd – Install new Fiber Hub Cabinet
- IH 35 at Clear Creek – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Clear Creek – Install new Fiber Hub Cabinet
- IH 35 at Keaton Rd – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Keaton Rd – Install new Fiber Hub Cabinet
- IH 35 at Bolivar St – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Bolivar St – Install new Fiber Hub Cabinet
- IH 35 at Belz Rd – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Belz Rd – Install new Fiber Hub Cabinet
- IH 35 at Lois Rd – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Lois Rd – Install new Fiber Hub Cabinet
- IH 35 at View Rd – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at View Rd – Install new Fiber Hub Cabinet
- IH 35 at Chisam Rd – Relocate Existing SB DMS (if necessary)
- IH 35 at Chisam Rd – Relocate Existing 60' CCTV Pole (if necessary)
- IH 35 at Chisam Rd – Install new Fiber Hub Cabinet

1. The Engineer shall relocate existing TxDOT Wireless ITS devices

and equipment within the project limits as needed, which are part of the existing District Traffic Management System (TMS), and integrate them into a new extended fiber network as part of this project. The existing ITS devices shall remain active for the duration of construction, with the exception being a weekend switchover from wireless to fiber or wireless to wireless.

2. The Engineer shall extend the new District TMS fiber communications network from US 380 to the Cooke County Line via a standard duct bank (2-3 inch, 1-4 inch multi-duct conduits) which will contain the 48 single mode fiber optic (SMFO) hub to hub cable, a 36 SMFO backbone cable, a tracer wire and 6 SMFO cable laterals to ITS devices.
3. The Engineer shall prepare ITS Plans to show all existing and relocated ITS devices within the project limits along with ground boxes, conduits, cables, conductors, power sources, electrical services, fiber communication schematics, fiber termination charts, wireless communication schematics (if needed during construction), and various other charts and tables using District format and preferences.
4. For new services, contact the local utility company to confirm electrical power for ITS circuits and include power pole number, power company name, and phone number on plans.

FUNCTION CODE 160 (170) – ROADWAY DESIGN

BRIDGE DESIGN

170.1. Comparative Cost Analysis of Bridge Structures

- Determine the optimum bridge beams for vertical clearance over railroads
- Determine the optimum bridge structure versus roadway embankment, pavement, soil stabilization and retaining walls

170.2. Bridge Structure Design and Details

- Bridge Layout - The Engineer shall prepare a bridge layout plan sheet for each bridge and bridge class culvert and comply with all relevant sections of the latest edition of the State's *LRFD Bridge Design Manual*, *Bridge Project Development Manual*, *Bridge Detailing Guide*, and *AASHTO LRFD Bridge Design Specifications* and respective checklists. Each bridge layout sheet must include bridge typical sections, structural dimensions, abutment and bent locations, superstructure, and substructure types. The Engineer shall locate and plot all soil borings and utilities, show proposed retaining walls, and, for staged construction, indicate limits of existing bridge for removal and reconstruction.
- Typical sections
- Construction Sequence

- Bore Log Sheets
- Foundation Layout
- Estimated Quantities
- Exhibit A
- Bearing Seat Elevations

170.3. Substructure

- Abutments - Perform calculations for abutment design, elevations of bridge substructure and superstructure elements, prepare sheets for plan and details
- Multi-Column Bents - Perform calculations for bent design, prepare sheets for plan and details

170.4. Superstructure

- Pre-stressed Concrete Units - Perform calculations for bridge slab design, prepare slab plan sheets, Compute and prepare tables for slab and bearing seat elevations, dead load deflections, etc.
- Girder Layouts - Prepare framing plan
- Girder Design (IGND) - Design beams and prepare beam design tables
- Steel Girder Unit - Design steel girder and prepare sheets for steel girder plan and details

170.5. PS&E Package Review

- 30% Plan Submittal
- 60% Plan Submittal
- 90% Plan Submittal
- 95% Plan Submittal
- Final Plan Submittal
- Co-ordination with Bridge Division

170.6. Project Management

- Design Coordination Meetings
- QC and QA

170.7. Independent Check

The Engineer shall engage in independent check for the bridge design and calculations.

170.8. Miscellaneous Bridge Details and Common Standards

- Miscellaneous Bridge Details - Prepare special provisions and special specifications in accordance to the above-listed manuals and guidelines
- Common Bridge Standards

170.9. Miscellaneous Structures (Junction Boxes, etc.)

The Engineer shall provide necessary details required to supplement standard details.

CSJ 0195-02-074

Mainlanes	
Northbound	Southbound
Description	Description
Over US 77	Over US 77
Over Ganzer	Over Ganzer
Westbound Outer Loop over 35	Eastbound Outer Loop over 35
Over Moores Branch	Over Moores Branch
Ramp Over Moores Branch	
Over FM 156	Over FM 156
Over Trib to Moores Branch	Over Trib to Moores Branch
Over Rector Road	Over Rector Road
Over Trib to Ranger Branch	Over Trib to Ranger Branch
Over Ranger Branch	Over Ranger Branch
Over Keaton Rd/5th St.	Over Keaton Rd/5th St.
Over FM 455	Over FM 455
Over Belz Road	Over Belz Road
Over Lois Road	Over Lois Road
Over View Road	Over View Road
Over Chisam Road/FM 246	Over Chisam Road/FM 246
Over FM 3002	Over FM 3002

CSJ 0195-02-074

Frontage Roads	
Northbound	Southbound
Description	Description
Over Moores Branch	Over Moores Branch
Over FM 156	Over FM 156
Over Trib to Moores Branch	Over Trib to Moores Branch
Over Trib to Ranger Branch	Over Trib to Ranger Branch
Over Ranger Branch	Over Ranger Branch

FUNCTION CODE 309 (309) – DESIGN VERIF/CHANGES/ALTER

CONSTRUCTION PHASE SERVICES

The Engineer shall provide Construction Phase Services at the written request of the State's Project Manager. The written request must include a description of the work requested, a mutually agreed upon time limit, and any special instructions for coordination and submittal. These services shall include, but are not limited to the following:

- Attend preconstruction meeting
- Attend partnering meeting
- Attend field meetings and make visits to site
- Calculate quantities and assist the area engineer in preparing change orders
- Review and approval of shop drawings
- Review and approval of forming details
- Responding to requests for information (RFIs)
- Providing minor redesign (major redesign should be handled with a contract supplement), which will include changes to the affected plan sheets and an updated copy of the 3D model (if applicable).
- Answering general questions
- Providing clarification
- Other project related tasks in support of the State during construction

Deliverables

Plans

The Engineer shall provide the following information at each submittal:

1. Prior to 30% Submittal:
 - 1.1. 5 sets of 11" x 17" bridge and retaining wall layouts for the State District review.
 - 1.2. External stability analysis for retaining walls.
 - 1.3. Engineer's internal QA and QC marked up set.
 - 1.4. One set of a roll format TCP phasing layouts, one .pdf of plan sheets for TCP concept, and significant project procedures form (State Form 2229) to present at the TCAT for the State review.
 - 1.5. One set of a roll format of illumination and large signing plan concept to State review.
 - 1.6. For District/Division Hydraulic Review of existing Bridge Class Culverts, five sets of 11" x 17" Bridge Class Culvert Plan and Profile sheets and Hydrology & Hydraulics sheets, include project title sheet and project layout sheet.
 - 1.7. If applicable for District/Division review and approval, two sets of revised Hydraulic reports.
 - 1.8. Two sets of Railroad Exhibit A for District/Division review and approval.
2. 30% Plans Submittal

- 2.1 12 sets of 11" x 17" plan sheets for the State District Review.
 - 2.2 Estimate of construction cost in excel format in order of item numbers and broken out by CSJs.
 - 2.3 Engineer's internal QA and QC markup set.
 - 2.4 Form 1002 and Design Exceptions with existing and proposed typical sections, location map and design exception exhibits.
3. 60% Plans Submittal:
- 3.1. 12 sets of 11" x 17" plan sets for the State District review.
 - 3.2. Estimate of construction cost in excel format in order of item numbers and broken out by CSJs.
 - 3.3. Engineer's internal QA and QC marked up set.
 - 3.4. One set of a roll format TCP phasing layouts, one .pdf of plan sheets for TCP concept, and significant project procedures form (State Form 2229) to present at the TCAT for the State review.
4. State Bridge Review
- 4.1. Seven sets of Bridge Layouts
5. District Review Submittal (95%):
- 5.1. 12 sets of 11" x 17" plan sheets for the State district review
 - 5.2. List of governing Specifications and Special Provisions in addition to those required.
 - 5.3. Marked up general notes.
 - 5.4. Estimate of construction cost in excel format in order of item numbers and broken out by CSJs.
 - 5.5. New Special Specifications and Special Provisions with Form 1814, if applicable.
 - 5.6. Triple Zero Special Provisions.
 - 5.7. Engineer sign, seal and date supplemental sheets (8 ½" x 11").
 - 5.8. Contract time determination summary.
 - 5.9. Significant project procedures form.
 - 5.10. Right-of-Way and utilities certification.
 - 5.11. Temporary road closure letters.
 - 5.12. Construction speed zone request.
 - 5.13. Engineer's internal QA and QC marked-up set.
 - 5.14. Other supporting documents.
6. Final submittal (100%).
- 6.1. 5 paper sets of 11" x 17" and ePS&E Submittal
 - 6.2. Revised supporting documents from 95% review comments.

Electronic Copies

The Engineer shall furnish the State with a CD or DVD of the final plans in the format of current CADD system used by the State, .pdf format, and in the State's File Management System (FMS) format.

The Engineer shall also provide separate CD or DVD containing cross section information (in dgn, XLR, & ASCII formats) for the State contractor to use.

The Engineer shall provide an electronic copy of Primavera file or the latest scheduling program used by the State for construction time estimate.

The handoff of the electronic files will be via email to the State, with a URL link to the project location in ProjectWise provided in the email.

Calculations

The Engineer shall provide the following:

- A 3-ring binder with all quantity and non-structural design calculations.
- A bound copy of all engineering calculations, analysis, input calculations, quantities, geometric designs (GEOPAK GPK files), etc. relating to the project's structural elements. Project structural elements include, but are not limited to: bridges, retaining walls, overhead sign foundations, high-mast illumination foundations, non-standard culverts, custom headwalls and drainage appurtenances.
- Working copies of all spreadsheets and output from any programs utilized on a CD or DVD in a universally reliable format.
- The Engineer may provide the calculations in .pdf format in lieu of the bound hard copies. The .pdf file should be submitted on a CD,DVD.

ATTACHMENT D
WORK AUTHORIZATION
D-1
WORK AUTHORIZATION NO. _____
CONTRACT FOR ENGINEERING SERVICES

THIS WORK AUTHORIZATION is made pursuant to the terms and conditions of Article 5 of Engineering Contract No. _____ (the Contract) entered into by and between the State of Texas, acting by and through the Texas Department of Transportation (the State), and _____ (the Engineer).

PART I. The Engineer will perform engineering services generally described as _____ in accordance with the project description attached hereto and made a part of this Work Authorization. The responsibilities of the State and the Engineer as well as the work schedule are further detailed in exhibits A, B and C which are attached hereto and made a part of the Work Authorization.

PART II. The maximum amount payable under this Work Authorization is \$_____ and the method of payment is _____ as set forth in Attachment E of the Contract. This amount is based upon fees set forth in Attachment E, Fee Schedule, of the Contract and the Engineer's estimated Work Authorization costs included in Exhibit D, Fee Schedule, which is attached and made a part of this Work Authorization.

PART III. Payment to the Engineer for the services established under this Work Authorization shall be made in accordance with Articles 3 thru 5 of the contract, and Attachment A, Article 1.

PART IV. This Work Authorization shall become effective on the date of final acceptance of the parties hereto and shall terminate on _____, unless extended by a supplemental Work Authorization as provided in Attachment A, Article 1.

PART V. This Work Authorization does not waive the parties' responsibilities and obligations provided under the Contract.

IN WITNESS WHEREOF, this Work Authorization is executed in duplicate counterparts and hereby accepted and acknowledged below.

THE ENGINEER

THE STATE OF TEXAS

(Signature)

(Printed Name)

(Title)

(Date)

(Signature)

(Printed Name)

(Title)

(Date)

LIST OF EXHIBITS

- Exhibit A Services to be provided by the State
- Exhibit B Services to be provided by the Engineer
- Exhibit C Work Schedule
- Exhibit D Fee Schedule/Budget
- Exhibit H-2 Subprovider Monitoring System Commitment Agreement

ATTACHMENT D
D-2
SUPPLEMENTAL WORK AUTHORIZATION NO. _____
WORK AUTHORIZATION NO. _____
CONTRACT FOR ENGINEERING SERVICES

THIS SUPPLEMENTAL WORK AUTHORIZATION is made pursuant to the terms and conditions of Article 5 Contract No. _____ hereinafter identified as the "Contract," entered into by and between the State of Texas, acting by and through the Texas Department of Transportation (the State), and _____ (the Engineer).

The following terms and conditions of Work Authorization No. _____ are hereby amended as follows:

This Supplemental Work Authorization shall become effective on the date of final execution of the parties hereto. All other terms and conditions of Work Authorization No. _____ not hereby amended are to remain in full force and effect.

IN WITNESS WHEREOF, this Supplemental Work Authorization is executed in duplicate counterparts and hereby accepted and acknowledged below.

THE ENGINEER

THE STATE OF TEXAS

(Signature)

(Printed Name)

(Title)

(Date)

(Signature)

(Printed Name)

(Title)

(Date)

ATTACHMENT E**FEE SCHEDULE
(Final Cost Proposal)**

This attachment provides the basis of payment and fee schedule. **The basis of payment for this contract is indicated by an “X” in the applicable box.** The basis shall be supported by the Final Cost Proposal (FCP) shown below. If more than one basis of payment is used, each one must be supported by a separate FCP.

“X”	Basis	
<u>X</u>	Lump Sum	The lump sum shall be equal to the maximum amount payable. The lump sum includes all direct and indirect costs and profit. The Engineer shall be paid pro rata based on the percentage of work completed. For payment the Engineer is not required to provide evidence of actual hours worked, travel, overhead rates or other evidence of cost, but must submit billing information in a form acceptable to the State as required by Article 4 A & B including classifying work, partial or completed, according to the Table of Deliverables.
<u>X</u>	Unit Cost	The unit cost(s) for each type of unit and number of units are shown in the FCP. The unit cost includes all direct and indirect costs and profit. The Engineer shall be paid based on the type and number of units fully completed and the respective unit cost. For payment, the Engineer is not required to provide evidence of actual hours worked, travel, overhead rates or any other cost data. The FCP may include special items, such as equipment which are not included in the unit costs. Documentation of these special costs may be required. The maximum amount payable equals the total of all units times their respective unit cost plus any special direct items shown.
<u>X</u>	Specified Rate Basis	The specified rates for each type of labor are shown in the FCP below. The FCP may include special items, such as equipment which are not included in the specified rates. Payment shall be based on the actual hours worked multiplied by the specified rate for each type of labor plus other agreed to special direct cost items. The specified rate includes direct labor and indirect cost and profit. The State may request documentation of reimbursable direct costs including hours worked. Documentation of special item costs may be required. The specified rate is not subject to audit.
_____	Cost Plus Fixed Fee	<p>Payment shall be based on direct and indirect costs incurred <u>plus</u> a pro rata share of the fixed fee based on the ratio of <u>labor and overhead cost incurred to total estimated labor and overhead cost in the FCP</u> or the percentage of work completed. The invoice must itemize labor rates, hours worked, other direct costs and indirect costs. The Engineer may be required to provide documentation of hours worked and any eligible direct costs claimed. The provisional overhead rate charged is subject to audit and adjustment to actual rates incurred. The FCP below shows the hourly rates for labor, other direct expenses including but not limited to travel and allowable materials, provisional overhead rate and the fixed fee.</p> <p>___A. Actual Cost Plus Fixed Fee - Actual wages are paid (no minimum, no maximum. This option does not apply to Indefinite Deliverable Contracts.)</p> <p>___B. Range of Cost Plus Fixed Fee – Actual wages <u>must</u> be within the allowable range shown on the Final Cost Proposal.</p>

ATTACHMENT E – FEE SCHEDULE

Final Cost Proposal (FCP) Supporting Basis of Payment

* The **MAXIMUM AMOUNT PAYABLE** is \$23,039,761.15.

The maximum amount payable is based on the following data and calculations:

* The maximum amount payable must be based on the contract scope. The work authorization fee schedules will be derived from this attachment.

ATTACHMENT E- FEE SCHEDULE**SPECIFIED RATE PAYMENT BASIS****PRIME PROVIDER NAME:**

Stantec Consulting Services, Inc.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE from 09/2017 thru 08/2022	HOURLY CONTRACT RATE from 09/2017 thru 08/2022	HOURLY BASE RATE from 09/2022 thru 09/2024	HOURLY CONTRACT RATE from 09/2022 thru 09/2024
Project Manager	10 to 20	\$75.00	\$218.65	\$78.75	\$229.58
RPLS - Project Manager	15+	\$56.19	\$163.81	\$59.00	\$172.00
Quality Manager	10 to 20	\$65.00	\$189.50	\$68.25	\$198.97
Senior Engineer	15+	\$60.10	\$175.21	\$63.11	\$183.97
Senior Structural Engineer	15+	\$67.00	\$195.33	\$70.35	\$205.09
Structural Engineer	5 to 15	\$55.00	\$160.34	\$57.75	\$168.36
Project Engineer	10 to 15	\$48.00	\$139.94	\$50.40	\$146.93
Design Engineer	5 to 10	\$42.00	\$122.44	\$44.10	\$128.57
Traffic Engineer	5 to 10	\$55.00	\$160.34	\$57.75	\$168.36
Traffic Engineer- Modeler/Analyst	5 to 10	\$41.00	\$119.53	\$43.05	\$125.50
Senior Landscape Architect	15+	\$62.00	\$180.75	\$65.10	\$189.79
Landscape Architect	5 to 15	\$44.00	\$128.27	\$46.20	\$134.69
Engineer-In-Training	1 to 5	\$33.00	\$96.21	\$34.65	\$101.02
Senior Engineer Tech	15+	\$37.00	\$107.87	\$38.85	\$113.26
Engineer Tech	5 to 15	\$30.50	\$88.92	\$32.03	\$93.36
Junior Engineer Tech	1 to 5	\$22.00	\$64.14	\$23.10	\$67.34
Senior CADD Operator	15+	\$32.00	\$93.29	\$33.60	\$97.96
CADD Operator	5 to 15	\$27.00	\$78.71	\$28.35	\$82.65
Junior CADD Operator	1 to 5	\$23.00	\$67.05	\$24.15	\$70.41
RPLS - Task Leader	10 to 15	\$47.00	\$137.02	\$49.35	\$143.87
Senior Survey Tech (Must be Surveyor in Training (SIT), or have a minimum of five year's surveying experience)	5 to 10	\$35.00	\$102.04	\$36.75	\$107.14
Survey Tech	1 to 5	\$30.00	\$87.46	\$31.50	\$91.83
Admin/Clerical		\$23.00	\$67.05	\$24.15	\$70.41
INDIRECT COST RATE:	165.03%				
PROFIT RATE:	10.0%				

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.**Note:** Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

SPECIFIED RATE PAYMENT BASIS

SUBPROVIDER NAME: CH2M Hill, Inc.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE from 09/2017 thru 08/2022	HOURLY CONTRACT RATE from 09/2017 thru 08/2022	HOURLY BASE RATE from 09/2022 thru 09/2024	HOURLY CONTRACT RATE from 09/2022 thru 09/2024
Project Manager	10 to 20	\$67.69	\$151.62	\$71.07	\$159.21
Quality Manager	10 to 20	\$62.00	\$138.88	\$65.10	\$145.82
Senior Engineer	15+	\$70.00	\$156.80	\$73.50	\$164.64
Senior Structural Engineer	15+	\$74.00	\$165.76	\$77.70	\$174.05
Structural Engineer	5 to 15	\$58.00	\$129.92	\$60.90	\$136.41
Project Engineer	10 to 15	\$55.00	\$123.20	\$57.75	\$129.36
Design Engineer	5 to 10	\$49.00	\$109.76	\$51.45	\$115.25
Engineer-In-Training	1 to 5	\$38.00	\$85.12	\$39.90	\$89.38
Senior Engineer Tech	15+	\$45.00	\$100.80	\$47.25	\$105.84
Admin/Clerical		\$22.00	\$49.28	\$23.10	\$51.74
Senior Hydrologist	20+	\$70.00	\$156.80	\$73.50	\$164.64
Senior Designer	20+	\$49.00	\$109.76	\$51.45	\$115.25
Hydrologist	5 to 15	\$52.00	\$116.48	\$54.60	\$122.30
Senior Project Controller	15+	\$45.00	\$100.80	\$47.25	\$105.84
Project Controller	5 to 15	\$35.00	\$78.40	\$36.75	\$82.32
INDIRECT COST RATE:	101.80%				
PROFIT RATE:	11.0%				

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE**SPECIFIED RATE PAYMENT BASIS****SUBPROVIDER NAME:** Lina T. Ramey & Associates, Incorporated**DIRECT LABOR**

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE from 09/2017 thru 08/2022	HOURLY CONTRACT RATE from 09/2017 thru 08/2022	HOURLY BASE RATE from 09/2022 thru 09/2024	HOURLY CONTRACT RATE from 09/2022 thru 09/2024
Project Manager	10 to 20	\$70.00	\$206.49	\$73.50	\$216.82
RPLS - Project Manager	15+	\$57.82	\$170.56	\$60.71	\$179.09
Quality Manager	10 to 20	\$62.25	\$183.63	\$65.36	\$192.81
Senior Engineer	15+	\$60.10	\$177.29	\$63.11	\$186.15
Project Engineer	10 to 15	\$49.00	\$144.54	\$51.45	\$151.77
Design Engineer	5 to 10	\$42.50	\$125.37	\$44.63	\$131.64
Engineer-In-Training	1 to 5	\$33.00	\$97.35	\$34.65	\$102.21
Senior Engineer Tech	15+	\$38.00	\$112.10	\$39.90	\$117.70
Engineer Tech	5 to 15	\$32.00	\$94.40	\$33.60	\$99.12
Junior Engineer Tech	1 to 5	\$26.00	\$76.70	\$27.30	\$80.53
Senior CADD Operator	15+	\$34.00	\$100.30	\$35.70	\$105.31
CADD Operator	5 to 15	\$28.00	\$82.60	\$29.40	\$86.73
Junior CADD Operator	1 to 5	\$24.00	\$70.80	\$25.20	\$74.34
RPLS - Task Leader	10 to 15	\$46.00	\$135.69	\$48.30	\$142.48
Senior Survey Tech (Must be Surveyor in Training (SIT), or have a minimum of five year's surveying experience)	5 to 10	\$36.00	\$106.20	\$37.80	\$111.51
Survey Tech	1 to 5	\$32.00	\$94.40	\$33.60	\$99.12
Admin/Clerical		\$23.00	\$67.85	\$24.15	\$71.24
Abstractor (Property Deed Researcher, Courthouse or Internet research)		\$24.00	\$70.80	\$25.20	\$74.34
Project Coordinator - Mobile LiDAR		\$52.00	\$153.39	\$54.60	\$161.06
Mobile LiDAR Processing Technician		\$38.00	\$112.10	\$39.90	\$117.70
Senior Hydrologist		\$61.00	\$179.94	\$64.05	\$188.94
Hydrologist		\$50.00	\$147.49	\$52.50	\$154.87
INDIRECT COST RATE:	168.17%				
PROFIT RATE:	10.0%				

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.**Note:** Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE**SPECIFIED RATE PAYMENT BASIS****SUBPROVIDER NAME:** MV Engineering, Inc.**DIRECT LABOR**

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE	HOURLY BASE RATE	HOURLY CONTRACT RATE
		from 9/2017 thru 08/2022	from 09/2017 thru 08/2022	from 09/2022 thru 09/2024	from 09/2022 thru 09/2024
Project Manager	10 to 20	\$71.00	\$181.52	\$74.55	\$190.60
Quality Manager	10 to 20	\$52.00	\$132.94	\$54.60	\$139.59
Senior Engineer	15+	\$60.10	\$153.65	\$63.11	\$161.34
Senior Structural Engineer	15+	\$64.00	\$163.62	\$67.20	\$171.80
Structural Engineer	5 to 15	\$53.35	\$136.40	\$56.02	\$143.22
Project Engineer	10 to 15	\$48.00	\$122.72	\$50.40	\$128.85
Design Engineer	5 to 10	\$40.50	\$103.54	\$42.53	\$108.72
Engineer-In-Training	1 to 5	\$33.00	\$84.37	\$34.65	\$88.59
Senior Engineer Tech	15+	\$35.00	\$89.48	\$36.75	\$93.96
Engineer Tech	5 to 15	\$29.00	\$74.14	\$30.45	\$77.85
Junior Engineer Tech	1 to 5	\$24.00	\$61.36	\$25.20	\$64.43
Senior CADD Operator	15+	\$32.00	\$81.81	\$33.60	\$85.90
CADD Operator	5 to 15	\$27.00	\$69.03	\$28.35	\$72.48
Junior CADD Operator	1 to 5	\$24.00	\$61.36	\$25.20	\$64.43
Admin/Clerical		\$22.00	\$56.25	\$23.10	\$59.06
INDIRECT COST RATE:	132.42%				
PROFIT RATE:	10.0%				

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.**Note:** Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE**SPECIFIED RATE PAYMENT BASIS****SUBPROVIDER NAME:** Terracon Consultants, Inc.**DIRECT LABOR**

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE from 09/2017 thru 08/2022	HOURLY CONTRACT RATE from 09/2017 thru 08/2022	HOURLY BASE RATE from 09/2022 thru 09/2024	HOURLY CONTRACT RATE from 09/2022 thru 09/2024
Project Manager	10 to 20	\$66.00	\$210.65	\$69.30	\$221.18
Quality Manager	10 to 20	\$62.50	\$199.48	\$65.63	\$209.45
Senior Engineer	15+	\$58.00	\$185.12	\$60.90	\$194.37
Project Engineer	10 to 15	\$49.00	\$156.39	\$51.45	\$164.21
Design Engineer	5 to 10	\$37.13	\$118.51	\$38.99	\$124.43
Engineer-In-Training	1 to 5	\$33.00	\$105.32	\$34.65	\$110.59
Senior Engineer Tech	15+	\$34.00	\$108.52	\$35.70	\$113.94
Junior Engineer Tech	1 to 5	\$23.00	\$73.41	\$24.15	\$77.08
Senior CADD Operator	15+	\$28.00	\$89.37	\$29.40	\$93.83
CADD Operator	5 to 15	\$24.00	\$76.60	\$25.20	\$80.43
Junior CADD Operator	1 to 5	\$21.00	\$67.02	\$22.05	\$70.38
Admin/Clerical		\$19.75	\$63.04	\$20.74	\$66.19
INDIRECT COST RATE:	190.15%				
PROFIT RATE:	10.0%				

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.**Note:** Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E - FEE SCHEDULE

SPECIFIED RATE PAYMENT BASIS

SUBPROVIDER NAME: Hicks & Company, Environmental/Archeological Consultants

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE		HOURLY CONTRACT RATE from 09/2017 thru 08/2022	HOURLY CONTRACT RATE from 09/2022 thru 09/2024
Project Manager	10 to 20		\$171.61	\$180.19
Senior Public Involvement Officer	15+		\$164.32	\$172.54
Public Involvement Officer	5 to 15		\$116.92	\$122.77
Senior Public Involvement Specialist	15+		\$96.80	\$101.64
Public Involvement Specialist	5 to 15		\$72.60	\$76.23
Junior Public Involvement Specialist	1 to 5		\$48.12	\$50.53
Senior GIS Operator	15+		\$110.00	\$115.50
GIS Operator	5 to 15		\$75.00	\$78.75
Senior Biologist	15+		\$105.00	\$110.25
Biologist IV	10 to 15		\$85.00	\$89.25
Biologist III	5 to 10		\$76.00	\$79.80
Senior Environmental Planner	15+		\$171.61	\$180.19
Environmental Planner IV	10 to 15		\$150.89	\$158.43
Environmental Planner III	5 to 10		\$87.00	\$91.35
Environmental Planner I/II	1 to 5		\$77.00	\$80.85
Senior Environmental Specialist	15+		\$111.93	\$117.53
Environmental Specialist	5 to 15		\$90.75	\$95.29
Junior Environmental Specialist	1 to 5		\$60.58	\$63.61
Senior Environmental Scientist	15+		\$139.15	\$146.11
Environmental Scientist IV	10 to 15		\$102.44	\$107.56
Environmental Scientist III	5 to 10		\$85.00	\$89.25
Environmental Scientist I/II	1 to 5		\$78.65	\$82.58

Contract rates include labor, overhead, and profit.

All rates are negotiated rates and are not subject to change or adjustment.

Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE**UNIT COST PAYMENT BASIS****RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS**

SERVICES TO BE PROVIDED	Test Codes	UNIT	Cost from 09/2017 thru 08/2022	Cost from 09/2022 thru 09/2024
Volumetric Shrinkage	ASTM D427	each	\$82.50	\$86.63
Standard Proctor Test	ASTM D698	each	\$178.00	\$186.90
Modified Proctor Test	ASTM D1557	each	\$200.00	\$210.00
Standard Penetration Test (SPT)	ASTM D1586	LF	\$28.50	\$29.93
California Bearing Ratio (Single Sample without MD Curve)	ASTM D1883	test	\$160.00	\$168.00
Unconfined Compressive Strength (Soil)	ASTM D2166	each	\$48.50	\$50.93
Hydraulic Conductivity Permeability	ASTM D2434	each	\$250.00	\$262.50
One Dimensional Consolidation Properties of Soil	ASTM D2435	each	\$330.00	\$346.50
Unconfined Compressive Strength (Rock)	ASTM D2938	each	\$66.00	\$69.30
Direct Shear Test of Soils Under Consolidated Drained Conditions	ASTM D3080	set of 3	\$950.00	\$997.50
Splitting Tensile of Intact Rock Core	ASTM D3967	each	\$68.00	\$71.40
Water Stand Pipes	ASTM D4043	LF	\$30.00	\$31.50
Calcium Carbonate Content of Soils	ASTM D4373	each	\$40.00	\$42.00
Hydraulic Conductivity Permeability	ASTM D4511	each	\$220.00	\$231.00
One Dimensional Swell, Methods A & B	ASTM D4546	each	\$80.00	\$84.00
One Dimensional Swell, Method C	ASTM D4546	each	\$130.00	\$136.50
Permeability of Silt and Clays	ASTM D5084	each	\$347.00	\$364.35
Suction Test (Filter Method)	ASTM D5298	each	\$82.50	\$86.63
Miscellaneous Testing	N/A	each	\$55.00	\$57.75
Soil Boring with SPT	ASTM D1586	LF	\$28.50	\$29.93
Soil Boring/Rock Coring with TCP (< 60 ft.)	Tex-132-E	LF	\$34.00	\$35.70
Soil Boring/Rock Coring with TCP (> 60 ft.)	Tex-132-E	LF	\$38.50	\$40.43
Soil Boring/Rock Coring without TCP (< 60 ft.)	N/A	LF	\$29.50	\$30.98
Soil Boring /Rock Coring without TCP (> 60 ft.)	N/A	LF	\$32.50	\$34.13
Soil Boring without TCP (< 60 ft.):	N/A			
(a) Utilizing Continuous Sampler	ASTM D1587	LF	\$24.00	\$25.20
(b) Shelby Push Tubes Extruded in Field	ASTM D1587	LF	\$24.00	\$25.20
(c) Augering	N/A	LF	\$16.00	\$16.80
Soil Boring without TCP (> 60 ft.):	N/A			
(a) Utilizing Continuous Sampler	ASTM D1587	LF	\$27.00	\$28.35
(b) Shelby Push Tubes Extruded in Field	ASTM D1587	LF	\$30.00	\$31.50
Core/drill operator/technician and coring equipment used to drill flexible and rigid pavement (2-man crew)	N/A	Trip	\$310.00	\$325.50
(a) 4-in. diameter cores	N/A	Inch	\$8.50	\$8.93
(b) 6-in. diameter cores	N/A	Inch	\$9.75	\$10.24
Mobilization of Drilling Rig (Trips less than 100 miles from office to site)	N/A	mile	\$4.35	\$4.57
Mobilization of Drilling Rig (Trips over 100 miles from office to site)	N/A	mile	\$4.75	\$4.99
Consolidated Undrained Triaxial Compression Test for Undisturbed Soils (CU) or ASTM D4767 (single-stage) (includes moisture, PI, -200 and unit weight	TEX-131-E	per stage	\$400.00	\$420.00
Consolidated Undrained Triaxial Compression Test for Undisturbed Soils (CU) or ASTM D4767 (multi-stage) (includes moisture, PI, -200 and unit weight/each	TEX-131-E	per test	\$1,050.00	\$1,102.50

The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.

All unit costs are negotiated costs and are not subject to change or adjustment.

Unit Cost Payment Basis: If unit costs by year are included, unit costs billed should correspond to the fiscal or calendar year, if applicable, in which the work was done.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE**UNIT COST PAYMENT BASIS****RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS**

SERVICES TO BE PROVIDED	Test Codes	UNIT	Cost from 09/2017 thru 08/2022	Cost from 09/2022 thru 09/2024
Determining Moisture Content in Soil Materials	Tex-103-E	each	\$8.00	\$8.40
Determining Liquid Limits of Soils	Tex-104-E	each	\$30.00	\$31.50
Determining Plastic Limit of Soils	Tex-105-E	each	\$30.00	\$31.50
Calculating the Plasticity Index of Soils	Tex-106-E	each	\$5.00	\$5.25
Particle Size Analysis of Soils	Tex-110-E	each	\$50.00	\$52.50
Determining the Amount of Material in Soils Finer than the 75 micrometer (No. 200) Sieve	Tex-111-E	each	\$45.00	\$47.25
Soil-Cement Testing- Part 1	Tex-120-E	each	\$185.00	\$194.25
Soil-Cement Testing- Part 2	Tex-120-E	each	\$225.00	\$236.25
Soil-Lime Testing- Part 1	Tex-121-E	each	\$475.00	\$498.75
Soil-Lime Testing- Part 2	Tex-121-E	each	\$225.00	\$236.25
Determining Sulfate Content in Soils - Colorimetric Method	Tex-145-E	each	\$58.00	\$60.90

The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.

All unit costs are negotiated costs and are not subject to change or adjustment.

Unit Cost Payment Basis: If unit costs by year are included, unit costs billed should correspond to the fiscal or calendar year, if applicable, in which the work was done.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

UNIT COST PAYMENT BASIS

RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS

SERVICES TO BE PROVIDED	UNIT	Cost from 09/2017 thru 08/2022	Cost from 09/2022 thru 09/2024
1 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	hour	\$110.00	\$115.50
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	hour	\$160.00	\$168.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	hour	\$185.00	\$194.25
4 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	hour	\$200.00	\$210.00
LiDAR Mobile Mapping System, (Includes Vehicle Operator, LiDAR Technician mileage on project and fuel) (Does not include travel to project.)	day	\$8,000.00	\$8,400.00
LiDAR Mobile Mapping Vehicle travel to project	mile	\$5.00	\$5.25
1 - Person Survey Crew (Terrestrial Laser scanner included in indirect cost rate. Mileage not included.)	hour	\$150.00	\$157.50
2 - Person Survey Crew (Terrestrial Laser scanner included in indirect cost rate. Mileage not included.)	hour	\$200.00	\$210.00
3 - Person Survey Crew (Terrestrial Laser scanner included in indirect cost rate. Mileage not included.)	hour	\$225.00	\$236.25
4 - Person Survey Crew (Terrestrial Laser scanner included in indirect cost rate. Mileage not included.)	hour	\$240.00	\$252.00

The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.

All unit costs are negotiated costs and are not subject to change or adjustment.

Unit Cost Payment Basis: If unit costs by year are included, unit costs billed should correspond to the fiscal or calendar year, if applicable, in which the work was done.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE**UNIT COST PAYMENT BASIS****RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS**

SERVICES TO BE PROVIDED	Test Code	UNIT	Cost from 09/2017 thru 08/2022	Cost from 09/2022 thru 09/2024
24-Hour Automated Tube Counts - Volume	N/A	per counter/day	\$175.00	\$183.75
24-Hour Automated Tube Counts - Bi-directional	N/A	per counter/day	\$150.00	\$157.50
24-Hour Automated Tube Counts - Urban Freeway Main Lanes	N/A	per counter/day	\$425.00	\$446.25
24-Hour Automated Tube Counts - Rural Main Lanes	N/A	per counter/day	\$250.00	\$262.50
24-Hour Automated Tube Counts - Speed or Class	N/A	per counter/day	\$160.00	\$168.00
Intersection Turning Movement Counts	N/A	per counter/hour/day	\$100.00	\$105.00
Turning Movement Count (12-hour Manual) Minor Intersection	N/A	each	\$550.00	\$577.50
Turning Movement Count (12-hour Manual) Major Intersection	N/A	each	\$1,100.00	\$1,155.00
2-hour Turning Movement Count, Minor Intersection, Weekday	N/A	each	\$150.00	\$157.50
2-hour Turning Movement Count, Major Intersection, Weekday	N/A	each	\$350.00	\$367.50
2-hour Turning Movement Count, Minor Intersection, Weekend	N/A	each	\$190.00	\$199.50
2-hour Turning Movement Count, Major Intersection, Weekend	N/A	each	\$375.00	\$393.75
Travel Time Runs in DMI-Equipped Vehicle (Includes labor and mileage)	N/A	hour	\$50.00	\$52.50
Speed Survey (location)	N/A	per location	\$160.00	\$168.00
Intersection Diagrams / Sketches	N/A	per intersection	\$65.00	\$68.25
Intersection Photography	N/A	per intersection	\$40.00	\$42.00

The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.

All unit costs are negotiated costs and are not subject to change or adjustment.

Unit Cost Payment Basis: If unit costs by year are included, unit costs billed should correspond to the fiscal or calendar year, if applicable, in which the work was done.

Note: Any direct labor, unit cost, or other direct expense classification included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

ATTACHMENT E- FEE SCHEDULE

OTHER DIRECT EXPENSES

RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS

SERVICES TO BE PROVIDED	UNIT	FIXED COST from 09/2017 thru 08/2022	MAXIMUM COST from 09/2017 thru 08/2022	FIXED COST from 09/2022 thru 09/2024	MAXIMUM COST from 09/2022 thru 09/2024
Lodging/Hotel - Taxes and Fees	day/person		\$25.00		\$26.25
Lodging/Hotel (Taxes/fees not included)	day/person		Current State Rate		Current State Rate
Meals (Excluding alcohol & tips) (Overnight stay required)	day/person		Current State Rate		Current State Rate
Mileage	mile	Current State Rate		Current State Rate	
Rental Car Fuel	day		\$25.00		\$26.25
SUV or ATV Rental (Includes taxes and fees; Insurance costs will not be reimbursed)	day		\$100.00		\$105.00
Rental Car Fuel	gallon		\$4.00		\$4.20
Rental Car (Includes taxes and fees; Insurance costs will not be reimbursed)	day		\$55.00		\$57.75
Air Travel - In State - Short Notice (Coach)	Rd Trip/person		\$475.00		\$498.75
Air Travel - In State - 2+ Wks Notice (Coach)	Rd Trip/person		\$300.00		\$315.00
Air Travel - Out of State - 2+ Wks Notice (Coach)	Rd Trip/person		\$500.00		\$525.00
Air Travel - Out of State - Short Notice (Coach)	Rd Trip/person		\$700.00		\$735.00
Taxi/Cab fare	each/person		\$30.00		\$31.50
Parking	day		\$20.00		\$21.00
Toll Charges	each		\$5.00		\$5.25
Standard Postage	letter	Current Postal Rate		Current Postal Rate	
Certified Letter Return Receipt	each	Current Postal Rate		Current Postal Rate	
Overnight Mail - letter size	each		Current Postal Rate		Current Postal Rate
Overnight Mail - oversized box	each		\$40.00		\$42.00
Courier Services	each		\$32.00		\$33.60
Photocopies B/W (11" X 17")	each	\$0.20		\$0.21	
Photocopies B/W (8 1/2" X 11")	each	\$0.10		\$0.11	
Photocopies Color (11" X 17")	each	\$1.20		\$1.26	
Photocopies Color (8 1/2" X 11")	each	\$0.65		\$0.68	
Digital Ortho Plotting	sheet	\$1.40		\$1.47	
Plots (B/W on Bond)	per sq. ft.	\$0.50		\$0.53	
Plots (Color on Bond)	per sq. ft.	\$1.40		\$1.47	
Plots (Color on Photographic Paper)	per sq. ft.	\$4.00		\$4.20	
Color Graphics on Foam Board	square foot	\$10.00		\$10.50	
Presentation Boards 30" X 40" Color Mounted	each		\$70.00		\$73.00
Report Printing	each		\$45.00		\$47.25
Report Binding and tabbing	each	\$5.00		\$5.25	
Reproduction of CD/DVD	each		\$4.00		\$4.20
CDs	each	\$1.00		\$1.05	
4" X 6" Digital Color Print	picture	\$0.30		\$0.32	
Tx Parks & Wildlife Data Request Fees	each		\$40.00		\$42.00
Hazardous Materials Database Search	per search		\$350.00		\$393.75
Newspaper Advertisement	per publication		\$3,000.00		\$3,150.00
Court Reporter	page		\$8.00		\$8.40
Court Reporter (Public Meetings, Hearings & Transcription)	day		\$500.00		\$525.00
Translator (English to Spanish, other language as appropriate, or Sign Language) for Public Involvement	event		\$500.00		\$525.00
Translator (English to Spanish, other language as appropriate, or Sign Language)	hour		\$100.00		\$105.00
Custodian for Public Involvement	hour/custodian		\$30.00		\$31.50
Sound Technician for Public Involvement	event		\$300.00		\$315.00
Public Involvement Facility Rental	4 hours		\$850.00		\$892.50
Public involvement Facility Rental	8 hours		\$1,750.00		\$1,837.50
Public Involvement Facility Rental	hour		\$150.00		\$157.50
Public Involvement Facility Rental	event		\$1,250.00		\$1,312.50
Audio - Equipment Rental	each		\$250.00		\$262.50
Audio - Visual Equipment Rental	event		\$300.00		\$315.00
Public Notices - Mass Mailing (500 pieces)	per mailing		\$500.00		\$525.00
FEMA FIS (Manual)	each		\$5.00		\$5.25
FEMA FIS Backup Data Request	each		\$300.00		\$315.00

ATTACHMENT E- FEE SCHEDULE

OTHER DIRECT EXPENSES

RATES SHOWN APPLY TO PRIME PROVIDER AND ALL SUBPROVIDERS

SERVICES TO BE PROVIDED	UNIT	FIXED COST from 09/2017 thru 08/2022	MAXIMUM COST from 09/2017 thru 08/2022	FIXED COST from 09/2022 thru 09/2024	MAXIMUM COST from 09/2022 thru 09/2024
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)	each		\$8,250.00		\$8,662.50
FEMA Model/Floodplain Hardcopy	each		\$250.00		\$262.50
Railroad - Flagger (Service provided by RR)	hour		\$60.00		\$63.00
Railroad - Insurance in addition to STD Minimum Required (Minimum coverage of \$1 Million required by RR.)	each		\$2,500.00		\$2,625.00
Railroad - Permit	each		\$1,500.00		\$1,575.00
Railroad - Safety Training (If required - Heavy Rail Safety Training Certificate, includes classroom training and employee certification card.)	Per Person		\$300.00		\$315.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Large Project (Includes labor, equipment and fuel)	hour		\$3,000.00		\$3,150.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Medium Project (Includes labor, equipment and fuel)	each		\$2,200.00		\$2,310.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Small Project (Includes labor, equipment and fuel)	each		\$1,500.00		\$1,575.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)	Per Person		\$400.00		\$420.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)	day		\$300.00		\$315.00
Flashing Arrow Board	day		\$500.00		\$525.00
Portable Message Board	day		\$200.00		\$210.00
Law Enforcement/Uniform Officer (including vehicle)	day		\$75.00		\$78.75
Required Perimt Fees (non-railroad)	each		\$300.00		\$315.00
Boat with Motor	day		\$225.00		\$236.25
Fathometer	hour		\$90.00		\$94.50
Backhoe Rental	each		\$1,000.00		\$1,050.00
GPS Receiver (rates applied to actual time GPS units are in use)	day		\$25.00		\$26.25
GPS RTK (rates applied to actual time GPS units are in use)	day	\$25.00		\$26.25	
GPS Static (rates applied to actual time GPS units are in use)	hour	\$25.00		\$26.25	
Map Records	sheet		\$5.00		\$5.25
Deed Copies	sheet	\$2.00		\$2.10	
Certified Deed Copies	sheet	\$2.50		\$2.63	
Historical Aerial Images	unit		\$100.00		\$105.00
Aerial Photographs (1"=500' scale)	each		\$50.00		\$52.50
Type II ROW Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (includes crew time, equipment, materials, rentals, & labor). Brass Marker supplied by TxDOT	each	\$65.00		\$68.25	
Type II ROW Monument - Poured 2-3 Feet (includes One Call, crew time, equipment, materials, rentals, labor). Brass Marker supplied by TxDOT	each	\$220.00		\$231.00	
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use)	hour	\$90.00		\$94.50	
Ground Target (includes paint, panel material, etc.)	each	\$25.00		\$26.25	

Profit not allowed on Other Direct Expenses.

For Cost Plus Fixed Fee, Specified Rate, and Unit Cost - Fixed cost items to be billed at the fixed cost rate. Documentation, such as a usage log, must be maintained for audit purposes, and may be required to be submitted as a basis for reimbursement. For items with a maximum cost, actual cost to be billed not to exceed the maximum shown. Expenses shown at a Current State Rate are billed at the rates that are in effect at the time that the expense is incurred. Itemized receipts must be maintained for audit purposes, and may be required to be submitted as a basis for reimbursement. **For Lump Sum** - Documentation is not required. Invoicing is paid according to the Table of Deliverables, and it includes labor, unit costs and other direct expenses.

NOTE: For Cost Plus Fixed Fee, Specified Rate, and Unit Cost - Miscellaneous other direct expenses up to \$100 per unit will be reimbursed at cost if approved and documented in advance by the State's Project Manager. Miscellaneous other direct expenses of \$100 per unit or more will not be reimbursed unless a supplemental agreement to the contract and work authorization (if WAs are used) has been executed in advance authorizing the miscellaneous other direct expenses. No more than \$2,500 in miscellaneous other direct expenses may be approved by the State's Project Manager over the life of this contract including prime provider and subproviders. **For Lump Sum** - This statement does not apply.

**ATTACHMENT E - FEE SCHEDULE
 SUMMARY PAGE**

Stantec Consulting Services, Inc.

FC	Description of Function Code (FC)	Stantec		Ch2M		Terracon		Hicks		MVE		LTRA		Total	
		Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours (Labor & Unit Cost)	Cost	Hours	Cost
PLANS, SPECIFICATIONS AND ESTIMATES															
110	Route and Design Studies	88	\$169,591.02			3,906	\$1,056,047.56	196	\$22,385.56					4,190	\$1,248,024.14
120	Social, Economic, and Envr. Studies							1,050	\$123,303.34					1,050	\$123,303.34
130	Right-of-Way Data	720	\$92,509.60									1,432	\$221,118.18	2,152	\$313,627.78
150	Field Surveying and Photogrammetry											2,841	\$382,469.35	2,841	\$382,469.35
160	Roadway Design Controls	39,820	\$4,776,594.60					406	\$47,903.74	3,620	\$396,826.20			43,846	\$5,221,324.54
161	Drainage			21,830	\$2,578,297.12									21,830	\$2,578,297.12
162	Signing, Markings and Signalization	4,186	\$515,253.58									9,192	\$1,167,291.04	13,378	\$1,682,544.62
163	Miscellaneous (Roadway)	26,766	\$3,272,934.88							7,280	\$784,143.04	8,812	\$1,073,844.68	42,858	\$5,130,922.60
164	Project Management and Administration	4,404	\$713,347.36	909	\$92,803.06			276	\$35,167.90	598	\$81,355.64	900	\$140,109.90	7,087	\$1,062,783.86
165	Traffic Management	3,540	\$460,020.20											3,540	\$460,020.20
170	Bridge Design	29,047	\$3,605,654.99							8,606	\$902,071.99			37,653	\$4,507,726.98
309	Construction Phase Services	264	\$40,112.02			58	\$10,160.90							322	\$50,272.92
	Total Labor & Unit Costs	108,835	\$13,646,018.25	22,739	\$2,671,100.18	3,964	\$1,066,208.46	1,928	\$228,760.54	20,104	\$2,164,396.87	23,177	\$2,984,833.15	180,747	\$22,761,317.45
110	Total Direct Costs		\$56,351.00		\$3,959.40		\$187,611.80						\$30,521.50		\$278,443.70
	Total Project Costs		\$13,702,369.25		\$2,675,059.58		\$1,253,820.26		\$228,760.54		\$2,164,396.87		\$3,015,354.65		\$23,039,761.15
	Percentage Breakdown (Cost)		59.47%		11.61%		5.44%		0.99%		9.39%		13.09%		100.00%
	Total HUB Participation								0.99%		9.39%		13.09%		23.47%

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Prime Provider Name: Stantec Consulting Services, Inc.

	\$ 218.65	\$ 175.21	\$ 139.94	\$ 122.44	\$ 96.21	\$ 107.87	\$ 88.92	\$ 93.29	\$ 78.71	\$ 67.05		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Engineer Tech	Senior CADD Operator	CADD Operator	Admin / Clerical	Total Cost	
110	Route and Design Studies (FC 110)											
110.1	Data Collection and Field Reconnaissance											
110.1.1	Collection of data, reports and maps											
110.1.2	Documents for existing and proposed development along proposed route from local municipalities											
110.1.3	Utility plans and documents from appropriate municipalities and agencies.											
110.1.4	Flood plain information and studies from FEMA, USACE, and other governmental agencies											
110.1.5	Conduct field reconnaissance and collect data											
110.2	Design Criteria											
	Develop the roadway design criteria											
110.3	Preliminary Cost Estimate											
	Develop preliminary cost estimate											
110.4	Design Concept Conference (DCC)											
	Complete State's Design Summary Report (DCR)											
	Plan, attend and document the Design Concept Conference (DCC)											
	Subtotal Hours:	110	140	172	204	192	164	88	132	124	88	\$ 169,591.02
	Subtotal Labor Cost:	\$ 24,051.50	\$ 24,529.40	\$ 24,069.68	\$ 24,977.76	\$ 18,472.32	\$ 17,690.68	\$ 7,824.96	\$ 12,314.28	\$ 9,760.04	\$ 5,900.40	\$ 169,591.02

**ATTACHMENT E - FEE SCHEDULE
SPECIFIED RATE PAYMENT BASIS**

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Prime Provider Name: Stantec Consulting Services, Inc.

	\$ 218.65	\$ 175.21	\$ 139.94	\$ 122.44	\$ 96.21	\$ 93.29	\$ 78.71		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior CADD Operator	CADD Operator	Total Hours	Total Cost
Right-of-Way (FC 130)									
Access Management	80	120	80	80	200	80	80	720	\$ 92,509.60
Subtotal Hours:	80	120	80	80	200	80	80	720	\$ 92,509.60
Subtotal Labor Cost:	\$ 17,492.00	\$ 21,025.20	\$ 11,195.20	\$ 9,795.20	\$ 19,242.00	\$ 7,463.20	\$ 6,296.80		\$ 92,509.60

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Prime Provider Name: Stantec Consulting Services, Inc.

	\$ 218.65	\$ 175.21	\$ 139.94	\$ 122.44	\$ 96.21	\$ 107.87	\$ 88.92	\$ 93.29	\$ 78.71	\$ 67.05		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Engineer Tech	Senior CADD Operator	CADD Operator	Admin / Clerical	Total Hours	Total Cost
Roadway Design (FC 160)												
Geometric design												
Horizontal alignment design	120	1080	1080	1080	1080	320	160	320	480	80	5800	\$ 724,485.20
Vertical alignment design	80	320	320	320	480	320	120	480	480	40	2960	\$ 334,132.40
Super elevation	80	320	320	320	480	160	40	80	160	40	2000	\$ 247,256.40
Cross Section design (GEOPAK)	80	1040	1040	1040	480	1040	480	480	240	40	5960	\$ 739,984.40
Pavement design	40	40	20	20	40	20	20	80	80	40	400	\$ 45,228.20
Miscellaneous details											0	
Intersection and Interchange design	40	320	320	480	480			160	320		2120	\$ 254,659.60
Bicycle/pedestrian element design	40	120	240					80	80		560	\$ 77,116.80
Roadway plan & profile sheets	80	400	400	400	800	1040	1040	2080	2080	160	8480	\$ 842,645.60
Typical section											0	
Provide width of travel lanes, shoulders, outer separations, border widths, curb offsets, managed lanes and ROW	80	200	200	160	80	160	200	480	480	40	2080	\$ 228,094.40
Include PGL, centerline pavement design, longitudinal joints, side slopes, sodding/seeding limits, concrete traffic barriers and sidewalks	80	200	200	160	80	160	200	480	480	40	2080	\$ 228,094.40
Design exceptions	40	80	80	40	40	40	40	80	40	40	520	\$ 63,869.20
Quantity summaries and estimate											0	
Prepare quantity sheets	320	400	400	800	480	160	80	80	80	40	2840	\$ 380,975.60
Load data into DCIS	400	240									640	\$ 129,510.40
Standards selection	40	80	40	20	20	40	40	80	80	20	460	\$ 55,706.00
Conduct QC and QA review	120	1040	1040	160	80	160	40	80	160	40	2920	\$ 424,836.00
Subtotal Hours:	1640	5880	5700	5000	4620	3620	2460	5040	5240	620	39820	\$ 4,776,594.60
Subtotal Labor Cost:	\$ 358,586.00	\$ 1,030,234.80	\$ 797,658.00	\$ 612,200.00	\$ 444,490.20	\$ 390,489.40	\$ 218,743.20	\$ 470,181.60	\$ 412,440.40	\$ 41,571.00		\$ 4,776,594.60

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Prime Provider Name: Stantec Consulting Services, Inc.

	\$ 218.65	\$ 175.21	\$ 122.44	\$ 96.21	\$ 67.05		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Design Engineer	EIT	Admin / Clerical		Total Cost
Signing, Pavement Markings, Signalization (Permanent) (FC 162)							
Traffic signal							
Traffic signal warrant studies							
Perform field work to identify existing conditions	8	24	80	80		192	\$ 23,446.24
Prepare traffic signal warrant study to support recommendations	8	24	60	80	16	188	\$ 22,070.24
Traffic signal timing							
Develop and include a timing plan for each signal improvement	24	32	80	120		256	\$ 32,194.72
Confirm power source for all signals	16	32	80			128	\$ 18,900.32
Coordinate with all appropriate utility agencies	16	40	120			176	\$ 25,199.60
Permanent Traffic signal plan (assume 9 diamond interchanges)							
Provide traffic plan with signal layout	32	160	320	480		992	\$ 120,392.00
Provide phase sequence diagrams	8	24	40	120		192	\$ 22,397.04
Provide aerial or underground interconnect details	32	120	320	480		952	\$ 113,383.60
Prepare sign detail sheets	8	24	80	160		272	\$ 31,143.04
Quantity summaries and estimate							
Provide small signs tabulation	8	32	100	120	8	268	\$ 31,681.52
Provide large signs tabulation	8	32	100	120	8	268	\$ 31,681.52
Standards selection	2	8	8	24		42	\$ 5,127.54
Conduct QC and QA reviews on deliverables	32	60	160		8	260	\$ 37,636.20
Subtotal Hours:	202	612	1548	1784	40	4186	\$ 515,253.58
Subtotal Labor Cost:	\$ 44,167.30	\$ 107,228.52	\$ 189,537.12	\$ 171,638.64	\$ 2,682.00		\$ 515,253.58

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Prime Provider Name: Stantec Consulting Services, Inc.

	\$	218.65	\$	175.21	\$	139.94	\$	122.44	\$	96.21	\$	107.87	\$	88.92	\$	93.29	\$	78.71	\$	67.05		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Engineer Tech	Senior CADD Operator	CADD Operator	Admin / Clerical	Total Hours	Total Cost										
Miscellaneous (Roadway) (FC 163)																						
Traffic control plan																						
Conceptual plan																						
Phasing																						
Layouts																						
Phasing layout																						
Provide preliminary layout for initial approval and review																						
Prepare circuit wiring diagrams showing for initial review																						
Phasing Typical Sections																						
Phasing Plan Sheets 1:100 Scale																						
Coordinate with the State to determine the location of proposed high-mast, conventional and underpass lighting.																						
Safety committee review																						
Coordinate with the State in schedule a Traffic Control Workshop																						
Design temporary drainage																						
Temporary signing																						
Prepare exhibits for and attend meetings with the public, as requested by the State																						
Obtain additional permanent or temporary easements and Right-of-Entry																						
Delineate areas of wetlands on traffic control plans.																						
Temporary traffic signal (2 intersection 4 phases of construction)																						
Detour layouts, Plan and Profile Sheets																						
Temporary Shoring																						
Quantity summaries and estimate																						
Standards selection																						
Illumination																						
Lighting layout																						
Underpass lighting plan (7 locations)																						
Coordination																						
Power provider																						
Contact the local utility company to confirm electrical power																						
Agencies																						
Verify that proposed illumination work meets the requirements of the National Electrical Code																						
Quantity summaries and estimate																						
Standards selection																						
Agreements (Railroad, etc.) and Layouts																						
Estimates																						
Contract Time Determination																						
Specifications																						
General notes																						
Constructibility Review																						
Conduct QC and QA review																						
Subtotal Hours:																						
Subtotal Labor Cost:																						
\$ 441,235.70 \$ 579,594.68 \$ 569,555.80 \$ 448,130.40 \$ 511,837.20 \$ 86,296.00 \$ 71,136.00 \$ 247,218.50 \$ 272,336.60 \$ 45,594.00 \$ 3,272,934.88																						

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074
County: Denton

Prime Provider Name: Stantec Consulting Services, Inc.

	\$ 218.65	\$ 175.21	\$ 139.94	\$ 122.44	\$ 93.29	\$ 67.05		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	Senior CADD Operator	Admin / Clerical	Total Hours	Total Cost
Managing Contracted or donated PS&E PE Services FC 145 (FC 164)								
Scheduling and control								
Project plan and scheduling								
Prepare project schedule	60	60	60			10	190	\$ 32,698.50
Prepare resource loading curves	60	60	60			10	190	\$ 32,698.50
Prepare safety, quality control and other project plans	60	60	60			10	190	\$ 32,698.50
Prepare risk register and mitigation strategies for major risks	60	60	60	48		10	238	\$ 38,575.62
Prepare cost estimation and controls	60	94	70			10	234	\$ 40,055.04
Policy planning	60	74			44	10	188	\$ 30,859.80
Prepare plan for QA and QC reviews	60	74	80	48	44	10	316	\$ 47,932.12
Progress control								
Maintain project schedule and prepare schedule submittals	60	54	65	48	44	9	280	\$ 42,261.77
Attend regular progress review meeting with the State (Assume 5 Meetings 4-hrs each)	60	54	65	46			225	\$ 37,308.68
Progress report (Assume 84 Months)								
Regular progress report (2.25 hrs each x 84 months)	190	210	210	155	48	9	822	\$ 131,784.57
Invoicing (2.5 hrs each x 84 months)	210	180	220	165	48	8	831	\$ 133,458.02
Coordination								
TxDOT	80	100	100			8	288	\$ 49,543.40
Other agencies	40	60	60		36	8	204	\$ 31,549.84
Public	40	60	60		40	8	208	\$ 31,923.00
Subtotal Hours:	1100	1200	1170	510	304	120	4404	\$ 713,347.36
Subtotal Labor Cost:	\$ 240,515.00	\$ 210,252.00	\$ 163,729.80	\$ 62,444.40	\$ 28,360.16	\$ 8,046.00		\$ 713,347.36

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Prime Provider Name: Stantec Consulting Services, Inc.

	\$ 218.65	\$ 175.21	\$ 139.94	\$ 122.44	\$ 96.21	\$ 93.29	\$ 67.05		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior CADD Operator	Admin / Clerical	Total Hours	Total Cost
Traffic Management Systems (FC 165)									
ITS design									
ITS device 3 DMS, 15 CCTV, 15 MVD, w/ lateral comm link and power	80	120	160	160	360	40	20	940	\$ 120,206.20
ITS infrastruc 15 hub buildings w/ power	80	120	160	160	360	40	20	940	\$ 120,206.20
ITS communicati 70,950 feet, assume 100 scale =~ 80 sheets	80	120	160	320	600	40	20	1340	\$ 162,887.00
Conduct QC and QA review	80	160	80					320	\$ 56,720.80
Subtotal Hours:	320	520	560	640	1320	120	60	3540	\$ 460,020.20
Subtotal Labor Cost:	\$ 69,968.00	\$ 91,109.20	\$ 78,366.40	\$ 78,361.60	\$ 126,997.20	\$ 11,194.80	\$ 4,023.00		\$ 460,020.20

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Prime Provider Name: Stantec Consulting Services, Inc.

	\$ 195.33	\$ 160.34	\$ 122.44	\$ 96.21	\$ 88.92	\$ 93.29	\$ 78.71	\$ 67.05		
BASIS SERVICES Task Descriptions	Senior Structural Engineer	Project Engineer	Design Engineer	EIT	Engineer Tech	Senior CADD Operator	CADD Operator	Admin / Clerical	Total Hours	Total Cost
Bridge Design (FC 170)										
Comparative cost analysis of bridge structures	50	50	50	50	50	30	30	30	340	\$ 40,333.50
Bridge structure design and details										
Bridge layout	170	480	510	470	240	200	200	20	2290	\$ 274,914.20
Typical Sections	80	160	160	160	100	110	110		880	\$ 104,076.80
Construction Sequence	145	290	290	290	180	200	200		1595	\$ 188,635.55
Bore Log Sheets	40	40	100	100	100	60	60		500	\$ 55,303.80
Foundation Layout	160	180	340	340	340	170	170		1700	\$ 193,927.80
Estimated Quantities	120	75	250	200	130	90	90	40	995	\$ 115,038.70
Exhibit A	35	65	100	100	40	20	20	40	420	\$ 48,802.45
Bearing Seat Elevations	85	165	240	140	72	40	40		782	\$ 99,196.39
Substructure										
Abutments	170	320	840	640	340	300	300		2910	\$ 330,771.70
Multi-Col Bents	540	800	1130	810	660	330	330		4600	\$ 565,484.70
SuperStructure										
P/S Units	195	575	640	580	420	240	240		2890	\$ 343,074.65
Girder Layouts	125	250	280	280	280	90	90		1395	\$ 166,100.85
Girder Design (IGND)	55	65	70	90	60	30	30		400	\$ 48,890.15
Steel Girder Unit	35	70	80	80	60	30	30		385	\$ 46,047.55
PS&E Package Review										
30% Plan Submittal	80	85	80	80	80	40	40	40	525	\$ 63,422.90
60% Plan Submittal	60	60	60	60	60	30	30	40	400	\$ 47,636.40
90% Plan Submittal	60	60	60	60	60	30	30	40	400	\$ 47,636.40
95% Plan Submittal	60	60	60	60	60	30	30	40	400	\$ 47,636.40
Final Plan Submittal	60	60	60	60	60	30	30	60	420	\$ 48,977.40
Co-ordination with Bridge Division	60	60	60	60	60	30	30	40	400	\$ 47,636.40
Project Management										
Design Coordination Meetings	500	980						60	1540	\$ 258,821.20
QC_QA	500	980						30	1510	\$ 256,809.70
Miscellaneous Bridge Details	40	90	90	90	50	50	50		460	\$ 54,968.30
Common Bridge Standards	40	90	90	90	50	50	50		460	\$ 54,968.30
Miscellaneous Structures	60	90	90	60	90	60			450	\$ 56,542.80
Subtotal Hours:	3525	6200	5730	4950	3642	2290	2230	480	29047	\$ 3,605,654.99
Subtotal Labor Cost:	\$ 688,538.25	\$ 994,108.00	\$ 701,581.20	\$ 476,239.50	\$ 323,846.64	\$ 213,634.10	\$ 175,523.30	\$ 32,184.00		\$ 3,605,654.99

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Prime Provider Name: Stantec Consulting Services, Inc.

	\$ 229.58	\$ 183.97	\$ 146.93	\$ 128.57	\$ 101.02	\$ 97.96	\$ 82.65	\$ 70.41		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior CADD Operator	CADD Operator	Admin / Clerical	Total Hours	Total Cost
Design Verification/ Changes/ Alter: Construction Phase Services										
Attend Preconstruciton Meeting	4	6	6					4	20	\$ 3,185.36
Attend Partnering Meeting	4	6	6	6					22	\$ 3,675.14
Attend Field Meetings and Site Visits	4	6	6						16	\$ 2,903.72
Assisting Area Engineer with Change Orders	4	4	4	4	4	4	4	4	32	\$ 4,164.36
Review and Approval of Shop Drawings	6	12	12	8	8	4	4	4	58	\$ 8,189.08
Review and Approval of Forming Drawings	4	4	4	4				4	20	\$ 3,037.84
Responding to Requests for Information (RFIs)	4	4	4	4				4	20	\$ 3,037.84
Providing Minor Resdesign	4	4	4	4	4	4	4	4	32	\$ 4,164.36
Answering General Questions	4	4	4	4					16	\$ 2,756.20
Providing Clarification	4	4	4	4					16	\$ 2,756.20
Other project tasks related	4	4	4						12	\$ 2,241.92
Subtotal Hours:	46	58	58	38	16	12	12	24	264	\$ 40,112.02
Subtotal Labor Cost:	\$ 10,560.68	\$ 10,670.26	\$ 8,521.94	\$ 4,885.66	\$ 1,616.32	\$ 1,175.52	\$ 991.80	\$ 1,689.84		\$ 40,112.02

**ATTACHMENT E - FEE SCHEDULE
OTHER DIRECT EXPENSES**

Other Direct Expenses to be charged to: FC110 Route and Design Studies

Prime Provider Name: Stantec Consulting Services, Inc.

OTHER DIRECT EXPENSES	UNIT	UNIT COST	QUANTITY	COST
Mileage	mile	\$ 0.535	5,000	\$ 2,675.00
Rental Car (Includes taxes and fees; Insurance costs will not be reimbursed)	day	\$ 55.00	120	\$ 6,600.00
Rental Car Fuel	per gallon	\$ 4.00	240	\$ 960.00
Air Travel	Rd Trip/person	\$ 700.00	14	\$ 9,800.00
Parking	day	\$ 20.00	40	\$ 800.00
Toll Charges	each	\$ 5.00	28	\$ 140.00
Overnight Mail - oversized box	each	\$ 40.00	50	\$ 2,000.00
Courier Services	each	\$ 32.00	50	\$ 1,600.00
Photocopies B/W (8 1/2" X 11")	each	\$ 0.10	8,000	\$ 800.00
Photocopies B/W (11" X 17")	each	\$ 0.20	100,000	\$ 20,000.00
Photocopies Color (8 1/2" X 11")	each	\$ 0.65	2,000	\$ 1,300.00
Photocopies Color (11" X 17")	each	\$ 1.20	1,000	\$ 1,200.00
Digital Ortho Plotting	per sq. ft.	\$ 1.40	640	\$ 896.00
Plots (B/W on Bond)	per sq. ft.	\$ 0.50	400	\$ 200.00
Plots (Color on Bond)	per sq. ft.	\$ 1.40	200	\$ 280.00
Plots (Color on Photographic Paper)	per sq. ft.	\$ 4.00	100	\$ 400.00
Color Graphics on Foam Board	per sq. ft.	\$ 10.00	50	\$ 500.00
Presentation Boards 30" x 40" Color Mounted	each	\$ 70.00	20	\$ 1,400.00
Report Binding and tabbing	each	\$ 5.00	16	\$ 80.00
CDs	each	\$ 1.00	100	\$ 100.00
4" x 6" Digital Color Print	each	\$ 0.30	200	\$ 60.00
TX Parks & Wildlife Data Request Fees	each	\$ 40.00	4	\$ 160.00
Hazardous Materials Database Search	per mile	\$ 350.00	4	\$ 1,400.00
Court Reporter (Public Hearings & Transcription)	day	\$ 500.00	3	\$ 1,500.00
Translator (English to Spanish, other language as appropriate, or Sign Language) for Public Involvement	event	\$ 500.00	3	\$ 1,500.00
Subtotal Other Direct Expenses:				\$ 56,351.00

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: CH2M Hill, Inc.

		\$ 151.62	\$ 156.80	\$ 123.20	\$ 109.76	\$ 85.12	\$ 100.80	\$ 109.76	\$ 49.28		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Senior Designer	Admin / Clerical	Total Hours	Total Cost	
Drainage (FC 161)											
Review reports provided by TxDOT for concurrence	12	20	40						72	\$ 9,883.44	
Data Collection											
Field inspections and documentation (5-days/4 person)	20	20	40	40	40				160	\$ 18,891.60	
Collect Available Data: GIS, Land Use, Previous Studies, Rainfall	12	16		20			24		72	\$ 9,157.68	
Obtain FIS, FIRM and Model Data	8	8					8		24	\$ 3,345.44	
Survey Coordination and Review	8	16	30						54	\$ 7,417.76	
Coordination with Local FPA, City/County Engineer, and District Maintenance Office	12	24							36	\$ 5,582.64	
Data Collection Report/Documentation		8			32				40	\$ 3,978.24	
Conduct QA/QC	8								8	\$ 1,212.96	
Hydrologic Studies (Bridge and Bridge Class Culverts)											
Delineate Drainage Areas and Determine Hydrologic Parameters	4	36	84	84	60	12	40		320	\$ 36,527.12	
Calculate Discharges	4	110	16	12	35		12		189	\$ 25,439.12	
Evaluate Methodologies and Compare Up to 2 Methods		16	32			12			60	\$ 7,660.80	
Pre/Post Construction Condition Assesments		12	40	36		16			104	\$ 12,373.76	
Analyze Various Discharge Frequencies (including design & 1% AEP)	4	16	12						32	\$ 4,593.68	
Compare and Document Calculated Discharges and FEMA Discharges		24		24					48	\$ 6,397.44	
Prepare Hydrologic Data Sheets	4	54	40	40					138	\$ 18,392.08	
Conduct QA/QC (Preliminary and Final)	60								60	\$ 9,097.20	
Complex Hydraulic Design & Documentation (Bridges, BC Culverts, & FEMA Streams)											
Perform Hydraulic Analysis Using 2D Model (Pond Creek Tributary 1 & 2)	24	465	420	420	381	100			1810	\$ 216,904.80	
Prepare Hydraulic Analyses Using HEC-RAS (Up to 15 HEC-RAS Models)	8	56	180	100	45	60			449	\$ 53,024.16	
Develop Storage-Dishcharge Analysis		45	16		20	16			97	\$ 12,342.40	
Future Condition Evaluation		12		24			16		52	\$ 6,272.00	
Proposed Conditions Analysis - Quantify Discharge and WSEL Impacts	6	36	16						58	\$ 8,525.72	
Evaluate EX/PR ROW 1% AEP Flood Volumes and Provide Mitigation	16	36	24		24	40	16		156	\$ 18,858.56	
Determine Storage Required		45		36			24		105	\$ 13,641.60	
Alternative Evaluation and Cost Determination to Mitigate Impacts	12	60	12		20	12			116	\$ 15,617.84	
Prepare Hydraulic Data Sheets	2	80	160	42			36		320	\$ 41,120.52	
Prepare Culvert Layout Sheets	2	80	54		24	16			176	\$ 23,155.72	
Prepare Hydraulic Reports for Each Bridge/BC Culvert/Zone A & AE (Up to 15 x-ings Prel. & Final)	24	260	200	180	100	60	60	44	928	\$ 112,117.60	
Conduct QA/QC (Preliminary and Final)	60								60	\$ 9,097.20	
Storm Drains											
Delineate Drainage Areas (up to 350 Sheets)	12	260	360	500	390	520	320		2362	\$ 262,555.44	
Calculate Storm Drain Discharges	12	120	190	160	100		120		702	\$ 83,288.24	
Size Inlets, Laterals, Trunk Lines and Outfalls		200	90	140	220	112	120		882	\$ 101,001.60	
Analyze Hydraulic Grade Lines		40	80	100	80	45			345	\$ 38,449.60	
Evaluate Detention/Storage Requirements		45	120	100	45	45	20		375	\$ 43,377.60	
Design Storm Drain Profiles (390 Sheets)	36	1020	1400	1200	1120	1120	600		6496	\$ 743,672.72	

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: CH2M Hill, Inc.

		\$ 151.62	\$ 156.80	\$ 123.20	\$ 109.76	\$ 85.12	\$ 100.80	\$ 109.76	\$ 49.28		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Senior Designer	Admin / Clerical	Total Hours	Total Cost	
Determine & Delineate Trench Protection		36	60	120	96	40	54		406	\$ 44,338.56	
Conduct QA/QC 30/60/95/100	60								60	\$ 9,097.20	
Cross Drainage Structures (15 Non-BC Crossings)											
Determine Drainage Areas for Cross Culverts	6	36		150		120	180		492	\$ 54,871.32	
HY-8 Analysis to Determine Culvert Size (Crossings under ML, SBFR & NBFR)	6	195	105	150	270				726	\$ 83,868.12	
Summary Technical Memorandum	4	60	40	20					124	\$ 17,137.68	
Prepare Culvert Layout Sheets	2	40	60	40	40				182	\$ 21,762.44	
Conduct QA/QC 30/60/95/100	60								60	\$ 9,097.20	
Temporary Drainage Facilities											
Determine Temporary Drainage Structures (based on TCP Layouts)	8	120	72	60	45		48		353	\$ 44,583.84	
Conduct QA/QC 30/60/95/100	40								40	\$ 6,064.80	
Scour Analysis											
Perform Scour Analysis (up to 6 Locations x 3 each)	8	120	60	40					228	\$ 31,811.36	
Provide Scour depths, envelope, countermeasures and Scour Data Sheets	8	80	60	40		60			248	\$ 31,587.36	
Conduct QA/QC (Preliminary and Final)	40								40	\$ 6,064.80	
Plans, Specifications & Estimates (PS&E) Development for Hydraulics											
Provide Drainage Area Computation Sheets	4	8	40	40					92	\$ 11,179.28	
Provide Inlet Computation Sheets	2	6	45	45	45				143	\$ 15,557.64	
Provide Storm Sewer Computation Sheets	2	6	45	45	45				143	\$ 15,557.64	
Provide Summary of Storm Sewer Drainage	4	45	36	36					121	\$ 16,049.04	
Ditch Analysis and Calculations	2	100	96	80	120	80			478	\$ 54,869.64	
Address TxDOT 30% Review Comments	16	32	60	54	24	36			222	\$ 26,434.24	
Address TxDOT 60% Review Comments	16	54	120	96	80	36			402	\$ 46,652.48	
Address TxDOT 95% Review Comments	8	16	36	36	36				132	\$ 15,172.64	
Address TxDOT 100% Review Comments	6	6	12	12	12				48	\$ 5,667.48	
Conduct QA/QC 30/60/95/100	160								160	\$ 24,259.20	
Standards selection	24								24	\$ 3,638.88	
Subtotal Hours:	856	4200	4603	4322	3549	2558	1698	44	21830	\$ 2,578,297.12	
Subtotal Labor Cost:	\$ 129,786.72	\$ 658,560.00	\$ 567,089.60	\$ 474,382.72	\$ 302,090.88	\$ 257,846.40	\$ 186,372.48	\$ 2,168.32		\$ 2,578,297.12	

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: CH2M Hill, Inc.

	\$ 151.62	\$ 156.80	\$ 123.20	\$ 100.80	\$ 49.28		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Senior Project Controller	Admin / Clerical	Total Hours	Total Cost
Project Management and Coordination of Preliminary Design FC 145 (164)							
Scheduling and control							
Project plan and scheduling							
Prepare safety, quality control and other project plans	3	24			17	44	\$ 5,055.82
Prepare risk register and mitigation strategies for major risks	4	24			18	46	\$ 5,256.72
Progress control							
Maintain project schedule and prepare schedule submittals	90			81	170	341	\$ 30,188.20
Attend regular progress review meeting with the State (Assume 5 Meetings 4-hrs each)	20					20	\$ 3,032.40
Progress report (Assume 84 Months)							
Regular progress report (2.25 hrs each x 84 months)	40		40		60	140	\$ 13,949.60
Invoicing (2.5 hrs each x 84 months)	84				126	210	\$ 18,945.36
Coordination							
TxDOT	46					46	\$ 6,974.52
Other agencies	62					62	\$ 9,400.44
Subtotal Hours:	349	48	40	81	391	909	\$ 92,803.06
Subtotal Labor Cost:	\$ 52,915.38	\$ 7,526.40	\$ 4,928.00	\$ 8,164.80	\$ 19,268.48		\$ 92,803.06

**ATTACHMENT E - FEE SCHEDULE
OTHER DIRECT EXPENSES**

Other Direct Expensed to be charged to: FC110 Route and Design Studies

Sub Provider Name: CH2M Hill, Inc.

OTHER DIRECT EXPENSES	UNIT	UNIT COST	QUANTITY	COST
Rental Car (Includes taxes and fees; Insurance costs will not be reimbursed)	day	\$ 55.00	24	\$ 1,320.00
Rental Car Fuel	per gallon	\$ 4.00	60	\$ 240.00
Toll Charges	each	\$ 5.00	24	\$ 120.00
Overnight Mail - oversized box	each	\$ 40.00	4	\$ 160.00
Courier Services	each	\$ 32.00	4	\$ 128.00
Photocopies B/W (8 1/2" X 11")	each	\$ 0.10	500	\$ 50.00
Photocopies B/W (11" X 17")	each	\$ 0.20	500	\$ 100.00
Photocopies Color (8 1/2" X 11")	each	\$ 0.65	60	\$ 39.00
Photocopies Color (11" X 17")	each	\$ 1.20	60	\$ 72.00
Plots (Color on Bond)	square foot	\$ 1.40	36	\$ 50.40
Report Binding	each	\$ 45.00	30	\$ 1,350.00
CDs	each	\$ 1.00	30	\$ 30.00
FEMA FIS Backup Data Request	each	\$ 300.00	1	\$ 300.00
Subtotal Other Direct Expenses:				\$ 3,959.40

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Hicks & Company, Environmental/Archeological Consultants

	\$ 171.61	\$ 110.00	\$ 150.89	\$ 139.15	\$ 102.44	\$ 111.93	\$ 87.00	\$ 77.00		
BASIS SERVICES Task Descriptions	Project Manager	Senior GIS Operator	Environmental Planner IV	Senior Environmental Scientist	Environmental Scientist IV	Senior Environmental Specialist	Environmental Planner III	Environmental Planner I/II	Total Hours	Total Cost
Route and Design Studies										
Data Collection and Field Reconnaissance	16	12	24	40	12	12	40	40	196	\$ 22,385.56
Subtotal Hours:	16	12	24	40	12	12	40	40	196	\$ 22,385.56
Subtotal Labor Cost:	\$ 2,745.76	\$ 1,320.00	\$ 3,621.36	\$ 5,566.00	\$ 1,229.28	\$ 1,343.16	\$ 3,480.00	\$ 3,080.00		\$ 22,385.56

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

	\$ 171.61	\$ 171.61	\$ 105.00	\$ 110.00	\$ 150.89	\$ 139.15	\$ 102.44	\$ 87.00	\$ 90.75	\$ 76.00	\$ 77.00		
BASIS SERVICES Task Descriptions	Project Manager	Senior Environmental Planner	Senior Biologist	Senior GIS Operator	Environmental Planner IV	Senior Environmental Scientist	Environmental Scientist IV	Environmental Planner III	Environmental Specialist	Biologist III	Environmental Planner I/II	Total Hours	Total Cost
Social, Economic and Environmental Studies and Public Involvement (FC 120)													
Informal Meetings	80					60		80	20		80	320	\$ 37,012.80
Environmental Study Review	40							40	20			100	\$ 12,159.40
Environmental Exhibits	52	20	10	10	30	48	60	146		10	20	406	\$ 46,860.22
Cut and Fill Exhibits	40	32				40		60	12	40		224	\$ 27,270.92
Subtotal Hours:	212	52	10	10	30	148	60	326	52	50	100	1050	\$ 123,303.34
Subtotal Labor Cost:	\$ 36,381.32	\$ 8,923.72	\$ 1,050.00	\$ 1,100.00	\$ 4,526.70	\$ 20,594.20	\$ 6,146.40	\$ 28,362.00	\$ 4,719.00	\$ 3,800.00	\$ 7,700.00		\$ 123,303.34

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Hicks & Company, Environmental/Archeological Consultants

	\$ 171.61	\$ 171.61	\$ 105.00	\$ 110.00	\$ 150.89	\$ 102.44	\$ 87.00	\$ 76.00	\$ 77.00		
BASIS SERVICES Task Descriptions	Project Manager	Senior Environmental Planner	Senior Biologist	Senior GIS Operator	Environmental Planner IV	Environmental Scientist IV	Environmental Planner III	Biologist III	Environmental Planner I/II	Total Hours	Total Cost
Roadway Design Controls											
Plan Preparation - Wetlands Information	24	60	30	22	50	100	90	10	20	406	\$ 47,903.74
Subtotal Hours:	24	60	30	22	50	100	90	10	20	406	\$ 47,903.74
Subtotal Labor Cost:	\$ 4,118.64	\$ 10,296.60	\$ 3,150.00	\$ 2,420.00	\$ 7,544.50	\$ 10,244.00	\$ 7,830.00	\$ 760.00	\$ 1,540.00		\$ 47,903.74

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Hicks & Company, Environmental/Archeological Consultants

	\$ 171.61	\$ 139.15	\$ 87.00	\$ 90.75		
BASIS SERVICES Task Descriptions	Project Manager	Senior Environmental Scientist	Environmental Planner III	Environmental Specialist	Total Hours	Total Cost
Project Management and Coordination of Preliminary Design (FC 145)						
Scheduling and control						
Project plan and scheduling						
Prepare project schedule	8	4	8		20	\$ 2,625.48
Prepare safety, quality control and other project plans	8	4	8		20	\$ 2,625.48
Prepare risk register and mitigation strategies for major risks	8	4	8		20	\$ 2,625.48
Policy planning	2	2	2	4	10	\$ 1,158.52
Prepare plan for QA and QC reviews	4	2	8	4	18	\$ 2,023.74
Progress control						
Maintain project schedule and prepare schedule submittals	8		8	4	20	\$ 2,431.88
Attend regular progress review meeting with the State (Assume 5 Meetings 4-hrs each)	16		8	8	32	\$ 4,167.76
Progress report (Assume 84 Months)	8	8	16		32	\$ 3,878.08
Regular progress report (2.25 hrs each x 84 months)	20	8	12	12	52	\$ 6,678.40
Invoicing (2.5 hrs each x 84 months)	20			8	28	\$ 4,158.20
Coordination						
TxDOT	8		8	8	24	\$ 2,794.88
Subtotal Hours:	110	32	86	48	276	\$ 35,167.90
Subtotal Labor Cost:	\$ 18,877.10	\$ 4,452.80	\$ 7,482.00	\$ 4,356.00		\$ 35,167.90

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Lina T. Ramey & Associates, Incorporated

	\$	206.49	\$	177.29	\$	144.54	\$	125.37	\$	100.30	\$	67.85	\$	170.56	\$	135.69	\$	106.20	\$	94.40			
BASIS SERVICES Task Descriptions		Project Manager		Senior Engineer		Project Engineer		Design Engineer		Senior CADD Operator		Admin / Clerical		RPLS - Project Manager		RPLS - Task Leader		Senior Survey Tech (SIT),		Survey Tech	Total Hours	Total Cost	
Right-of-Way (FC 130)																							
Right-of-Way Map												2		10		12		24		4	52	\$ 6,395.98	
Utility Locations and Layouts																							
Coordinate with the State, utility owners or their designee		200		200		100															500	\$ 91,210.00	
Utility Conflict Analysis		80		200		200		100		300											880	\$ 123,512.20	
Subtotal Hours:		280		400		300		100		300		2		10		12		24		4	1432	\$ 221,118.18	
Subtotal Labor Cost:	\$	57,817.20	\$	70,916.00	\$	43,362.00	\$	12,537.00	\$	30,090.00	\$	135.70	\$	1,705.60	\$	1,628.28	\$	2,548.80	\$	377.60		\$ 221,118.18	

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE & UNIT COST PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Lina T. Ramey & Associates, Incorporated

BASIS SERVICES Task Descriptions	Specified Rate Payment Basis							Unit Cost Payment Basis		Total Labor Hours	Total Unit Cost Hours	Total Cost
	Admin / Clerical	RPLS - Project Manager	RPLS - Task Leader	Senior Survey Tech (SIT),	Survey Tech	Project Coordinator - Mobile LIDAR	Mobile LIDAR Processing Technician	2- person survey crew	3- person survey crew			
	\$ 67.85	\$ 170.56	\$ 135.69	\$ 106.20	\$ 94.40	\$ 153.39	\$ 112.10	\$ 160.00	\$ 185.00			
Field Surveying and Photogrammetry (FC 150)												
Design surveys												
Verify and collect data to create cross-sections, digital terrain models, and obscured area as needed.	2	12	48	80	80			80	60	222	140	\$ 48,643.54
Locate and verify existing visible utilities	2	10	30	40	5			80		87	80	\$ 23,432.00
Locate and verify topographical features and existing improvements.	2	8	20	40	10			60		80	60	\$ 19,005.98
Verify details of existing bridge structures	2	8	8	10	4	20	40	30	30	92	60	\$ 21,927.10
Verify details of existing drainage features, (e.g., culverts, manholes, etc.).	2	6	5	20	5			40		38	40	\$ 10,833.51
Locate wetlands	2	4	30	60	10			60		106	60	\$ 21,804.64
Establish or verify additional control or verify existing control points. Horizontal and Vertical control ties must be made and tabulated, to other control points in the vicinity, which were established by other sources such as, the National Geodetic Survey (NGS), and the Federal Emergency Management Agency (FEMA), and any other local entities as directed by the State.	2	10	20	30	10			40		72	40	\$ 15,085.10
Locate apparent existing right-of-ways	2	12	120	240	240			240	160	614	400	\$ 134,609.22
Locate boreholes up to 400	2	10	40	80	40			80		172	80	\$ 32,340.90
Additional channel section for hydrographic surveys as needed	2	16	36	66	12			80	30	132	110	\$ 34,241.50
Verify and Update existing control data and prepare survey control data sheets, as directed by the State for inclusion into a construction plan set.	2	10	24	50	20			40	10	106	50	\$ 20,545.86
Subtotal Hours:	22	106	381	716	436	20	40	830	290	1721	1120	\$ 382,469.35
Subtotal Labor & Unit Cost:	\$ 1,492.70	\$ 18,079.36	\$ 51,697.89	\$ 76,039.20	\$ 41,158.40	\$ 3,067.80	\$ 4,484.00	\$ 132,800.00	\$ 53,650.00			\$ 382,469.35

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

SUB Provider Name: Lina T. Ramey & Associates, Incorporated

	\$ 206.49	\$ 177.29	\$ 144.54	\$ 125.37	\$ 97.35	\$ 100.30	\$ 82.60		
BASIS SERVICES Task Descriptions	Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior CADD Operator	CADD Operator	Total Hours	Total Cost
Signing, Pavement Markings, Signalization (Permanent) (FC 162)									
Signing									
Large sign									
Prepare sign detail sheets (59 COSS, 60 large sign panels plus SOLS)	120	80	80	160	160	120	160	880	\$ 111,412.40
Designate the shields to be attached to the guide signs	60	40	40	80	80	60	80	440	\$ 55,706.20
Illustrate and number the proposed signs on plan sheets	60	40	40	80	80	60	80	440	\$ 55,706.20
Small sign (15.12 miles, assume 102 sheets plus SOSS, frontage road intersections)									
Prepare sign detail sheets	80	60	60	120	160	40	120	640	\$ 80,373.40
Designate the shields to be attached to the guide signs	40	30	30	60	80	20	60	320	\$ 40,186.70
Illustrate and number the proposed signs on plan sheets	40	30	30	60	80	20	60	320	\$ 40,186.70
Overhead sign bridge design - (COSS DESIGN - 59 sheets)	80	120	160	240	320	240	320	1480	\$ 172,665.20
Pavement marking and delineation layout (15.12 miles, 102 sheets, qnty, FR inter.)	120	240	480	240	480	480	960	3000	\$ 340,964.40
Quantity summaries and estimate									
Provide small signs tabulation	40	100	160			60		360	\$ 55,133.00
Provide large signs tabulation	40	100	160			60		360	\$ 55,133.00
Standards selection	16	40	24	32				112	\$ 17,876.24
Conduct QC and QA reviews on deliverables	120	400	320					840	\$ 141,947.60
Subtotal Hours:	816	1280	1584	1072	1440	1160	1840	9192	\$ 1,167,291.04
Subtotal Labor Cost:	\$ 168,495.84	\$ 226,931.20	\$ 228,951.36	\$ 134,396.64	\$ 140,184.00	\$ 116,348.00	\$ 151,984.00		\$ 1,167,291.04

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Lina T. Ramey & Associates, Incorporated

	\$ 206.49	\$ 177.29	\$ 144.54	\$ 125.37	\$ 97.35	\$ 100.30	\$ 82.60		
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Project Engineer	Design Engineer	EIT	Senior CADD Operator	CADD Operator	Total Hours	Total Cost
Miscellaneous (Roadway) (FC 163)									
Storm water pollution prevention									
Plans, Notes and Layouts	120	480	1960	720	960	1320	1840	7400	\$ 861,278.80
Standard Details	20	40	80	80	80	40	80	420	\$ 51,222.20
Summary of Quantities	40	40	80	40	80	40		320	\$ 43,729.20
PS&E preparation									
General notes	16	24	24					64	\$ 11,027.76
Specs	16	24	24					64	\$ 11,027.76
Estimates	16	24	24					64	\$ 11,027.76
Conduct QC and QA review	160	160	160					480	\$ 84,531.20
Subtotal Hours:	388	792	2352	840	1120	1400	1920	8812	\$ 1,073,844.68
Subtotal Labor Cost:	\$ 80,118.12	\$ 140,413.68	\$ 339,958.08	\$ 105,310.80	\$ 109,032.00	\$ 140,420.00	\$ 158,592.00		\$ 1,073,844.68

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Lina T. Ramey & Associates, Incorporated

	\$ 206.49	\$ 177.29	\$ 144.54	\$ 125.37	\$ 67.85		
BASIS SERVICES Task Descriptions	Senior Project Manager	Senior Engineer	Project Engineer	Design Engineer	Admin / Clerical	Total Hours	Total Cost
Project Management and Coordination of Preliminary Design FC 164 (FC 145)							
Scheduling and control							
Prepare plan for QA and QC reviews	20	40	40	40		140	\$ 22,017.80
Progress control							
Maintain project schedule and prepare schedule submittals							
1 Prepare and submit 30% submittal	20	30	20		20	90	\$ 13,696.30
2 Prepare and submit 60% submittal	20	30	20		20	90	\$ 13,696.30
3 Prepare and submit 95% submittal	20	30	20		20	90	\$ 13,696.30
4 Prepare and submit final submittal	20	30	20		20	90	\$ 13,696.30
Progress report (Assume 84 Months)							
Regular progress report (2.25 hrs each x 84 months)	40	50	80		20	190	\$ 30,044.30
Invoicing (2.5 hrs each x 84 months)	40	60	90		20	210	\$ 33,262.60
Subtotal Hours:	180	270	290	40	120	900	\$ 140,109.90
Subtotal Labor Cost:	\$ 37,168.20	\$ 47,868.30	\$ 41,916.60	\$ 5,014.80	\$ 8,142.00		\$ 140,109.90

**ATTACHMENT E - FEE SCHEDULE
OTHER DIRECT EXPENSES**

Other Direct Expensed to be charged to: FC110 Route and Design Studies

Sub Provider Name: Lina T. Ramey & Associates, Incorporated

<u>OTHER DIRECT EXPENSES</u>	<u>UNIT</u>	<u>UNIT COST</u>	<u>QUANTITY</u>	<u>COST</u>
Mileage	mile	\$ 0.535	19,900	\$ 10,646.50
Toll Charges	each	\$ 5.00	193	\$ 965.00
Standard Postage	letter	\$ 0.49	100	\$ 49.00
Certified Letter Return Receipt	each	\$ 6.47	100	\$ 647.00
Courier Services	each	\$ 32.00	12	\$ 384.00
Photocopies B/W (8 1/2" X 11")	each	\$ 0.10	1,000	\$ 100.00
Photocopies B/W (11" X 17")	each	\$ 0.20	20,000	\$ 4,000.00
Plots (Color on Bond)	square foot	\$ 1.40	250	\$ 350.00
Railroad - Flagger (Service provided by RR)	hour	\$ 60.00	20	\$ 1,200.00
Railroad - Permit	each	\$ 1,500.00	1	\$ 1,500.00
Railroad - Insurance in addition to STD Minimum Required (Minimum coverage of \$1 Million required by RR.)	each	\$ 2,500.00	1	\$ 2,500.00
Railroad - Safety Training (If required - Heavy Rail Safety Training Certificate, includes classroom training and employee certification card.)	per person	\$ 300.00	4	\$ 1,200.00
Type II ROW Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (includes crew time, equipment, materials, rentals, & labor). Brass Marker supplied by TxDOT	each	\$ 65.00	4	\$ 260.00
Type II ROW Monument - Poured 2-3 Feet (includes One Call, crew time, equipment, materials, rentals, labor). Brass Marker supplied by TxDOT	each	\$ 220.00	6	\$ 1,320.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use)	hour	\$ 90.00	60	\$ 5,400.00
Subtotal Other Direct Expenses:				\$ 30,521.50

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: MV Engineering, Inc.

	\$	181.52	\$	153.65	\$	122.72	\$	103.54	\$	84.37	\$	89.48	\$	74.14	\$	81.81	\$	69.03			
BASIS SERVICES Task Descriptions		Project Manager		Senior Engineer		Project Engineer		Design Engineer		EIT		Senior Engineer Tech		Engineer Tech		Senior CADD Operator		CADD Operator	Total Hours	Total Cost	
Roadway Design (FC 160)																					
Miscellaneous details																					
Removal layouts		120		400		400		480		480		320		80		320		400	3000	\$ 310,883.20	
Quantity summaries and estimate																					
Prepare quantity sheets		100		80		80										20		40	320	\$ 44,659.00	
Conduct QC and QA review		60		80		80		80											300	\$ 41,284.00	
Subtotal Hours:		280		560		560		560		480		320		80		340		440	3620	\$ 396,826.20	
Subtotal Labor Cost:	\$	50,825.60	\$	86,044.00	\$	68,723.20	\$	57,982.40	\$	40,497.60	\$	28,633.60	\$	5,931.20	\$	27,815.40	\$	30,373.20		\$ 396,826.20	

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: MV Engineering, Inc.

	\$ 163.62	\$ 122.72	\$ 103.54	\$ 84.37	\$ 89.48	\$ 74.14	\$ 81.81	\$ 69.03	\$ 56.25		
BASIS SERVICES Task Descriptions	Senior Structural Engineer	Project Engineer	Design Engineer	EIT	Senior Engineer Tech	Engineer Tech	Senior CADD Operator	CADD Operator	Admin/ Clerical	Total Hours	Total Cost
Miscellaneous (Roadway) (FC 163)											
Retaining Wall											
Profile and alignment	360	480	360	224	120	120	360	360	60	2444	\$ 251,293.88
Layouts	448	580	448	380	100	64	284	272	48	2624	\$ 281,329.04
Special details	124	168	80				140	240		752	\$ 77,209.64
Quantity summaries and estimate	172	388	96	168	32		100	84		1040	\$ 116,714.88
Standards selection	28	72								100	\$ 13,417.20
Conduct QC and QA review	120	200								320	\$ 44,178.40
Subtotal Hours:	1252	1888	984	772	252	184	884	956	108	7280	\$ 784,143.04
Subtotal Labor Cost:	\$ 204,852.24	\$ 231,695.36	\$ 101,883.36	\$ 65,133.64	\$ 22,548.96	\$ 13,641.76	\$ 72,320.04	\$ 65,992.68	\$ 6,075.00		\$ 784,143.04

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: MV Engineering, Inc.

	\$ 163.62	\$ 122.72	\$ 103.54	\$ 56.25		
BASIS SERVICES Task Descriptions	Senior Structural Engineer	Project Engineer	Design Engineer	Admin / Clerical	Total Hours	Total Cost
Project Management and Coordination of Preliminary Design FC 164 (FC 145)						
Scheduling and control						
Project plan and scheduling						
Prepare project schedule	8				8	\$ 1,308.96
Prepare safety, quality control and other project plans	8				8	\$ 1,308.96
Prepare cost estimation and controls	32	64	96	40	232	\$ 25,279.76
Prepare plan for QA and QC reviews	8	20	28		56	\$ 6,662.48
Progress control						
Attend regular progress review meeting with the State (Assume 5 Meetings 4-hrs each)	20				20	\$ 3,272.40
Progress report (Assume 84 Months)						
Regular progress report (2.25 hrs each x 84 months)	84				84	\$ 13,744.08
Invoicing (2.5 hrs each x 84 months)	126				126	\$ 20,616.12
Coordination						
TxDOT	16	16			32	\$ 4,581.44
Other agencies	16	16			32	\$ 4,581.44
Subtotal Hours:	318	116	124	40	598	\$ 81,355.64
Subtotal Labor Cost:	\$ 52,031.16	\$ 14,235.52	\$ 12,838.96	\$ 2,250.00		\$ 81,355.64

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: MV Engineering, Inc.

	\$ 163.62	\$ 122.72	\$ 103.54	\$ 84.37	\$ 74.14	\$ 81.81	\$ 69.03		
BASIS SERVICES Task Descriptions	Senior Structural Engineer	Project Engineer	Design Engineer	EIT	Engineer Tech	Senior CADD Operator	CADD Operator	Total Hours	Total Cost
Bridge Design (FC 170)									
Bridge structure design and details									
Foundation Layout	50	50	60	60	60	30	30	340	\$ 34,565.20
Estimated Quantities	40	25	75	60	40	25	25	290	\$ 29,177.10
Bearing Seat Elevations	45	60	96	48	25	15	15	304	\$ 32,831.80
Substructure									
Abutments	92	165	360	260	165	140	140	1322	\$ 127,863.14
Multi-Col Bents	185	255	320	230	205	115	115	1425	\$ 146,646.50
SuperStructure									
P/S Units	90	260	260	235	170	110	110	1235	\$ 122,576.55
Girder Layouts	70	115	100	115	100	45	45	590	\$ 59,824.55
Girder Design (IGND)	60	70	80	80	80	80	80	530	\$ 51,438.80
PS&E Package Review									
60% Plan Submittal	50	60	50	40	30	30	30	290	\$ 30,845.40
90% Plan Submittal	50	60	50	40	30	30	30	290	\$ 30,845.40
95% Plan Submittal	50	60	50	40	30	30	30	290	\$ 30,845.40
Final Plan Submittal	50	60	50	40	30	30	30	290	\$ 30,845.40
Co-ordination with Bridge Division	50	60	50	40	30	30	30	290	\$ 30,845.40
Project Management									
Design Coordination Meetings	150	270						420	\$ 57,677.40
QC_QA	150	270						420	\$ 57,677.40
Miscellaneous Bridge Details and Common Standards									
Miscellaneous Bridge Details	15	25	25	25	25	25	15	155	\$ 15,154.25
Common Bridge Standards	15	20	20	20	20	15	15	125	\$ 12,412.30
Subtotal Hours:	1212	1885	1646	1333	1040	750	740	8606	\$ 902,071.99
Subtotal Labor Cost:	\$ 198,307.44	\$ 231,327.20	\$ 170,426.84	\$ 112,465.21	\$ 77,105.60	\$ 61,357.50	\$ 51,082.20		\$ 902,071.99

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Terracon Consultants, Inc.

\$ 210.65	\$ 199.48	\$ 185.12	\$ 156.39	\$ 118.51	\$ 108.52	\$ 76.60
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BASIS SERVICES Task Descriptions	Project Manager	Quality Manager	Senior Engineer	Project Engineer	Design Engineer	Senior Engineer Tech	CADD Operator	Total Hours	Total Cost
Route and Design Studies (FC 110)									
Geotechnical Borings and Investigations									
Borings									
Proposed Boring Location Plan	8	4	24					36	\$ 6,926.00
Staking Borings and Clearing Utilities						180		180	\$ 19,533.60
Field Supervision			48			450		498	\$ 57,719.76
Retaining Walls at US-77, Ganzer, Milam, Moore's Branch, FM-156, Moore's Tributary, Rector Clear Creek Relief, FM-455, Blez, Lois, View, Chishm, FM-3002									
Laboratory and Boring Data Analysis			16	40	200		40	296	\$ 35,983.52
Subsurface Profile Plots			8	40	80		80	208	\$ 23,345.36
Bearing, Sliding, Overturning Analyses		32	16	40	320			408	\$ 53,524.08
Global Stability Analyses		32	20	40	480			572	\$ 73,226.16
Settlement Analyses		32	20	40	480			572	\$ 73,226.16
Bridge, COSS Sign, and ITS CCTV Pole Foundations									
Drilled Shaft Capacity Curves		16	32	66	330			444	\$ 58,545.56
L-PILE Parameters		16	32	66	198			312	\$ 42,902.24
Geotechnical Report									
Draft Geotechnical Report	8	16	24	80	40			168	\$ 26,571.36
Final Geotechnical Report	4		8	24			40	76	\$ 9,140.92
Preparation of DD Sheet for MSE Retaining Walls				16			8	24	\$ 3,115.04
Geotechnical Task Management									
Task Management	80							80	\$ 16,852.00
Meetings	32							32	\$ 6,740.80
Subtotal Hours:	132	148	248	452	2128	630	168	3906	\$ 507,352.56
Subtotal Labor Cost:	\$ 27,805.80	\$ 29,523.04	\$ 45,909.76	\$ 70,688.28	\$ 252,189.28	\$ 68,367.60	\$ 12,868.80		\$ 507,352.56

ATTACHMENT E - FEE SCHEDULE SPECIFIED RATE PAYMENT BASIS

Highway: IH 35
CSJ: 0195-02-074 / 0195-01-116
County: Denton / Cooke

Sub Provider Name: Terracon Consultants, Inc.

	\$ 221.18	\$ 209.45	\$ 194.37	\$ 164.21	\$ 66.19		
BASIS SERVICES Task Descriptions	Project Manager	Quality Manager	Senior Engineer	Project Engineer	Admin/Clerical	Total Hours	Total Cost
Construction Phase Services							
Review and approval of shop drawings	4	6	7	8	4	29	\$ 5,080.45
Responding to requests for information (RFIs)	4	6	7	8	4	29	\$ 5,080.45
Subtotal Hours:	8	12	14	16	8	58	\$ 10,160.90
Subtotal Labor Cost:	\$ 1,769.44	\$ 2,513.40	\$ 2,721.18	\$ 2,627.36	\$ 529.52		\$ 10,160.90

**ATTACHMENT E - FEE SCHEDULE
UNIT COST PAYMENT BASIS**

Sub Provider Name: Terracon Consultants, Inc.

<u>UNIT COST (FC 110)</u>	<u>TEST CODE</u>	<u>UNIT</u>	<u>UNIT COST</u>	<u>QUANTITY</u>	<u>COST</u>
Soil Boring/Rock Coring with TCP (< 60 ft.)	N/A	LF	\$ 34.00	12,895	\$ 438,430.00
Mobilization of Drilling Rig (Trips less than 100 miles from office to site)	N/A	mile	\$ 4.35	400	\$ 1,740.00
Determining Moisture Content in Soil Materials	Tex-111-E	each	\$ 8.00	200	\$ 1,600.00
Determining Liquid Limits of Soils	Tex-104-E	each	\$ 30.00	200	\$ 6,000.00
Determining Plastic Limit of Soils	Tex-105-E	each	\$ 30.00	200	\$ 6,000.00
Calculating the Plasticity Index of Soils	Tex-106-E	each	\$ 5.00	200	\$ 1,000.00
Determining Sulfate Content in Soils - Colorimetric Method	Tex-145-E	each	\$ 58.00	175	\$ 10,150.00
Particle Size Analysis of Soils	Tex-110-E	each	\$ 50.00	12	\$ 600.00
Determining the Amount of Material in Soils Finer than the 75 micrometer (No. 200) Sieve	Tex-111-E	each	\$ 45.00	165	\$ 7,425.00
One Dimensional Consolidation Properties of Soil	ASTM D2435	each	\$ 330.00	20	\$ 6,600.00
Consolidated Undrained Triaxial Compression Test for Undisturbed Soils (CU) or ASTM D4767 (single-stage) (includes moisture, PI, -200 and unit wieght)	TEX-131-E	each	\$ 400.00	36	\$ 14,400.00
Unconfined Compressive Strength (Soil)	ASTM D2166	each	\$ 48.50	700	\$ 33,950.00
Unconfined Compressive Strength (Rock)	ASTM D2938	each	\$ 66.00	200	\$ 13,200.00
Direct Shear Test of Soils Under Consolidated Drained Conditions	ASTM D3080	set of 3	\$ 950.00	8	\$ 7,600.00
Subtotal Unit Cost Expense:					\$ 548,695.00

ATTACHMENT E - FEE SCHEDULE OTHER DIRECT EXPENSES

Other Direct Expensed to be charged to: FC110 Route and Design Studies

Sub Provider Name: Terracon Consultants, Inc.

<u>OTHER DIRECT EXPENSES</u>	<u>UNIT</u>	<u>UNIT COST</u>	<u>QUANTITY</u>	<u>COST</u>
Mileage	mile	\$ 0.535	1,080	\$ 577.80
Photocopies B/W (8 1/2" X 11")	each	\$ 0.10	600	\$ 60.00
Photocopies B/W (11" X 17")	each	\$ 0.20	50	\$ 10.00
Photocopies Color (8 1/2" X 11")	each	\$ 0.65	1,200	\$ 780.00
Photocopies Color (11" X 17")	each	\$ 1.20	20	\$ 24.00
Railroad - Flagger (Service provided by RR)	hour	\$ 60.00	36	\$ 2,160.00
Railroad - Insurance in addition to STD Minimum Required (Minimum coverage of \$1 Million required by RR.)	each	\$ 2,500.00	1	\$ 2,500.00
Railroad - Permit	each	\$ 1,500.00	1	\$ 1,500.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Small Project (Includes labor, equipment and fuel)	day	\$ 1,500.00	96	\$ 144,000.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Large Project (Includes labor, equipment and fuel)	day	\$ 3,000.00	12	\$ 36,000.00
Subtotal Other Direct Expenses:				\$ 187,611.80

ATTACHMENT F - WORK SCHEDULE

Contract No. 18-7SDP5012
PS No. 6855

CSJ: 0195-02-074
IH 35: From US 77 to North of FM 3002
Denton County

ID	Task Name	Duration	Start	Finish	2018				2019				2020				2021				2022				2023				2024				2025
					3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
1	Project Duration	1826 days	Mon 10/2/17	Mon 9/30/24																													
2	Start to Work	0 days	Mon 10/2/17	Mon 10/2/17	◆ 10/2																												
3	Kick-off Meeting	0 days	Wed 10/18/17	Wed 10/18/17	◆ 10/18																												
4	Schematic Review	40 days	Thu 10/19/17	Wed 12/13/17																													
5	Approved Schematic (by others)	0 days	Sun 12/31/17	Sun 12/31/17	◆ 12/31																												
6	Design Concept Conference	0 days	Wed 1/31/18	Wed 1/31/18	◆ 1/31																												
7	Data Collection & Site Investigations	40 days	Wed 1/31/18	Tue 3/27/18																													
8	Design Surveys	50 days	Wed 1/31/18	Tue 4/10/18																													
9	Review Existing Data	10 days	Wed 1/31/18	Tue 2/13/18																													
10	Establish Horiz. & Vert. Control	10 days	Wed 2/14/18	Tue 2/27/18																													
11	Supplemental Survey	30 days	Wed 2/28/18	Tue 4/10/18																													
12	Prior to 30% PS&E	160 days	Wed 1/31/18	Tue 9/11/18																													
13	Prior to 30% Design	120 days	Wed 1/31/18	Tue 7/17/18																													
14	Geotechnical Investigation & Analysis	80 days	Wed 1/31/18	Tue 5/22/18																													
15	Retaining Wall Layouts	120 days	Wed 1/31/18	Tue 7/17/18																													
16	Bridge Layouts	120 days	Wed 1/31/18	Tue 7/17/18																													
17	Bridge Class Culvert Layouts	120 days	Wed 1/31/18	Tue 7/17/18																													
18	Hydraulic Report	120 days	Wed 1/31/18	Tue 7/17/18																													
19	Railroad Exhibit A	120 days	Wed 1/31/18	Tue 7/17/18																													
20	TCP Concept Layout	120 days	Wed 1/31/18	Tue 7/17/18																													
21	Illumination & Large Sign Concept Layout	120 days	Wed 1/31/18	Tue 7/17/18																													
22	Prior to 30% Submittal	0 days	Tue 7/17/18	Tue 7/17/18	◆ 7/17																												
23	Prior to 30% TxDOT Review	40 days	Wed 7/18/18	Tue 9/11/18																													
24	30% PS&E	110 days	Wed 9/12/18	Tue 2/12/19																													
25	30% Design	70 days	Wed 9/12/18	Tue 12/18/18																													
26	30% Submittal	0 days	Tue 12/18/18	Tue 12/18/18	30% Submittal ◆ 12/18																												
27	30% TxDOT Review	40 days	Wed 12/19/18	Tue 2/12/19																													
28	60% PS&E	200 days	Wed 2/13/19	Tue 11/19/19																													
29	60% Design	140 days	Wed 2/13/19	Tue 8/27/19																													
30	60% Submittal	0 days	Tue 8/27/19	Tue 8/27/19	60% Submittal ◆ 8/27																												
31	60% TxDOT Review	60 days	Wed 8/28/19	Tue 11/19/19																													
32	95% PS&E	110 days	Wed 11/20/19	Tue 4/21/20																													
33	95% Design	80 days	Wed 11/20/19	Tue 3/10/20																													
34	95% Submittal	0 days	Tue 3/10/20	Tue 3/10/20	95% Submittal ◆ 3/10																												
35	95% TxDOT Review	30 days	Wed 3/11/20	Tue 4/21/20																													
36	95% PS&E Resubmittal	70 days	Wed 4/22/20	Tue 7/28/20																													
37	Address 95% Comments	50 days	Wed 4/22/20	Tue 6/30/20																													
38	95% Resubmittal	0 days	Tue 6/30/20	Tue 6/30/20	95% Resubmittal ◆ 6/30																												
39	95% Resubmittal TxDOT Review	20 days	Wed 7/1/20	Tue 7/28/20																													
40	100% PS&E	106 days	Wed 7/29/20	Wed 12/23/20																													
41	100% Design	45 days	Wed 7/29/20	Tue 9/29/20																													
42	100% Submittal (Ready to Let)	0 days	Tue 9/29/20	Tue 9/29/20	100% Submittal (Ready to Let) ◆ 9/29																												
43	Letting Support	60 days	Thu 10/1/20	Wed 12/23/20																													
44	Construction Phase Support Services	983 days	Thu 12/24/20	Mon 9/30/24																													
45	Contract Termination	0 days	Mon 9/30/24	Mon 9/30/24	◆ 9/30																												

ATTACHMENT G

Computer Graphics Files for Document and Information Exchange

I. Project File Submission.

- a. Engineer shall submit project files through:
 1. Texas Department of Transportation (TxDOT) Dropbox Service, if possible, which is accessible at <https://ftp.dot.state.tx.us/dropbox>, or
 2. If the TxDOT Dropbox Service cannot be used, Engineer shall use one or more of the following media formatted: compact-discs (CD), digital versatile discs (DVD), universal serial bus (USB) flash drive, or any methods as directed by State.
- b. Engineer shall make certain all files and media submitted to State are virus-free.
- c. State will reject submissions that are not accompanied by a complete and accurate TxDOT Media Information Form.

II. General Project File Requirements.

- a. Compatibility with State Hardware and Software.
 1. General Requirements
 - A. Unless directed in writing by State's project manager, Engineer shall use only the software listed in Table 1, Approved Software, in performing the work that is the subject of this agreement.
 - B. Engineer shall make certain that all media, files and data formats are completely compatible with State's information resources. Engineer is responsible for requesting any additional information it deems necessary to ensure compatibility.

Table 1. Approved Software	
Software Type	Approved Software
Word Processing	Microsoft Word 2010
Spreadsheet	Microsoft Excel 2010
Database	Microsoft Access 2010
Computer-Aided Design and Drafting (CADD)	Bentley MicroStation V8i Bentley GEOPAK Suite V8i
Operating System	Microsoft Windows 7

2. Graphics File Requirements
 - A. Along with each graphics file submitted, Engineer shall submit plots generated from that file.
 - B. Using State's hardware and software, each graphics file must display as plotted and subsequently plot as displayed without conversion, translation, or additional manipulation.
 - C. Engineer shall not invoice State for any conversion or translation expenses incurred by the Engineer to achieve compatibility with State hardware and software.

III. MicroStation Graphics Files Requirements

- a. State will furnish, on its choice of media, the following:
 1. TxDOT File Examples
 2. TxDOT Plot File Examples
 3. Applicable TxDOT CAD File Naming Convention Guideline
- b. MicroStation Design File (DGN File) Characteristics

1. Unless authorized in writing by State, Engineer shall provide DGN files consistent with TxDOT standards including level use, font designations, line weight, and color criteria shown on the Planimetric / DTM table.
 2. Engineer shall promptly notify State's project manager of any compatibility problems that arise
- c. Project Design File Criteria.
1. Planimetric File.
 - A. Generally, the planimetric file is a product of stereo digitized aerial photography.
 - B. The planimetric file contains existing topographic and geographic features within the limits of the projected contract.
 - C. The planimetric file serves as a foundation for referencing and the development of the proposed improvements.
 - D. Unless authorized in writing by State, Engineer shall not modify the planimetric file.
 2. Master Design File or Schematic Layout.
 - A. The master design file or schematic layout consists of a graphical description of proposed improvements and contains graphic elements representing engineering alignments and proposed features.
 - B. Categories that can simultaneously reference identical coordinates of the planimetric include right of way maps, roadway design, bridge design, traffic signing, signals, striping and control plans, and project limits profiles.
 3. Sheet File.
 - A. Standard sheet format must be appropriate to the category of the design file it references.
 - B. The referenced design file must be displayed within a single sheet file and terminate by clip referencing to match lines contained in the design file.
 - C. The sheet file must contain all annotation appropriate to the design file application or category being referenced. Typical examples are text, dimensioning, ramp labeling, patterning, hatching, profile data.
- d. Graphics Media Requirements
- Any media delivered to State by Engineer shall include documentation of the following:
- A. Media directory listing
 - B. Symbology, weight, style, and color standards for design elements
 - C. Level menu showing level use consistent with State's standards
 - D. Font characteristics and pen tables consistent with State's standards.
 - E. Completed Media Information Form (see pages 4-9)
 - F. CAD File Naming Convention Guidelines for State's District or Division in which the work is to be performed.
- e. Minimum MicroStation Graphics File Requirements.
- At a minimum requirement, the DGN files shall be comprised of elements defined with the following graphic entities and attributes.
- A. Required Graphic Entities.
 - Line - 2 connected points that form a single entity
 - Line Strings - a series of connected points that form a single entity
 - Polygon - a series of connected points that form a closed entity

Circle – the geometric definition of a circle (not a line string)

Arc – a segment of a circle (not a linestring or polygon)

Symbol – a group of graphic entities that form a single entity

Cell – a named, retrievable symbol

B. Required Entity Attributes.

Level – a drawing layer that can be selectively turned on or off

Line Weight – a line weight (width)

Line Style – a line symbology (dashed, dot-dash, etc.)

Color – a color code

TEXAS DEPARTMENT OF TRANSPORTATION
MEDIA INFORMATION FORM

FIRM NAME _____

FIRM CONTACT _____ PHONE NO _____

STATE CONTACT _____

MEDIA OPERATING SYSTEMS _____

MEDIA FORMAT _____

LIMITS _____

CONTRACT NO. _____

CSJ NO. _____ HIGHWAY NO. _____

THE FILES HAVE BEEN SCANNED
FOR VIRUSES AND ARE VIRUS FREE: _____
(NAME)

(EXAMPLE FOR THE MEDIA LABEL: THE FILES LISTED ON THIS FORM THAT ARE ON 2
OR MORE MEDIA MUST BE LABELED WITH THE CSJ NO. 0999-99-9999 AND
NUMBERING SYSTEM OF 1 OF 2, 2 OF 2.)

MEDIA LABEL _____ OF _____

TO BE COMPLETED BY THE STATE.

INDEX NUMBER: _____ DATE RECEIVED: _____

RECEIVED BY: _____

DELIVERED BY: _____

VERIFIED VIRUS FREE: _____ DATE: _____

SPECIAL INSTRUCTIONS: _____

LEVEL STRUCTURE

CSJ NO.	DRAWING TITLE	HIGHWAY
	ROADWAY PLAN AND PROFILE	

DESIGN FILE NAME	STATION LIMITS	SHEET NO
RPP09.DGN	1046+00 TO 1057+00	107

RF	REFERENCE FILE NAME	REFERENCE DESCRIPTION
1	<u>ALIGN.DGN</u>	<i>HORIZONTAL ALIGNMENT FILE</i>
2	<i>BGEOM.DGN</i>	<i>BRIDGE GEOMETRY FILE</i>
3	<i>DTOPO.DGN</i>	<i>DESIGN TOPOGRAPHY</i>
4	<i>RGEOM.DGN</i>	<i>ROADWAY GEOMETRY FILE</i>
5	<i>PPSHT01.DGN</i>	<i>REF BORDER FOR ROAD PLAN AND PROFILE SHTS.</i>
6	<i>RDWYPRO.DGN</i>	<i>PROFILE</i>
	<i>CELL LIBRARY:</i>	<i>XXX.CEL</i>
	<i>PLOT CONFIG:</i>	<i>XXX.PLT</i>

PLOTTING INFORMATION

CSJ NO. _____ HIGHWAY NO. _____
MEDIA LABEL _____ OF _____ ACCOUNT/CONTRACT NO. _____

PLOTTING INSTRUCTIONS:

COLOR TABLES

PEN TABLES

CELL LIBRARIES

PLAN SHEETS (DGN.FILES)

PARCEL SKETCHES (DGN FILES WITH DIFFERENT DESC)

EXAMPLE DOCUMENTATION

AVAILABLE AT YOUR REQUEST

- Cell Library
- Plotting Pen Tables
- Menus
- Seed Files

Planimetric / DTM

File Level Menu

Photogrammetry Feature	DTM	Microstation V8 Name	Level
Control			
Horizontal Control, Principal Point	no	p_control ground ctrl	1
Road			
Paved Road , Curb	yes	p_road paved, curb	2
Dirt Road	yes	p_road dirt	3
Guard Rails	no	p_road guard rail	4
Guard Fences	no	p_road guard fence	5
Guard Posts	no	p_road guard post	7
Concrete Barrier	no	p_road conc barrier	6
Paint Stripe Solid and Dashed	yes	p_road paint stripe	62
Bridge End	yes	p_road bridge end	9
Cattle Guard	no	p_road cattle guard	16
Overhead Sign	no	p_road overhead sign	7
General Road Feature	no	p_road general feature	7
Railroad			
Railroad Track RR Controls	no	p_railroad rr control	10
Drainage			
Concrete Dam	yes	p_drainage conc dam	27
Concrete Drain	yes	p_drainage conc drain	28
Earthen Dam	yes	p_drainage earthen dam	26
Riprap	yes	p_drainage riprap	8
Culvert	yes	p_drainage culvert	9
Inlet	yes	p_drainage inlet	9
Water	yes	p_drainage water	25
Marsh	yes	p_drainage marsh	24
Structure			
Building	no	p_structure building	11
Ruin	no	p_structure ruins	12
Sidewalk	no	p_structure sidewalk	13
Slab	no	p_structure slab	14
Porch, Deck	no	p_structure porch	15
Stairs, Steps	no	p_structure stairs	16
Fence, Gate, Post	no	p_structure fence	17
Retaining Wall	no	p_structure ret wall	18
Wall	no	p_structure wall	18
Cemetery	no	p_structure cemetery	23
Billboard	no	p_structure billboard	21
Sign, Sign Pole, Sign Post	no	p_structure sign	21
Antenna, Cellular Tower, Satellite Dish	no	p_structure antenna	20
Windmill	no	p_structure windmill	23
Flag Pole	no	p_structure flag pole	20
Pipes	no	p_structure pipe	23
Tank	no	p_structure tank	23
Area Under Construction	no	p_structure constr area	12
General, AC Unit, Goal Large, Small Circle	no	p_structure general	23
Unidentified Feature	no	p_structure unidentified	23
Utility			
Fire Hydrant	no	p_utility fire hydrant	20

Manhole	no	p_utility manhole	20
Marker, Meter, Valve	no	p_utility marker	20
Transmission Tower, transmission Line	no	p_utility trans tower	20
Pipeline	no	p_utility pipeline	22
General, Pole,Pole LP, TFP, LP			
Traffic Light, Gas Light	no	p_utility general pole	20
Vegetation			
Woods	no	p_veg woods	29
Tree	no	p_veg tree	29
Tree Farm	no	p_veg tree farm	30
Tree Orchard	no	p_veg tree orchard	29
Palm	no	p_veg palm	29
Digital Terrain Model (DTM)			
Breakline	yes	p_dtm breakline	40
General Breakline	yes	p_dtm general breakline	53
Retaining Wall Breakline	yes	p_dtm retaining wall	48
Sidewalk Breakline	yes	p_dtm sidewalk	43
Mass Points	yes	p_dtm mass points	38
Water Obscured	yes	p_dtm water obscured	45
Obscured Area	yes	p_dtm obscured area	41
Pit and Fill Area	yes	p_dtm pit or fill area	24
Stock Pile	yes	p_dtm stock pile	19

ATTACHMENT H-SG

Historically Underutilized Business for State Funded Professional or Technical Services Contracts HUB Goal Assigned-State of Texas Subcontracting Plan Required

- 1) **POLICY.** It is the policy of the Department to ensure that HUBs shall have an equal opportunity to participate in the performance of contracts; to create a level playing field on which HUBs can compete fairly for contracts and subcontracts; to ensure nondiscrimination on the basis of race, color, national origin, or gender in the award and administration of contracts; to help remove barriers to the participation of HUBs in department contracts; and, to assist in the development of firms that can compete successfully in the market place outside the HUB program. Consequently, the HUB requirements of the Department's HUB Program apply to this contract as follows:
- (1) The Provider agrees to insure that they shall take all necessary and reasonable steps to meet the HUB goal for this contract.
- a. The Provider and any subprovider(s) shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of contracts.
 - b. When submitting the contract for execution by the Department, the Provider must complete and furnish Exhibit H-1 which lists the commitments made to all subproviders, including certified HUB subprovider(s) that are to meet the contract goal, and Exhibit H-2 which is a commitment agreement(s) containing the original signatures of the Provider and HUB(s) that were indicated in the original submitted State of Texas HUB Subcontracting Plan (HSP) in Section 8. For Work Authorization Contracts, Exhibit H-1 is required at the time of submitting the contract for execution by the Department. Exhibit H-2 will be required to be completed and attach with each work authorization number that is submitted for execution, if the HUB will be performing work. If non-HUB subprovider is performing work, insert N/A (not applicable) on the line provided. A prime must allow a HUB maximum opportunity to perform the work by not creating unnecessary barriers or artificial requirements for the purpose of hindering a HUB's performance under the contract. Any substitutions or changes to the HSP, in addition to any changes to the original contract award, shall be subject to prior written approval by the Department. If there are any changes to the subproviders during the contract term, the Provider must furnish a Revised Exhibit H-1 showing the revised commitment of all subproviders.
 - c. Failure to carry out the requirements set forth above shall constitute a breach of contract and may result in a letter of reprimand; in termination of the contract by the Department; in a deduction from money due or to become due to the Provider, not as a penalty but as damages to the Department's HUB Program; or such other remedy or remedies as the Department deems appropriate.
- 2) **DEFINITIONS.**
- a. "Department" means the Texas Department of Transportation (TxDOT).
 - b. "Contract" is the agreement between the Texas Department of Transportation and a Provider.
 - c. "Provider" is any individual or company that provides professional or technical services.
 - d. "Joint Venture" means an association of two or more businesses to carry out a single business enterprise for profit which combines their property, capital, efforts, skills and knowledge.
 - e. "Historically Underutilized Business (HUB)" means any business so certified by the Texas Facilities Commission.
- 3) **PERCENTAGE GOAL.** The goal for Historically Underutilized Business (HUB) participation in the work to be performed under this contract is **23.7%** of the contract amount.
- 4) **PROVIDER'S RESPONSIBILITIES.** A Provider (HUB or non-HUB) must perform a minimum of 30% of the contract with its employees (as defined by the Internal Revenue Service). The contract is subject to the HSP Good Faith Effort Requirements.
- a. A Provider who cannot meet the contract goal, in whole or in part, should have documented any of the following and other efforts made as a "Good Faith Effort" to obtain HUB participation.
 - (1) Whether the prime advertised in general circulation, trade association, and/or minority/women focus media concerning subcontracting opportunities.

- (2) Whether the prime provided written notice to at least three (3) qualified HUBs allowing sufficient time for HUBs to participate effectively.
- (3) Whether the prime documented reasons for rejection or met with the rejected HUB to discuss the rejection.
- (4) Whether the prime provided qualified HUBs with adequate information about bonding, insurance, the plans, the specifications, scope of work and requirements of the contract.
- (5) Whether the prime negotiated in good faith with qualified HUBs, not rejecting qualified HUBs who are also the lowest responsive bidder.
- (6) Whether the prime used the services of available minority and women community organizations, contractor's groups, local, state, and federal business assistance offices, and other organizations that provide support services to HUBs.

NOTE: The Provider must not cause or allow subproviders to bid their services.

- b. The preceding information shall be submitted directly to the Chair of the Consultant Selection Team responsible for the contract.
 - c. The Provider shall make all reasonable efforts to honor commitments to HUB subproviders named in the original HSP in Section 8. Where the Provider terminates or removes a HUB subprovider named in the initial commitment, the Provider must demonstrate on a case-by-case basis to the satisfaction of the Department that the originally designated HUB was not able or willing to perform. The term "unable" includes, but is not limited to, a firm that does not have the resources and expertise to finish the work and/or a firm that substantially increases the time to complete the project.
 - d. The Provider shall make all reasonable efforts to replace a HUB subprovider that is unable or unwilling to perform successfully with another HUB and must meet the HSP Good Faith Effort Requirements. Any substitution of HUBs shall be subject to prior written approval by the Department. The Department will request a statement from the firm being replaced concerning its replacement prior to approving the substitution. If there are any changes to the subproviders during the contract term, the Provider must furnish a Revised Exhibit H-1 showing the revised commitment of all subproviders.
 - e. The Provider shall designate a HUB liaison officer who will administer the Provider's HUB program and who will be responsible for maintenance of records of efforts and contacts made to subcontract with HUBs.
- 5) **ELIGIBILITY OF HUBs.**
- a. The Texas Facilities Commission (TFC) certifies the eligibility of HUBs.
 - b. The TFC maintains a directory of certified HUBs. The HUB Directory is available through the Department's Business Opportunity Programs Office and through the Internet at the TFC's Website (<http://www.tfc.state.tx.us/divisions/commissionadmin/prog/HUB>).
 - c. Only HUB firms certified and identified in specific categories and classes at the time the contract is signed or at the time the commitments are submitted are eligible to be used in the information furnished by the Provider as required under Section 2.c. above.
 - d. If during the course of the contract it becomes necessary to substitute another HUB firm for a firm named in the information submitted by the Provider as required by Section 2.c. above, then only certified HUBs will be considered eligible as a substituted firm. The Provider's written request for substitutions of HUB subproviders shall be accompanied by a detailed explanation, which should substantiate the need for a substitution. The Department will verify the explanation with the HUB firm being replaced before giving approval of the substitution. If there are any changes to the subproviders during the contract term, the Provider must furnish a Revised Exhibit H-1 showing the revised commitment of all subproviders.
 - e. The 73rd Legislature passed Texas Civil Statutes, Article 601i, relative to contracts between governmental entities and certain disadvantaged businesses. The Statute provides for civil penalties for persons who falsely claim disadvantaged business status and for the general contractor who knowingly contracts with a person claiming to be a disadvantaged business.

6) **DETERMINATION OF HUB PARTICIPATION.**

A firm must be an eligible HUB and perform a professional or technical function relating to the project. Proof of payment, such as copies of canceled checks, properly identifying the Department's contract number or project number may be required to substantiate the payment, as deemed necessary by the Department. A HUB subprovider, with prior written approval from the Department, may subcontract 70% of a contract as long as the HUB subprovider performs a commercially useful function. All subcontracts shall include the provisions

required in the subcontract and shall be approved as to form, in writing, by the Department prior to work being performed under the subcontract. A HUB performs a commercially useful function when it is responsible for a distinct element of the work of a contract; and actually manages, supervises, and controls the materials, equipment, employees, and all other business obligations attendant to the satisfactory completion of contracted work. If the subcontractor uses an employee leasing firm for the purpose of providing salary and benefit administration, the employees must in all other respects be supervised and perform on the job as if they were employees of the subcontractor.

7) **COMPLIANCE OF PROVIDER.**

To ensure that HUB requirements of this contract are complied with, the Department will monitor the Provider's efforts to involve HUBs during the performance of this contract. This will be accomplished by a review of the monthly State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) submitted to the Business Opportunity Programs Office by the Provider indicating his/her progress in achieving the HUB contract goal, and by compliance reviews conducted by the Department. The State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) must be submitted at a minimum monthly to the Business Opportunity Programs Office, in addition to with each invoice to the appropriate agency contact.

The Provider shall receive credit toward the HUB goal based on actual payments to the HUB subproviders with the following exceptions and only if the arrangement is consistent with standard industry practice.

- (1) Payments to brokers or firms with a brokering type operation will be credited only for the amount of the commission;
- (2) Payments to a joint venture will not be credited unless all partners in the joint venture are HUBs;
- (3) Payments to a HUB subprovider who has subcontracted a portion of the work required under the subcontract will not be credited unless the HUB performs a commercially useful function;
- (4) Payments to a HUB will not be credited if the firm does not provide the goods or perform the services paid for;
- (5) Payments made to a HUB that cannot be linked by an invoice or canceled check to the contract under which credit is claimed will not be credited.

A Provider must not withhold or reduce payments to any HUB without a reason that is accepted as standard industry practice. A HUB prime or subprovider must comply with the terms of the contract or subcontract. Work products, services, and commodities must meet contract specifications whether performed by a prime or subprovider.

A Provider's failure to meet the HUB goal and failure to demonstrate to the Department's satisfaction sufficient "Good Faith Effort" on his/her part to obtain HUB participation shall constitute a breach of contract. In such a case, the Department reserves the right to issue a letter of reprimand; to deduct the amount of HUB goal not accomplished by HUBs from the money due or to become due the Provider, not as a penalty but as damages to the Department's HUB program; or such other remedy or remedies as the Department deems appropriate.

8) **RECORDS AND REPORTS.**

- a. After submission of the initial commitment (Exhibit H-1), required by Section 2.c. of this attachment, the Provider shall submit State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) at a minimum monthly, after contract work begins, on subcontracting involvement. One copy of the State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) is to be sent to the Business Opportunity Programs Office of the Department monthly. In addition, the State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) must be submitted with the Provider's invoice. All payments made to subproviders are to be reported. **These State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Reports are required monthly even during months when no payments to subproviders have been made.** The State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report will be required until all work on the contract has been completed. The Department may verify the amounts being reported as paid to HUBs by requesting copies of canceled checks paid to HUBs on a random basis.

WAs Used

Contract No. 18-7SDP5012

PS No. 6855

- b. Subproviders should be identified on the State of Texas HUB Subcontracting Plan Prime Contractor Progress Assessment Report (Exhibit H-6) by name, the amount of actual payment made to each during the billing period, cumulative payment amount and percentage of the total contract amount.
- c. All such records must be retained for a period of seven years following final payment, or until an investigation, audit, examination, or other review undertaken during the seven years, and shall be available at reasonable times and places for inspection by authorized representatives of the Department and other agencies.
- d. Prior to receiving final payment, the Provider shall submit a Final Report (Exhibit H-4), detailing the subprovider payments to the Business Opportunity Programs Office of the Department, and one copy to the Department with the Provider's final invoice.

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EXHIBIT H-2
Texas Department of Transportation
Subprovider Monitoring System Commitment Agreement

This commitment agreement is subject to the award and receipt of a signed contract from the Texas Department of Transportation (TxDOT). *NOTE: Exhibit H-2 is required to be attached to each contract that does not include work authorizations. Exhibit H-2 is required to be attached with each work authorization. Exhibit H-2 is also required to be attached to each supplemental work authorization. If DBE/HUB Subproviders are used, the form must be completed and signed. If no DBE/HUB Subproviders are used, indicate with "N/A" on this line: _____ and attach with the work authorization or supplemental work authorization.*

Contract #: _____ Assigned Goal: _____ % Prime Provider: _____

Work Authorization (WA)#: _____ WA Amount: _____ Date: _____

Supplemental Work Authorization (SWA) #: _____ to WA #: _____ SWA Amount: _____

Revised WA Amount: _____

Description of Work <i>(List by category of work or task description. Attach additional pages, if necessary.)</i>	Dollar Amount <i>(For each category of work or task description shown.)</i>
Total Commitment Amount <i>(Including all additional pages.)</i>	\$ _____

IMPORTANT: The signatures of the prime and the DBE/HUB and Second Tier Subprovider, if any (both DBE and Non-DBE) and the total commitment amount must always be on the same page.

<p>Provider Name: Address: Phone # & Fax #: Email:</p>	<p>Name: _____ <i>(Please Print)</i></p> <p>Title: _____</p> <p>_____</p> <p align="center">Signature Date</p>
<p>DBE/HUB Sub Provider Subprovider Name: VID Number: Address: Phone # & Fax #: Email:</p>	<p>Name: _____ <i>(Please Print)</i></p> <p>Title: _____</p> <p>_____</p> <p align="center">Signature Date</p>
<p>Second Tier Sub Provider Subprovider Name: VID Number: Address: Phone # & Fax #: Email:</p>	<p>Name: _____ <i>(Please Print)</i></p> <p>Title: _____</p> <p>_____</p> <p align="center">Signature Date</p>
<p>VID Number is the Vendor Identification Number issued by the Comptroller. If a firm does not have a VID Number, please enter the owner's Social Security or their Federal Employee Identification Number (if incorporated).</p>	

WAs Used

Contract No. 18-7SDP5012

PS No. 6855

EXHIBIT H-4

Texas Department of Transportation Subprovider Monitoring System Final Report

The Final Report Form should be filled out by the Prime Provider and submitted to the Contract Manager and the Business Opportunity Programs Office for review upon completion of the contract. The report should reflect **all subcontract activity** on the project. The report will aid in expediting the final estimate for payment. If the HUB or DBE goal requirements were not met, documentation supporting good faith efforts must be submitted.

DBE Goal: _____%

OR

HUB Goal: _____%

Total Contract Amount: \$ _____

Total Contract Amount: \$ _____

Contract Number: _____

Vendor ID #	Subprovider	Total \$ Amt Paid to Date
TOTAL		

This is to certify that _____% of the work was completed by the HUB or DBE subproviders as stated above.

By: Prime Provider

Per: Signature

Subscribed and sworn to before me, this _____ day of _____, 20__

Notary Public _____ County

My Commission expires: _____

