

THE STATE OF TEXAS §

COUNTY OF TRAVIS §

**CONTRACT FOR ENGINEERING SERVICES
Cost Plus Fixed Fee,
Unit Cost, Lump Sum, or Specified Rate
Indefinite 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 Lockwood, Andrews & Newnam, Inc., having its principal business address at 2925 Briarpark Drive, Suite 400, Houston, Texas 77042, 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 the development of a design schematic, environmental documents/studies in support of the schematic work, public involvement, value engineering study, permit procurement, data collection analysis, mitigation and remediation, monitoring, drainage, conceptual traffic control, traffic projections, traffic engineering and operations including traffic simulations and 3-D modeling, surveying and mapping, and subsurface utility engineering (SUE), for various highway projects located within the State of Texas; 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

A. Contract Effective Date. This agreement becomes effective when signed by the last party whose signing makes the agreement fully executed.

B. Contract Termination Date. This contract terminates upon the earliest occurrence of the following:

1. April 28, 2022 at 11:59 PM in Austin, Texas,
2. Fifth anniversary of execution at 11:59 PM in Austin, Texas in accordance with 43 Tex. Admin. Code § 9.32(b)(1)(C),
3. Completion of all work authorized in the first two years of the contract, or
4. Termination in accordance with Article 15, Termination, of Attachment A, General Provisions, or other applicable contract provision.

C. Amendment of Contract Period. The parties may modify the contract termination date by written supplemental agreement prior to the date of termination as set forth in Article 6, Supplemental Agreements, of

attachment A, General Provisions, provided, however, that the termination date may, in no event, be extended past the fifth anniversary of execution.

D. Work Performed Outside Contract Period. Engineer shall not invoice State and State will not reimburse Engineer for any work performed or cost incurred before or after the contract period.

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 authorizations.

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:

<p>Engineer:</p> <p>Vice President Lockwood, Andrews & Newnam, Inc. 2925 Briarpark Drive, Suite 400 Houston, Texas 77042</p>	<p>State:</p> <p>Director, Professional Engineering Procurement Services Texas Department of Transportation 125 E. 11th Street Austin, Texas 78701</p>
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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:
Philip L. Meaders
A2B5065D678F467...

(Signature)
Philip L. Meaders

(Printed Name)
Vice President

(Title)
5/18/2017

(Date)

THE STATE OF TEXAS

DocuSigned by:
William L. Hale
B9775932E4FB44E...

(Signature)
William L. Hale, P.E.

(Printed Name)
Chief Engineer

(Title) 5/24/2017

(Date)

**Attachments 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	Not Applicable
G	Computer Graphics Files for Document and Information Exchange, if applicable Not 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
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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).

The maximum contract time is the time needed to complete all work authorizations that will be issued in the first two years of the contract. All work authorizations must be issued within the initial two-year period, starting from the contract execution date.

B. Contents. Each work authorization will specify (1) the 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. Proposal Work Authorizations. The State may issue a proposal work authorization under which the Engineer will submit a proposal for additional work. The proposal must be for additional work that is within the defined scope of work under this contract. The amount to be paid for a proposal work authorization will be a lump sum for each proposal. The lump sum payment will be no less than two percent (2%) and no more than four percent (4%) of the State's estimate of the cost of the additional work. The Engineer may elect without penalty not to submit a proposal in response to a proposal work authorization. Any proposal submitted in response to a proposal work authorization will be the sole property of the State. The State may, at its option, issue similar or identical proposal work authorizations under other contracts, and the proposals submitted in response to the various proposal work authorizations may be compared by the State for the purpose of determining the contract under which the work will be awarded. The determination of the contract under which the work will be awarded will be based on the design characteristics of the proposal and the Engineer's qualifications and will not consider the Engineer's rates.

J. 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. Errors, Omissions, Negligent Acts. The Engineer shall save harmless the State and its officers and employees from all claims and liability due to activities of itself, its agents, or employees, performed under this contract and which are caused by or result from error, omission, or negligent act of the Engineer or of any person employed by the Engineer.

B. Attorney Fees. The Engineer shall also save harmless the State from any and all expense, including, but not limited to, attorney fees which may be incurred by the State in litigation or otherwise resisting said claim or liabilities which may be imposed on the State as a result of such activities by the Engineer, its agents, or employees.

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. 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.

D. 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 Texas Department of Transportation 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. The only exceptions allowed are ordinary business lunches and items that have received the advance written approval of the Executive Director of the Texas Department of Transportation.

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, except as mentioned above. 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.).

ATTACHMENT B
SERVICES TO BE PROVIDED BY THE STATE

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

- a. Name, address and phone number of the State's project manager.
- b. Records available that would assist in the completion of the environmental services.
- c. Review of recommendations offered by the Engineer and approval or rejection of any or all work performed under this contract.
- d. Review of progress of work and final acceptance of all documents.
- e. Processing of all periodic payment requests submitted by Engineer.
- f. Submittal of documentation to regulatory agencies for review and comment when specified.
- g. All comments regarding the review of the environmental services completed.
- h. Assistance in the coordination and scheduling of site visits.
- i. Review and approval of typical roadway and bridge cross sections created by the Engineer.
- j. Approval of pavement design to be used for cost estimation purposes.
- k. Available planimetric mapping, aerial photography and Digital Terrain Model (DTM) for the corridor.
- l. Available horizontal control points, benchmark elevations and descriptions for vertical control in the project area.
- m. Available existing Right-of-Way (ROW) maps of state highway facilities in the project corridor.
- n. Available interface data for any projects adjacent to the project corridor.
- o. Current average bid prices for construction, maintenance, and operation costs.
- p. Assistance as necessary in obtaining the required data and information from other local, regional, state, and federal agencies.
- q. Timely reviews of deliverables in accordance with Exhibit C, "Work Schedule" of the Work Authorization and decisions necessary for the Engineer to maintain the project work schedule.
- r. Examples of acceptable format for the deliverables required by the work authorizations.
- s. Current version of all State's guidelines for preparation of environmental documents, air quality analysis, and noise analysis and versions of "recommended text" for air, noise, or

- other studies for which the State desires standard wording to be used.
- t. Potential Archeological Liability Map (PALM) of the project area, if applicable.
 - u. Distribution environmental document and schematic layout to the appropriate agencies and the public.
 - v. Right of entry from public or private land owners to allow environmental services to be performed. Right-of-entry permission shall be written and signed by the land owner. Letters or other materials seeking right of entry shall contain explicit reference to the kinds of activities for which right of entry is requested and an indication of the impacts (if any) that will result from performance of environmental services, if applicable.
 - w. Cost estimate method for any required ROW and associated improvements.
 - x. Crash Data from at least 3 previous years if available.

Resource Information

1. Agencies.

- a. AASHTO – American Association of State Highway and Transportation Officials
- b. BEG - Bureau of Economic Geology, University of Texas at Austin
- c. CEQ - Council on Environmental Quality
- d. ENV - Environmental Affairs Division of the Texas Department of Transportation
- e. District - One of the 25 geographical districts into which the Texas Department of Transportation is divided.
- f. FEMA - Federal Emergency Management Agency
- g. FHWA - Federal Highway Administration
- h. IBWC – International Boundary and Water Commission
- i. MPO - Metropolitan Planning Organization
- j. NRCS - Natural Resource Conservation Service (formerly Soil Conservation Service)
- k. SHPO - State Historic Preservation Office
- l. State – Texas Department of Transportation acting on behalf of the State of Texas
- m. TARL – Texas Archeological Research Laboratory
- n. THC - Texas Historical Commission
- o. TCEQ - Texas Commission on Environmental Quality (formerly TNRCC)
- p. TPWD - Texas Parks and Wildlife Department
- q. TxDOT - Texas Department of Transportation
- r. USACE – United States Army Corps of Engineers
- s. USCG – United States Coast Guard
- t. USEPA – United States Environmental Protection Agency

- u. USFWS – United States Fish and Wildlife Service
- v. USGS – United States Geological Survey

2. Environmental Terms.

- a. ACT – Antiquities Code of Texas
- b. APE - Area of Potential Effects
- c. Archeological Historic Property - an archeological site eligible for inclusion in the National Register of Historic Places (36 CFR 60) or for designation as a State Archeological Landmark (SAL) (TAC, Title 13, Part 2, Chapter 26).
- d. CE – Categorical Exclusion Action
- e. CFR – Code of Federal Regulations
- f. CSJ – Control Section Job
- g. Deliverables – Reports for environmental services
- h. EA – Environmental Assessment
- i. Environmental Services – environmental documents, studies, research, permit applications, public involvement, training and other activities for completion of environmental documentation.
- j. EO – Executive Order
- k. EPIC – Environmental Permits Issues and Commitments
- l. Environmental Compliance Toolkits - the official location for approved policies, procedures, standards, and guidance from the Environmental Affairs Division of the State (web address: <http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits.html>)
- m. FHWA Technical Advisory T 6640.8A (1987) – FHWA Format Guidance
- n. FONSI - Finding of No Significant Impact (23 CFR 771 and TAC, Title 43)
- o. Historic-age resource - a building, structure, object or non-archeological site (defined in accordance with 36 CFR 60) that is at least 50 years old at the time of a transportation project's letting.
- p. Historic Property - a building, structure, object or non-archeological site eligible for inclusion in the National Register of Historic Places (36 CFR 60).
- q. IP – Individual Permit
- r. ISA – Initial Site Assessment
- s. MSAT – Mobile Source Air Toxics
- t. NEPA – National Environmental Policy Act of 1969
- u. NCHRP – National Cooperative Highway Research Program

- v. NHPA – National Historic Preservation Act
- w. NRHP – National Register of Historic Places
- x. NRI – Nationwide River Inventory
- y. NWP – Nationwide Permit
- z. PCN - Pre-Construction Notification
- aa. Project Area - a geographic area designated for performance of specified analyses, such as wetland or archeological studies.
- bb. SAL – State Antiquities Landmark
- cc. Project Area - a geographic area designated for performance of specified analyses, such as wetland or archeological studies.
- dd. Section 4(f) – refers to the original section within the U.S. Department of Transportation (DOT) Act of 1966, which established the requirement for consideration of park and recreational lands, wildlife and waterfowl refuges, and historic sites in transportation project development. The law, now codified in 49 U.S.C. §303 and 23 U.S.C. §138, is implemented by the Federal Highway Administration (FHWA) through the regulation 23 CFR §774.
- ee. Section 4(f) Evaluation – an evaluation prepared when a project proposed to use resources from any significant publicly owned public parks, recreation areas, or wildlife and waterfowl refuges and any land from an historic sites of national, state or local significance.
- ff. Section 7 – refers to Section 7 of the federal Endangered Species Act (ESA) of 1973 (16 U.S.C. §1531 et seq.), called “Interagency Cooperation,” which is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species.
- gg. Section 106 – refers to Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), which requires Federal agencies to take into account the effects of their undertakings on historic properties and to provide the Advisory Council on Historic Preservation (ACHP) with a reasonable opportunity to comment. In addition, federal agencies are required to consult on the Section 106 process with State Historic Preservation Offices (SHPO), Tribal Historic Preservation Offices (THPO), Indian Tribes (to include Alaska Natives) [Tribes], and Native Hawaiian Organizations (NHO).
- hh. SOP – Standard Operating Procedure – established procedure to be followed in carrying out a given operation or in a given situation.
- ii. Study Area - the geographic area to be discussed in an environmental document.
- jj. TAC – Texas Administrative Code
- kk. TPDES – Texas Pollutant Discharge Elimination System

- ll. Transportation Activity - a construction or other project performed by the State or under its jurisdiction
- mm. Transportation Project - The planning, construction, or reconstruction of a transportation facility that the department has the legal authority to plan, construct, or reconstruct, including but not limited to, a public road or highway, bridge, ferry, transit facility, or high occupancy vehicle lane.
- nn. TxDOT NEPA MOU – the December 16, 2014 “Memorandum of Understanding (MOU) between FHWA and TxDOT concerning the State of Texas’ Participation in the Project Delivery Program Pursuant to 23 U.S.C. 327.”
- oo. TXNDD – Texas Natural Diversity Database
- pp. USC – United States Code
- qq. Wetland Determination – Preliminary study to determine whether a wetland is present.
- rr. UTM – Universal Transverse Mercator
- ss. Wetland Delineation – Demarcation of the boundaries of a wetland in accordance with the most current version of the USACE *Wetlands Delineation Manual* (Technical Report Y-87-1).
- tt. Waters of the U.S. – Jurisdictional limits of the U.S. Army Corps of Engineers under the Clean Waters Act, as defined in 33 CFR 328.

ATTACHMENT C**SERVICES TO BE PROVIDED BY THE ENGINEER**

The work to be performed by the Engineer shall consist of providing preliminary engineering services for development of a design schematic, environmental documents and studies in support of the schematic work, public involvement, value engineering study, permit procurement, data collection analysis, mitigation and remediation, monitoring, drainage, conceptual traffic control, traffic projections, traffic engineering and operations including traffic simulations and 3-D modeling, surveying and mapping, and subsurface utility engineering (SUE), for various highway projects located within the State of Texas.

The Engineer shall complete the services to be provided by the Engineer according to the milestone work schedule established in the work authorization. The Engineer shall submit a written progress report to the State monthly indicating the actual work accomplished during the month, scheduled work to be accomplished for the month, and the estimated work to be accomplished for the coming month. The progress report will use a bar chart diagram to indicate the percentage complete of each task shown on the previous report and the percentage complete of each tasks. The Engineer is required to meet with the designated State project manager or environmental coordinator on a monthly basis for progress tracking purposes unless prior agreement is made with State not to hold a meeting in any given month. The Engineer shall submit minutes of the meeting summarizing the events of the meeting within seven calendar days after each meeting.

The Engineer shall prepare a project work schedule. The work schedule must incorporate an allocation of time for stage reviews of the design schematic and the environmental documents by State personnel. The Engineer shall present the work schedule to the State for review and acceptance, and provide assistance in interpreting the proposed work schedule.

FUNCTION CODE 102(110) - FEASIBILITY STUDIES**ROUTE AND DESIGN STUDIES**

The Engineer shall prepare an alignment and proposed roadway schematic layout to include projected traffic volumes, existing and proposed typical sections. The Engineer shall furnish Microsoft Office and Microstation V8i-Geopak computer generated media containing the roadway schematic layout to the State. All supporting attachments and exhibits shall accompany the schematic layout. All Microstation and Geopak computer generated files containing the roadway

design schematic shall be compatible with the software used by the State.

The Engineer shall produce, obtain, review, and evaluate existing and twenty-year projected traffic data for use in the preparation of the schematic design layout. The data shall be utilized in accordance with the requirements for schematic development and consistent with the policies of the State.

The Engineer shall prepare preliminary drawings to identify any potential adverse impacts within the project corridor. Identification of all existing and proposed utilities (public and private), structures, burial grounds, neighborhood communities, historical landmarks, and undeveloped areas is required. Any potential utility conflicts and structural impediments must be identified as such. The Engineer shall propose alternative alignments which would avoid or minimize displacements and damages, and prepare any additional attachments or exhibits required illustrating a preferred alternative alignment. The Engineer shall render assistance to the State for agency meetings as necessary during the development of the schematic design as requested by the State. The Engineer shall also render assistance to the State for meetings with affected property owners (MAPOs), public meetings and a public hearing if requested.

An itemization of the schematic design and engineering work activity to be performed under this contract is detailed below. All designs shall be prepared in accordance with the latest version of: TxDOT Roadway Design Manual, TxDOT Project Development Process Manual, AASHTO Policy on Geometric Design of Highways and Streets, TxDOT Standard Specifications for Construction of Highways, Streets, and Bridges, TxDOT Traffic Operations Manual on Highway Operations, Texas Manual on Uniform Traffic Control (TMUTCD), and Highway Capacity Manual - Transportation Research Board.

The design schematic horizontal layout will adhere to a design scale of 1 in. = 100 ft (or 1 in. = 200 ft as directed by the State.) The schematic layout, exhibits, and attachments will be developed in English units. All Microsoft Office and Microstation V8i - Geopak computer graphic files furnished to the State must be submitted in electronic format by means of a CD, DVD, or USB media that will be compatible to the State. Schematics will follow the State and Federal Highway Administration (FHWA) standards, the schematic will also follow the CADD standards used by the State and shall be submitted as an original document, accompanied with an original Microstation V8i formatted graphics file. Final copies of the schematic design shall be signed by a professional engineer licensed in the

State of Texas.

Schematic Design Work Outline:

Develop Base Maps

The base maps to be used for the analysis and proposed schematic layout shall be developed by the Engineer from existing construction and right of way (ROW) plans as available. The Engineer shall re-establish the existing centerline horizontal alignments for all roadways, identify existing ROW, property owners and the approximate location of major utilities based on a SUE in the preparation of base maps.

Planimetrics and Aerial Mapping

Planimetrics, Digital Terrain Modeling (DTM), and aerial photographs shall be furnished to the Engineer by the State, if available.

Analyze Existing Conditions

Using collected data and base maps, the Engineer shall develop an overall analysis of the existing conditions in order to develop the schematic design. The analysis shall include, but not be limited to the following:

- a. ROW determination
- b. Horizontal alignment
- c. Vertical alignment
- d. Pavement cross slopes and pavement type
- e. Soil Exploration
- f. Geotechnical Testing
- g. Highway - Rail Grade Crossing Studies (Delete if not applicable)
- h. Intersection design and analysis
- i. Sight distance
- j. Large Guide Signs and Roadside signing
- k. Level-of-service
- l. Locations of critical constraints
- m. Drainage
- n. Traffic control and construction phasing sequence

Schematic Alternatives

The Engineer shall identify and analyze schematic alternatives to minimize potential adverse impacts, major utility conflicts, structural impediments, or exceptions to the State or FHWA design criteria.

Deliverable Schematic

The Engineer shall consider the following in the analysis to optimize the design:

- a. Efficient use of the allocated ROW
- b. Control of Access (COA) and driveway locations
- c. Roadway and intersection geometry
- d. Cross Sections
- e. Bicycle and Pedestrian design
- f. Drainage and Hydraulic design
- g. Stopping Sight distance
- h. Level-of-service
- i. Traffic and signal operations
- j. Construction, ROW, easement, and utility costs
- k. Construction sequencing
- l. Traffic control during construction
- m. Roadside safety appurtenances
- n. Large guide signage
- o. Environmental mitigation (For example: Noise Walls)
- p. Bridge Layouts and Clearance
- q. Railroads (if applicable)
- r. Interface with existing High Occupancy Vehicle (HOV) Lane, Managed Lanes, and park-and-ride facilities

Project Management and Coordination

- a. The Engineer shall direct and coordinate the various elements and activities associated with developing the design schematic.
- b. The Engineer shall prepare the detailed graphic Project Work Schedule indicating tasks, critical dates, milestones, deliverables and State review requirements. The Project Work Schedule will depict the order of the various tasks, milestones, and deliverables. The Engineer shall review and provide comments on its elements of the schedule to the State.

- c. The Engineer shall submit written monthly Progress Reports to the State.
- d. The Engineer shall prepare subcontracts for subconsultants, direct and monitor subconsultants activities, and review subconsultant work and invoices.
- e. The Engineer shall provide ongoing quality assurance and quality control to ensure completeness of product and compliance with the State procedures.
- f. The Engineer shall prepare and submit invoices.

Data Collection

The Engineer shall conduct field reconnaissance and collect data as necessary to complete the schematic design. Data shall include the following information. Items “a” to “g” will be obtained from the State, if available, while items “h” to “j” will be obtained from other agencies as required.

- a. Available Corridor Major Investment Studies
- b. Design data from record drawings of existing and proposed facilities
- c. Existing and future design year traffic data
- d. Roadway inventory information, including the number of lanes, speed limits, pavement widths and rating, bridge widths and ratings, and ROW widths
- e. Aerial photos, planimetric mapping, and DTM
- f. Environmental Data
- g. Previously prepared drainage studies
- h. Adopted land use maps and plans as available
- i. Federal Emergency Management Agency (FEMA) Flood Boundary Maps and Flood Insurance Studies and Models
- j. Public and private utility information

Preliminary Design Conference

The Engineer shall prepare and submit a preliminary Design Summary Report (DSR) to the State for review and approval and shall attend an initial Kick-Off Meeting to establish and agree on fundamental aspects and concepts and to establish the basic features and design criteria for the project. This meeting will be coordinated with any adjacent projects to ensure continuity.

Schematic Design – General Tasks

- a. ROW/Property Base Map

The Engineer shall obtain information on existing ROW and property information from as-built plans, ROW maps, and tax records. The Engineer shall prepare a base map depicting the

information.

b. Utility Base Map

- The Engineer shall obtain information on existing utilities from utility owners and shall conduct investigations to identify and evaluate all known existing and proposed public and private utilities. The Engineer shall identify potential conflicts and attempt to minimize the potential adverse utility impacts in the preparation of the schematic design. The Engineer shall prepare a base map depicting the utility locations.
 - Utility Engineering Investigation (currently Subsurface Utility Engineering) shall include utility investigations subsurface and above ground prepared in accordance with AASHTO standards [ASCE C-1 38-02 (<http://www.fhwa.dot.gov/programadmin/asce.cfm>)] and Utility Quality Levels defined in cumulative order as follows:
 - i. Quality Level D – Existing Records: Utilities are plotted from review of available existing records.
 - ii. Quality Level C – Surface Visible Feature Survey: Quality Level D information from existing records is correlated with surveyed surface-visible features. Includes Quality Level D information. If there are variances in the designated work area of Level D then a new schematic or plan layout, if needed, is required showing the limits of the proposed project and limits of the work area required for this work authorization; including highway stations, limits within existing or proposed right of way, additional areas outside the proposed right of way, and distances or areas to be included down existing intersecting roadways.
 - iii. Quality Level B – Designate: Two-dimensional horizontal mapping. This information is obtained through the application and interpretation of appropriate non-destructive surface geophysical methods. Utility indications are referenced to established survey control. Incorporates Quality Levels C and D information to produce Quality Level B. If there are variances in the designated work area of Level D then a new schematic or plan layout, if needed, is required showing the limits of the proposed project and limits of the work area required for this work authorization; including highway stations, limits within existing or proposed right of way, additional areas outside the proposed right of way, and distances or areas to be included down existing intersecting roadways.
 - iv. Quality Level A – Locate (Test Hole): Three-dimensional mapping and other characterization data. This information is obtained through exposing utility facilities through test holes and measuring and recording (to appropriate survey control) utility and environment data. Incorporates quality levels B, C and D information to produce Quality Level A.
 - The Engineer shall comply with all applicable State policy and procedural manuals and shall be responsible for any damage to the utility during the locating process. In the event of damage, the Engineer shall stop work, notify the appropriate utility facility owner, the State and appropriate regulatory agencies. The regulatory agencies include, but are not limited to the Railroad Commission of Texas and the Texas Commission on Environmental Quality (TCEQ). The Engineer shall not resume work until the utility

facility owner has determined the corrective action to be taken. The Engineer shall be liable for the costs involved in the repair or replacement of the utility facility.

c. Typical Sections

The Engineer shall develop both existing and proposed typical sections that depict the number and type of lanes, shoulders, median width, curb offsets, cross slope, border width, clear zone widths, and ROW limits.

d. Environmental Constraints

The Engineer shall consider impacts to environmentally sensitive sites (as identified by the Engineer and verified by the State) during the schematic design process. Environmentally sensitive sites include natural, cultural, and the human environment. Examples are historic and archeological resources, burial grounds, neighborhood communities and residential areas, farmland, floodplains, wetlands, endangered species, rare habitats, wildlife corridors, wildlife crossings, parks and nature preserves, geologic features, undeveloped areas, and significant trees.

e. Drainage

The Engineer shall use data from as-built plans and FEMA maps to locate drainage out fall(s) and to determine existing storm sewer and culvert sizes, design flows, and water surface elevations for use in the design of roadway geometry. The Engineer shall conduct a Preliminary Drainage Study to determine and evaluate the adequacy of the ROW needed to accommodate the proposed roadway and drainage system. The drainage study shall identify the impacts to abutting properties and the 100-year floodplain due to proposed highway improvements, identify the water surface elevations for the 2, 5, 10, 25, 50 and 100 year storm events, identify and locate outfalls, drainage outfall descriptions, provide overall drainage area map, sub-drainage area map, storm water detention facilities, and provide a drainage study report identifying the results of the study. The drainage report, signed and sealed by a professional engineer, shall include applicable hydrologic and hydraulic models such as HEC-1 and HEC-2, HEC-RAS, HEC-HMS, XP-SWMM, and other applicable models. If requested, the Engineer shall prepare a Final Drainage Study in accordance with the State's *Hydraulic Design Manual*, District criteria, and any specific guidance provided by the State. The Engineer shall not evaluate the adequacy of the existing drainage structures, unless directed by the State.

f. ROW Requirements

The Engineer shall determine the ROW requirements based on the proposed alignment, typical sections, design cross sections, access control, terrain, construction requirements, drainage, clear

zone, maintenance, Intelligent Transportation System (ITS) and environmental mitigation requirements.

g. Construction Sequence

The Engineer shall consider the requirements for construction staging and traffic control throughout the development of schematic design to ensure that the proposed design can be constructed. The Engineer shall provide construction phasing assumptions to the State as requested.

h. Design Exceptions

The Engineer shall identify design exceptions and waivers, and shall document the necessity for each design exception or waiver for approval.

i. Traffic Data and Projections

The Engineer shall develop the opening-year, design-year (opening year +20) and pavement design year (opening year + 30) travel forecasts, and related traffic analysis in coordination with State Transportation and Programming Division (TPP). The developed traffic projections shall be utilized for design and environmental analysis. The Engineer shall develop traffic forecasts for the main lanes, ramps, cross streets, interchanges, intersections, and frontage roads for no-build and build alternatives. These projections shall include graphic representations of the anticipated daily movements along the corridor (suitable for inclusion in the design schematic and environmental document) and the Traffic Analysis for Highway Design table. The Engineer shall prepare a Traffic Projections Methodology memo, based on the information provided in the TPP traffic analysis package. The Engineer shall review the proposed methodology with the State and shall refine it based on these discussions. Traffic volumes developed by the Engineer will be submitted to TPP for review and approval, and the Engineer will revise the traffic volumes based on TPP's comments.

j. Financial Plan and Project Management Plan

The Engineer shall prepare a Financial Plan (FP) and Project Management Plan (PMP) in accordance with FHWA Financial Plan Guidance, dated January 2007, for submission by the State to the FHWA Division Office for review and approval. The purpose of the FP is to document the project cost estimate and revenue structure and provide reasonable assurance that sufficient financial resources shall be available to implement and complete the project as planned. The FP shall cover topics such as the project cost estimate, revenue structure, funding resources, project implementation over time based on the available financial resources, and the cost and revenue assumptions used in development.

- a. The initial FP shall consist of at least five main sections including:

- i. Cost Estimate.
 - ii. Implementation Plan.
 - iii. Financing and Revenues.
 - iv. Cash Flow.
 - v. Risk Identification and Mitigation Factors.
- b. The Engineer shall prepare for and attend a cost estimate review (CER) workshop with the State and the FHWA to develop and review information for inclusion in the FP such as cost estimation procedures and tools, identifying funding sources and revenues, and project implementation schedules. In preparation for the CER, the Engineer shall conduct a risk analysis assessment, provide cost spreadsheets and models for input into the FHWA's probability modeling software, review and provide comments on the CER summary report, and update cost information in the initial FP to reflect confidence limits established during the CER.
- c. The Engineer shall provide annual updates (AUs) to the Initial FP reflecting changes in project finances and funding resources. Each update shall include revisions to the five main sections mentioned above as well as discussions of significant cost or revenue changes, comparisons to previous plan estimates, and explanations of mitigating actions taken to adjust for deviations.
- d. The Engineer shall submit the PMP, FP and FP AUs to the State for review and comment. For scoping purposes, it is assumed that the initial drafts of the FP and FP AUs shall be reviewed concurrently by the District, and the State's Design and Finance Divisions. The Engineer shall address the State's comments and prepare a revised draft for review by the FHWA. The Engineer shall address FHWA comments and prepare the final FP (up to three revision cycles from the State and FHWA) for the State to submit to the FHWA for approval. To document each revision cycle, the Engineer shall develop comment response forms that includes the comments, comment numbers, page and line numbers of draft where comments originated, page and line numbers where revisions can be located, and the responses.
- k. Financial Plan and Project Management Plan
The Engineer shall prepare a Financial Plan (FP) and Project Management Plan (PMP) in accordance with FHWA Financial Plan Guidance, dated January 2007, for submission by the State to the FHWA Division Office for review and approval. The purpose of the FP is to document the project cost estimate and revenue structure and provide reasonable assurance that sufficient financial resources shall be available to implement and complete the project as planned. The FP

shall cover topics such as the project cost estimate, revenue structure, funding resources, project implementation over time based on the available financial resources, and the cost and revenue assumptions used in development.

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 - i. Cost Estimate.
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- c. The Engineer shall provide annual updates (AUs) to the Initial FP reflecting changes in project finances and funding resources. Each update shall include revisions to the five main sections mentioned above as well as discussions of significant cost or revenue changes, comparisons to previous plan estimates, and explanations of mitigating actions taken to adjust for deviations.
- d. The Engineer shall submit the PMP, FP and FP AUs to the State for review and comment. For scoping purposes, it is assumed that the initial drafts of the FP and FP AUs shall be reviewed concurrently by the District, and the State's Design and Finance Divisions. The Engineer shall address the State's comments and prepare a revised draft for review by the FHWA. The Engineer shall address FHWA comments and prepare the final FP (up to three revision cycles from the State and FHWA) for the State to submit to the FHWA for approval. To document each revision cycle, the Engineer shall develop comment response forms that includes the comments, comment numbers, page and line numbers of draft where comments originated, page and line numbers where revisions can be located, and the responses.

I. Traffic and Operational Analysis

The Engineer shall review and analyze traffic data (including percent trucks, design hourly

volume, and directional distribution), existing roadway features (including ramp locations, weaving sections, number of lanes, offset to obstructions, lane widths, frontage road operations, and intersection operation and geometry), traffic flow patterns, accident patterns and frequencies, and transit and traffic operations. A detailed level of service analysis with CORSIM, PASSER, HCS, VISSIM, SYNCRO, and/or other acceptable model will be performed for the current year using current traffic and geometric conditions and for the design year using traffic projections and proposed geometric designs to compare different geometric alternatives and ramp patterns. Results of this analysis shall be incorporated into the schematic design.

m. Bicycle and Pedestrian Accommodations

The Engineer shall comply with the federal policy statement on Bicycle and Pedestrian Accommodations Regulations and Recommendations by United States Department of Transportation (USDOT). This policy encourages the incorporation of safe and convenient walking and bicycling facilities into transportation projects. The inclusion of bicycle and pedestrian facilities shall be considered when the project is scoped. Public input when applicable, as well as local city and metropolitan planning organization for bicycle and pedestrian plans shall be considered.

n. Interstate Access Justification

The Engineer shall prepare an Interstate Access Justification report in accordance with established FHWA procedures to document proposed changes in access to interstate highways. The request shall include an introduction that describes the proposed project along with a statement of need. The request shall address at a minimum, the eight policy requirements outlined in the FHWA policy. The access request shall provide an explanation of how the request satisfies each of the eight points in the policy requirements. Supporting analysis to illustrate how those requirements are met shall be included.

o. Toll Managed, Express, High Occupancy Vehicle , Managed Lanes, Transit

The Engineer shall address and consider Toll Managed Lanes, Express Lanes, High Occupancy Vehicle lanes, Managed Lanes, other special use lanes, and public transportation elements within the context of the general purpose, ramp, frontage road and interchange design.

Conceptual Design Schematics

The Engineer shall develop conceptual design schematics in MicroStation format to evaluate various methods of handling traffic while providing access in key areas. It is anticipated that a single design alternative that optimizes traffic flow and access shall be produced. The conceptual schematics will be plan view only. Profile work will be done only to the extent necessary to lay out the proper

horizontal geometry.

The schematics shall contain the following design elements:

- a. Mainlane roadway alignment
- b. Pavement edges, face of curbs and shoulder lines
- c. Typical sections of existing and proposed roadways
- d. Proposed structure locations (including wildlife crossings and fencing structures)
- e. Preliminary ROW requirements and control-of-access locations
- f. Direction of traffic flow and the number of lanes on all roadways
- g. Existing and projected traffic volumes

Geometric Design Schematics

The Engineer shall develop geometric design schematics based on the conceptual schematics after the basic layout, lane arrangement, and ROW and easements requirements depicted on the conceptual schematics is approved. The State may require this task be performed using OpenRoads Technology.

The geometric schematic plan view shall contain the following design elements:

- a. Geopak calculated roadway alignments for mainlanes, general purpose lanes, ramps, direct connectors, bridges, HOV lanes, managed lanes, express lanes, collector distributor roads, frontage roads and cross streets at major intersections and grade separations.
- b. Horizontal curve data shown in tabular format
- c. Pavement edges, curb lines, sidewalks for all roadway improvements
- d. Typical sections of existing and proposed roadways
- e. Proposed structure locations, bridge layouts including abutment, bent and rail locations
- f. Existing and proposed major utilities
- g. Existing property lines and respective property ownership information
- h. ROW and easements requirements adequate for preparation of ROW maps
- i. Control-of-access limits
- j. Existing and projected traffic volumes
- k. Location and text of the existing and proposed general purpose lanes guide signs and the preliminary locations for changeable message signs
- l. Lane lines, shoulder lines, and direction of traffic flow arrows indicating the number of lanes on all roadways

The geometric schematic profile view shall contain the following design elements:

- a. Calculated profile grade and vertical curve data including "K" values for the mainlanes
- b. Existing ground line profiles along the mainlanes
- c. Grade separations and overpasses
- d. Calculated vertical clearances at grade separations and overpasses

The calculated profile grade for frontage roads, connectors, ramps and cross streets will be shown on separate Supplemental Profile rolls.

Cross-Sections

The Engineer shall use Geopak to generate preliminary cross-sections every 50 or 100 feet and at culvert locations in conjunction with the Geometric Schematic. The Engineer shall determine earthwork volumes for use in the cost estimate, and shall prepare 11"x17" or roll plots of the cross-sections.

Retaining Walls

Prepare preliminary retaining concepts to be shown on schematics, typical sections, and cross sections.

- Determine if any additional walls are required and verify the need for and length of the retaining wall as shown on the ultimate schematic.
- Compute and tabulate retaining wall quantities for preliminary design milestone plans submittal.

Renderings and Traffic Simulation

The Engineer shall develop renderings, three-dimensional (3D) models, illustrations, and animations as a means of expression and understanding for what the owner of a project envisions and what the public perceives. In support of the Public Outreach effort, reasonable Build Alternatives will be chosen by the State to be carried forward into creating one rendering and one traffic animation for each of the various alternatives. A 3D model shall be created for the reasonable Build Alternatives from supplied: horizontal and vertical alignments, existing and proposed digital terrain models (DTMs), proposed typical sections, traffic counts, and ground photography.

The animations and renderings shall give the public and stakeholders a clear awareness and appreciation for the reduction of traffic congestion and how traffic will flow into and out of the project area.

Preliminary Construction Sequence

The Engineer shall prepare a Preliminary Construction Sequence Layout in conjunction with the Geometric Schematic depicting the phasing and traffic detours anticipated to construct the proposed design.

Preliminary Cost Estimate

The Engineer shall prepare a preliminary cost estimate for the project, including the costs of construction, required ROW and associated improvements, and eligible utility adjustments. Current State unit bid prices will be used in preparation of the estimate.

Engineering Summary Report

The Engineer shall prepare a report to summarize the design criteria, traffic analysis, preliminary cost estimate and basis of estimate, construction sequence description, and utility conflict issues.

Agency Coordination and Public Involvement

- a. The Engineer shall assist the State in conducting meetings with various agencies to discuss and review the schematic design. The Engineer shall document and respond to issues related to the schematic design.
- b. The Engineer shall prepare exhibits and participate, schedule, and conduct a Value Engineering (VE) study and provide a Certified Value Engineering Specialist (CVS).
- c. The Engineer shall assist in conducting public meetings and public hearing during the project development process. The Engineer shall prepare schematic exhibits, constraints maps, other necessary exhibits, and assist the State in the presentation.
- d. The Engineer shall schedule, participate in mail out, and pay for meeting notices, and facilitate a Meeting with Affected Property Owners (MAPO) located within or near the project's study area.
- e. The Engineer shall prepare the adjacent property owner list, mail out and pay for meeting notices, notice of public meeting and hearing, draft letter to public officials, prepare, publish and pay for notices to major and local newspaper, reserve public meeting and hearing location, hire court reporter and law enforcement for public hearing, audio and visual rental equipment, and assist with conducting public meeting and hearing. The Engineer shall attend pre-meetings at the State's District in preparation for every meeting and hearing, as directed by the State.
- f. Compile public comments received and responses to comments during the MAPO, public meeting into a summary of public meeting and the public meeting into a documentation packet of public

meeting and the public hearing into a Public Hearing Documentation Packet.

Schematic Design Project Deliverables

In conjunction with the performance of the foregoing services, the Engineer shall provide the following draft and final documents and associated electronic files as applicable. The number of deliverable items will be determined by the State.

- Draft and final copies of the Engineering Summary Report
- Draft and final copies of the Interstate Access Justification Report or Traffic and Operational Analysis Report for non-interstates.
- Draft and final copies of the Preliminary Drainage Study
- Draft and final copies of the Geometric Schematic layouts 11"x17" Cut sheets or Rolls as requested.
- Draft and final copies of the Conceptual Design Schematics roll plots
- Draft and final copies of the Geometric Schematic layouts (1 inch = 100 feet)
- Draft and final copies of the design schematic Profiles rolls
- Draft and final copies of the design schematic Cross-Sections in 11"x17" Cut sheets or roll plot format as requested
- Copy of the Preliminary Cross-Sections in a roll plot format
- Final copies of the Engineering Summary Report
- Final copies of the Interstate Access Justification Report
- Six (6) final copies of the Preliminary Drainage Study
- Copies of the Preliminary Construction Sequence Layouts
- Electronic copy of the 3D rendering and traffic simulation for the reasonable build alternatives
- Electronic files shall be furnished to the State on a CD or DVD Recordable media
- Traffic Data Schematics
- Traffic Projections Methodology memo
- Average Daily Corridor Traffic Projections Report
- Risk Management Plan
- Participation in CER
- Draft Project Management Plan
- Draft Financial Plan
- Final Project Management Plan
- Final Financial Plan

- Line schematics with traffic data shown
- Documentation of MAPO, Public Meeting, and Public Hearing
- Value Engineering Report
- Utility Plan – Electronic file on CD in latest version of Microstation V8 or Geopak
- Design Exception/Waiver documents
- An Electronic submittal of the Geopak Drainage, HEC-RAS, SWMM, & HMS models. The models must be approved by the State's District Hydraulic Engineer prior to generating any reports.
- Hard copy of a draft Hydraulic Report for review and comment.
- Culvert Hydraulic Data Sheets and Preliminary Culvert Layouts.
- Drainage Report - one (1) copy of final report with CD (CD to include a PDF of the entire report) and computer files of hydrologic and hydraulic modeling with appropriate labeling of location, CSJ, and submittal date on a CD,
- Retaining Wall Layouts

FUNCTION CODE 145(145,160) - MANAGING CONTRACTED/DONATED PE

CONTRACT MANAGEMENT AND ADMINISTRATION

The ENGINEER shall:

- a. Perform all work in accordance with the State's latest practices, criteria, specifications, policies, procedures, and Environmental Compliance Toolkits. All documents shall be sufficient to satisfy the current Environmental Compliance Toolkits available from the State.
- b. Act as an agent for the State when specified in a work authorization.
- c. Produce a complete and acceptable deliverable for each environmental service performed for environmental documentation.
- d. Incorporate environmental data into identification of alternatives.
- e. Notify the State of its schedule, in advance, for all field activities.
- f. When specified, seek right of entry from public or private land owners to perform environmental services. Right of entry permission shall be written and signed by the land owner. Develop letters or other materials for seeking right of entry. Letters or other materials seeking right of entry shall not be distributed without prior approval of the State. Letters or other materials seeking right of entry shall contain explicit reference to the kinds of activities for which right of entry is requested and an indication of the impacts (if any) that will result from performance of environmental services.

- g. Notify the State as soon as practical, by phone and in writing, if performance of environmental services discloses the presence or likely presence of significant impacts (in accord with 40 Code of Federal Regulations (CFR) 1500-1508). Inform the State of the basis for concluding there are significant impacts and the basis for concluding that the impacts may require mitigation.
- h. Notify the State as soon as practical, by phone and in writing, if performance of environmental services results in identification of impacts or a level of controversy that may elevate the Transportation Activity's status from a categorical exclusion or environmental assessment, and the State will reassess the appropriate level of documentation.

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

SOCIAL, ECONOMIC AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT

1. Environmental Documentation.

Each environmental service provided by the Engineer shall have a deliverable. Deliverables shall summarize the methods used for the environmental services, and shall summarize the results achieved. The summary of results shall be sufficiently detailed to provide satisfactory basis for thorough review by the State, The Federal Highway Administration (FHWA), and (where applicable) agencies with regulatory oversight. All deliverables shall meet regulatory requirements for legal sufficiency, and shall adhere to the requirements for reports enumerated in the State's NEPA MOU.

a. Quality Assurance/Quality Control Review

For each deliverable, the Engineer shall perform quality assurance quality control (QA/QC) reviews of environmental documents and on other supporting environmental documentation to determine whether documents conform with:

- 1) Current Environmental Compliance Toolkit guidance published by the State's Environmental Affairs Division and in effect as of the date of receipt of the documents or documentation to be reviewed;
- 2) Current state and federal laws, regulations, policies, guidance, agreements, and memoranda of understanding between the State and other state or federal agencies; and
- 3) FHWA and American Association of State Highway and Transportation Officials (AASHTO) guidelines contained in "Improving the Quality of Environmental Documents, A Report of the Joint AASHTO and American Council of Engineering Companies (ACEC) Committee in Cooperation with the Federal Highway Administration" (May 2006) for:
 - a) Readability, and

- b) Use of evidence and data in documents to support conclusions.

Upon request by the State, the Engineer shall provide documentation that the QA/QC reviews were performed by qualified staff.

- b. Deliverables shall contain all data acquired during the environmental service. All deliverables shall be written to be understood by the public and must be in accordance with the State's Environmental Toolkit guidance, documentation standards, current guidelines, policies and procedures.
- c. Electronic versions of each deliverable must be written in software which is compatible to the State and must be provided in a changeable format for future use by the State. The Engineer shall supplement all hard copy deliverables with electronic copies in searchable Adobe Acrobat™ (.pdf) format, unless another format is specified. Each deliverable shall be a single, searchable .pdf file that mirrors the layout and appearance of the physical deliverable. The Engineer shall deliver the electronic files on CD-R, CD-RW media in Microsoft Windows format, or through the ftp site.
- d. When the environmental service is to apply for a permit (e.g., United States Coast Guard (USCG) or United States Army Corps of Engineers (USACE), the permit and all supporting documentation shall be the deliverable.
- e. Submission of Deliverables
- 1) Deliverables shall consist of reports of environmental services performed in addition to a Categorical Exclusion (CE) determination form and supporting documentation including the required form or Environmental Assessment (EA) document, when applicable.
 - 2) All deliverables must comply with all applicable state and federal environmental laws, regulations and procedures and include all items listed in the Environmental Document Review Checklist and the Administrative Completeness Review Checklist.
 - 3) On the cover page of each environmental assessment (EA), finding of no significant impact (FONSI), environmental impact statement (EIS), and record of decision (ROD) prepared under the authority granted by this MOU, and for any memorandum corresponding to any CE determination it makes, the Engineer shall insert the following language in a way that is conspicuous to the reader or include it in a CE project record:
"The environmental review, consultation, and other actions required by applicable

Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT."

- f. The State shall provide the State's and other agency comments on draft deliverables to the Engineer. The Engineer shall revise the deliverable:
- 1) to include any State commitments, findings, agreements, or determinations (e.g., wetlands, endangered species consultation, Section 106, or Section 4(f)), required for the Transportation Activity as specified by the State;
 - 2) to incorporate the results of public involvement and agency coordination;
 - 3) to reflect mitigation measures resulting from comments received or changes in the Transportation Activity; and
 - 4) include with the revised document a comment response form (matrix) in the format provided by the State.
- g. All photographs shall be 3.5" x 5" color presentation printed on matte finish photographic paper or 3.5" x 5" color presentation printed on matte white, premium or photo quality laser or inkjet paper. All photographs shall be well focused and clearly depict details relevant to an evaluation of the project area. Provision of photographs shall be one original print of each image or electronic presentations of comparable quality. Comparable quality electronic photograph presentations shall be at least 1200 x 1600 pixel resolution. Photographs shall be attached to separately labeled pages that clearly identify project name, project identification (ID) number, address or Universal Transverse Mercator (UTM) of resource, description of the picture and direction of the photographic view. In addition to the hard-copy prints, an electronic version of each will be submitted with the same identification information as the hard-copy.

2. Technical Reports and Documentation

Definition of technical report and documentation for environmental services: a report, checklist, form, or analysis detailing resource-specific studies identified during the process of gathering data to make an environmental decision.

Technical reports and documentation must be produced before an environmental document (e.g. EA) is prepared in order to identify issues early in the process. The State will determine what technical reports and documentation will be necessary for any given project. Technical reports and documentation must be prepared for the State with sufficient detail and clarity to support

environmental determination(s). All technical reports shall be compliant with TxDOT Environmental Compliance Toolkits. The environmental document will reference the technical reports.

Environmental technical reports and documentation must include appropriate National Environmental Policy Act of 1969 (NEPA) or federal regulatory language in addition to the purpose and methodology used in delivering the service. Technical reports and forms must include sufficient information to determine the significance of impacts. Some examples of environmental technical reports and documentation are listed below:

- Purpose and Need
- Biological Evaluation Form
- Air Quality
- Archeological Sites and Cemeteries
- Bicycle and Pedestrian Accommodation
- Coastal Barrier Resources Act
- Community Impacts Assessment
- Ecological Resources
- Farmland Protection Policy Act
- Hazardous Materials
- Historic Resources
- Indirect and Cumulative Impacts
- Section 6(f) Land and Water Conservation Fund Act
- National Environmental Policy Act (NEPA) and Project Development
- Chapter 26, Parks and Wildlife Code
- Public Involvement
- Traffic Noise
- U.S. DOT Section 4(f) Analysis

All technical reports and documentation prepared under the authority granted by this MOU, the Engineer shall insert the following language in a way that is conspicuous to the reader or include in a CE project record:

"The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by

TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT."

Minimum Deliverables: (Additional deliverables to be identified based on work assigned.)

- Draft Document
- Final Document

3. Environmental Assessment (EA) Content and Format.

- a. The EA shall meet the requirements of 23 CFR §771.119 and TAC, Title 43, Part 1, Chapter 2. The EA content shall be in sufficient detail to meet regulatory requirements for legal sufficiency and include all items listed in the Environmental Document Review Checklist and the Administrative Completeness Review Checklist.
- b. Exhibits to be included in reports or EAs shall not exceed 11" by 17," and shall be in color. Text pages shall be 8.5" by 11". Exhibits and text in reports or EAs shall be neat and reproducible via photocopying without loss of legibility. The EA documents shall be reproduced on plain white paper unless otherwise approved in advance in writing by the State.
- c. The EA shall use good quality maps and exhibits, and shall incorporate by reference and summarize background data and technical analyses to support the concise discussions of the alternatives and their impacts. The Engineer shall follow the Environmental Assessment Outline and the Environmental Handbook: Preparing an Environmental Assessment located in the Environmental Compliance Toolkits located on the TxDOT website.

Minimum Deliverables: (Additional deliverables to be identified, based on work assigned.)

- Preliminary Draft EA for district review
- Revised Draft EA (per district comments)
- Draft EA for State review
- Revised Draft EA (per State comments)
- Draft EA for Public Hearing
- Final EA

4. Community Impacts

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

Community Impacts includes land use, environmental justice, limited English proficiency, and other issues as addressed in TxDOT Environmental guidance.

The Engineer shall perform Community Impact Assessments including relocations and Environmental Justice analysis (in accordance with Executive Order 12898) and Limited English Proficiency analysis (in accordance with Executive Order 13166).

- a. Compile analysis to meet requirements of TA 6640.8A. Analysis must conform to applicable current State and FHWA guidance.
- b. Process for Community Impact Assessment should follow guidance provided in TxDOT's Community Impacts Assessment Toolkit.

7. Historic Resource Identification, Evaluation and Documentation Services

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall perform limited non-archeological historic-age resource studies related to compliance with Section 106 and Section 110 of the NHPA (36 CFR 800). Such studies include may a Project Coordination Requests (PCR).

The PCR shall comply with the TxDOT Environmental Compliance Toolkits provided by the State's Environmental Affairs Division in effect as of the date of the receipt of the documents.

- a. The Engineer shall revise the PCR to address comments by the State at no additional cost to the State and may be required to integrate the findings into another environmental document. The State assumes responsibility for transmitting the findings to THC and for transmitting THC comments to the Engineer's Technical Expert. Engineer's Technical Expert is an institution, firm, individual, or team that provides professional scientific services, including but not limited to archeologists, biologists, geologists, historians, or other environmental professions that conduct environmental or cultural assessments required by state or federal law for transportation projects. The State assumes responsibility for any further historic, non-archeological surveys that arise from the findings of the PCR.
- b. The Engineer shall conduct tasks associated with public involvement as requested during the historic resources reporting phase and conforming to the methodology outlined in the the TxDOT Environmental Compliance Toolkits.

The Engineer shall contact interested parties when applicable in order to determine local knowledge of historic resources in the project area. Interested parties include but are not limited to: Certified

Local Governments, Historic Preservation Offices, County Historical Commissions, Historic Bridge Foundation, and other consulting parties.

9. Archeological Background Studies

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

- a. The Background Study shall be produced by a professional archeologist as defined in 13 TAC §26.4(2).
- b. The Archeological Background Study shall conform to the current Review Standard for Archeological Background Studies, available from the State.
- c. Unless the Engineer has previously completed an Archeological Background Study for the project, the Archeological Background Study must define and consider all alternatives selected for detailed study, including all existing right of way, all proposed new right of way, easements (temporary and permanent), and any other project-specific location designated by the State. The Archeological Background study shall consider the likely depth of impacts resulting from the proposed project. The location of all alternatives selected for detailed study shall be presented on a map or maps as part of the Archeological Background Study.
- d. For projects in which an Archeological Background Study has already been completed by the Engineer and the project has materially changed --affecting the project limits, proposed new right of way (if any), easements (if any), any other project-specific location designated by the State, and/or the depth of impacts -- the Archeological Background Study shall incorporate the previous study by reference and focus on the project changes.
- e. To conduct the Archeological Background Study, the professional archeologist shall undertake a review of existing data, including, but not limited to, the Texas Archeological Sites Atlas, geologic maps, soil maps, Potential Archeological Liability Map (PALM) of the project area (if applicable), aerial photographs, and historic maps. Based on this review, the Archeological Background Study shall identify and plot on a map the areas that require field investigation to evaluate the project's effects on archeological resources and cemeteries and shall identify the areas in which the proposed project would have no effect on archeological resources and cemeteries. The Archeological Background Study shall identify any areas proposed for field investigation where impacts are deep, extending beyond three feet in depth.

11. Air Quality Studies

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall prepare the air quality section in accord with the current version of the State's Air Quality Handbook, and Air Quality toolkit. If the Air Quality Handbook requires it, the administrative record must contain and the Engineer shall prepare the following air quality elements in the format prescribed in the specific SOP documents or other Air Quality toolkit documents:

- a. Conformity report form and applicable coordination,
- b. Hot-spot technical report and applicable coordination,
- c. CO TAQA technical report,
- d. Qualitative MSAT analysis,
- e. Quantitative MSAT technical report and conference call,
- f. CMP analysis,
- g. GHG analysis (only if it becomes a requirement in the Air Quality Handbook),
- h. Applicable disclosure statements in the environmental document as prescribed in the SOP for Preparing Air Quality Statements,
- i. Air quality cumulative and indirect impacts analysis as specified in the Cumulative and Indirect Impacts Analysis section of this attachment and include a discussion of the analysis in the environmental document, and
- j. Response to public comments received on air quality issues.

12. Traffic Noise Studies

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall:

- a. Perform a traffic noise analysis in accordance with the current version of the State's (FHWA approved) "Guidelines for Analysis and Abatement of Roadway Traffic Noise" The current version of the guidance is located on the State's Traffic Noise Toolkit website located at <http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits.html>. Noise analyses shall be performed for all alternatives.
- b. Comply with all noise policy, guidelines and standards found on the State's Traffic Noise Toolkit website located at <http://www.txdot.gov/inside-txdot/division/environmental/compliance->

[toolkits.html](#). Upon request, the State shall provide the Engineer's Technical Expert with existing and predicted (future) traffic data and, when available, aerial photography.

- c. By project location site visit, identify adjacent, land use development and photo document representative receivers that might be impacted by highway traffic noise and may benefit from feasible and reasonable noise abatement.
- d. Determine existing and predicted noise levels for representative receivers, as follows:
 - 1) For transportation activities on new location, take field measurements of existing noise levels. Field measurements shall be accomplished with sound meters that meet or exceed American National Standards Institute (ANSI) S1.4-1983, Type 2.
 - 2) For transportation activities not on new location, perform computer modeling of existing noise levels and predicted (future) noise levels.
 - 3) Computer modeling shall be accomplished with the latest FHWA approved Traffic Noise Model (TNM) software program which must be purchased at the expense of the Engineer's Technical Expert from the software distributor.
- e. Identify impacted receivers in accordance with the absolute and relative impact criteria.
- f. Consider and evaluate all required noise abatement measures for impacted receivers in accordance with the feasible and reasonable criteria.
- g. Propose noise abatement measures that are both feasible and reasonable.
- h. Determine predicted (future) noise impact contours for transportation activities where there is adjacent undeveloped property where residential or commercial development is likely to occur in the near future.

13. Water Quality Studies

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall:

- a. Address all water quality studies in accordance with Section 303(d) of the Clean Water Act as administered by the Texas Commission on Environmental Quality (TCEQ).
- b. Identify if the project is located within five miles of an impaired assessment unit and within the watershed of the impaired assessment unit.
- c. Identify whether the project drains to any impaired assessment unit.
- d. Provide the location of the project within the watershed of the impaired assessment unit.
- e. Identify the impaired assessment unit number, segment name, and segment number.

- f. Identify the pollutant(s) in the discharge for which the water body is listed, and the year of the 303(d) list used in the assessment
- g. If the impaired assessment unit has a Total Maximum Daily Load that has been approved by the Environmental Protection Agency, provide:
- the name and date of the Total Maximum Daily Load,
 - the name and date of any corresponding Implementation Plan, and
 - a discussion of whether the project is consistent with the approved Total Maximum Daily Load and Implementation Plan.
- h. If unit does not have a Total Maximum Daily Load that has been the impaired assessment approved by the Environmental Protection Agency, indicate:
- that the impaired assessment unit does not have a Total Maximum Daily Load that has been approved by the Environmental Protection Agency, and
 - if the project could discharge the pollutant identified in (d) above. If yes, discuss measures that will be taken to prevent or reduce the likelihood of such a discharge.
- j. Discuss the Best Management Practices that will be used-particularly at the discharge point to the water body to meet other water quality regulations, such as vegetative swales, silt fencing, compliance with the Texas Pollutant Discharge Elimination System (TPDES).

14. Determining Impacts to Waters of the United States, including Wetlands

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

- a. The Engineer shall identify all waters within the boundaries of the project area.
- b. The Engineer shall make a preliminary determination of USACE jurisdiction. Restrict the level of effort to identification without formal delineation
- c. The Engineer shall delineate waters of the United States, including wetlands.
- 1) Provide documentation which shall include all field work and compilation of field documentation for wetland delineations. Wetland delineations shall be performed in accordance with the current USACE Wetlands Delineation Manual (Technical Report Y-87-1) and, if appropriate, the Great Plains, Arid West, or Atlantic and Gulf Coastal Plain Supplement to Technical Report Y-87-1.
 - 2) Stake wetland boundaries in the field.
 - 3) Map the boundaries of the waters of the United States with the global positioning system per guidance from the USACE-Galveston.

- d. When required, the State will provide a land survey of wetland boundaries.
- e. When the environmental service is to apply for a permit, the permit and supporting documentation shall be the report and deliverable.
- f. Draft and Final Deliverable.
 - 1) The Engineer shall produce a draft and final report of wetland determinations and delineations. The draft report will be submitted to the State for review and approval by the State and USACE. In the final report, address State and USACE comments from the draft report. The revised final report shall be delivered to the State within 30 days of receipt of comments from the State or USACE.
 - 2) The location of all sites, cities, villages, highways, rivers and other features or place names discussed in the text and situated in the project locale shall be shown on the appropriate figure. All tables, figures and maps shall have a number, title, appropriate explanatory note and a source reference. In addition, where applicable, figures and all maps shall display a title, north arrow, scale, legend and source reference.
 - 3) The report shall be in the following format:
 - a) Cover Sheet

In accordance with the State's NEPA MOU, on the cover page of each biological evaluation or assessment, historic properties or cultural resources report, section 4(f) evaluation, or other analyses prepared under the authority granted by the MOU, the Engineer shall insert the following language in a way that is conspicuous to the reader or include in a CE project record:
"The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT."
 - b) Introduction
 - i. Who authorized the wetland delineation.
 - ii. Why the wetland delineation is being done.
 - iii. Location of site (USGS 7.5' Map).
 - iv. Date of field visit(s).
 - v. Identification of delineators.
 - c) Methods
 - i. Brief description of the method used.
 - ii. State any modification of the method.

- iii. Source of existing information.
- d) Results and Discussion
 - i. Description of the site.
 - ii. Topography of the site.
 - iii. Plant communities of the site.
 - iv. Soil types identified on the site.
 - v. Hydrology information of the site.
 - vi. Existing wetland mapping (e.g., NWI, state, and local).
- e) Findings
 - i. Types of wetlands identified on the site (e.g., Cowardin, et al. 1979).
 - Description of wetlands identified.
 - Locations of wetlands.
 - Area of wetlands (in acres).
 - Contrast with non-wetland.
 - How was the wetland boundary chosen (e.g., feature on landscape).
 - ii. Types of other waters of the United States identified on the site.
 - Description of the other waters of the United States.
 - Locations of the other waters of the United States.
 - Area of the other waters of the United States.
 - Contrast with non-wetlands.
 - How was the other water of the United States boundary chosen (e.g., feature on landscape).
- f) Conclusion.
 - i. Table summary of total area and types of wetlands and other regulated waters.
 - ii. A map showing each location where a Wetland Data Form was completed.
 - iii. Statement regarding the need for permits.
 - iv. Caution that final authority rest with the appropriate agencies.
- g) Literature Cited.
- h) Appendix (Routine Wetland Determination Data Forms and, if required, Atypical Situation Data Forms).

15. Wild and Scenic Rivers (if required)

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall determine the Transportation Activity's impacts on rivers in the National Wild and Scenic River System. If a river in the National Wild and Scenic River System is located in the study area or will be affected by the Transportation Activity, identify and perform coordination with the agency or regulatory agencies with jurisdiction.

- a. Include information on the management plan for a listed river, affected land use, and any necessary Section 4(f) coordination.
- b. Document coordination with the agency or agencies with jurisdiction.
- c. Identify potential adverse effects on the natural, cultural, and recreational values of rivers listed on the Nationwide River Inventory (NRI) or study river.
- d. Review the Transportation Activity's adverse effects on alteration of free flowing nature of river, alteration of the setting, or deterioration of water quality.
- e. Address listed adverse effects and document consultation on avoiding or mitigating the impacts with the managing agency.
- f. Identify measures proposed to avoid or mitigate such impacts.
- g. Fulfill the requirements of 16 United States Code (USC) 1271-1287.

16. Edwards Aquifer Impact (if required)

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall determine the impacts of the transportation activity on the Edwards Aquifer for the Austin, San Antonio and Laredo Districts only. Include information on TCEQ coordination requirements under the Edwards Aquifer Protection Program when impacts within the recharge, transition, or contributing zones deem it necessary.

17. Floodplain Impacts

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall determine whether the Transportation Activity has the potential to affect floodplains. Document Trinity River Corridor Development Certificate Regulatory Zone requirements

(Dallas and Fort Worth Districts), and International Boundary Water Commission (IBWC)

requirements (Transportation Activity within the floodplain of the Rio Grande) if the project is within the area covered by these regulations. Studies for floodplain impacts shall fulfill the requirements of Executive Order 11988 and 23 CFR 650, Subpart A.

- a. Briefly describe the watershed characteristics of the study area in terms of land uses and changes in land use that may affect stream discharge.
- b. Briefly describe the streams in the study area, including evidence of stream migration, down cutting, or aggradations.
- c. Identify the presence and nature (e.g., zone A, zone AE, zone AE with floodway) of any Federal Emergency Management Agency (FEMA) mapped floodplains. Include the panel number.
- d. Indicate the existence of any significant development associated with the mapped area and identify the jurisdiction responsible for the floodplain.
- e. Identify the locations where an alternative will encroach on the base (100-year) floodplain ("encroachments"), where an alternative will support incompatible floodplain development and the potential impacts of encroachments and floodplain development. This identification should be included in the text and on a map.
- f. Include a list of all jurisdictions having control over floodplains for each alternative.
- g. Where an encroachment or support of incompatible floodplain development results in impacts, the report shall provide more detailed information on the location, impacts and appropriate mitigation measures. In addition, if any alternative (1) results in a floodplain encroachment or supports incompatible floodplain development having significant impacts, or (2) requires a commitment to a particular structure size or type, the report shall include an evaluation and discussion of practicable alternatives to the structure or to the significant encroachment. The report shall include exhibits which display the alternatives, the base floodplains and, where applicable, the regulatory floodplains.
- h. For each alternative encroaching on a designated or regulatory floodplain, the report shall provide a preliminary indication of whether the encroachment would be consistent with or require a revision to the regulatory floodplain. If the preferred alternative encroaches on a regulatory floodplain, the report shall discuss the consistency of the action with the regulatory floodplain. In addition, the report shall document coordination with FEMA and local or state agencies with jurisdiction indicating that revision would be acceptable or that a revision is not required.
- i. If the preferred alternative includes a floodplain encroachment having significant impacts, the report shall include a finding that it is the only practicable alternative as required by 23 CFR 650, Subpart A. The finding shall refer to Executive Order 11988 and 23 CFR 650, Subpart A. In such

cases the report shall document compliance with the Executive Order 11988 requirements and shall be supported by the following information:

- 1) The reasons why the proposed action must be located in the floodplain;
- 2) The alternatives considered and why they were not practicable; and
- 3) A statement indicating whether the action conforms to applicable state or local floodplain protection standards;

18. Coastal Zone and Barrier Impacts (if required)

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall determine if the proposed activity complies with Texas' approved coastal management program and will be conducted in a manner consistent with the Texas Coastal Management Program and the Coastal Zone Management Act by avoiding and minimizing impacts to coastal natural resource areas.

19. Stormwater Permits (Section 402 of the Clean Water Act)

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall:

- a. Describe the need to use the TPDES General Permit, TX 150000. The text will describe how the project will comply with the terms of the TPDES, including the Stormwater Pollution Prevention Plan.
- b. Describe the need for Municipal Separate Storm Sewer System (MS4) notification. List MS4 participating municipalities.

20. USACE Permits

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

- a. Section 10 of the Rivers and Harbors Act (33 USC 403). The Engineer shall determine whether the Transportation Activity requires a Section 10 permit and upon approval by the State, prepare and submit permit applications to USACE and obtain the permits.

- b. Section 404 of the Clean Water Act (33 USC 1344). The Engineer shall determine whether the Transportation Activity requires a Section 404 permit (Nationwide or Individual Permit (IP)) and upon approval by the State, prepare and submit permit applications (Pre-Construction Notification (PCN) or individual permit application) to USACE and obtain the permits. PCNs and IPs will be prepared in accordance with current USACE policies and regulations.
- c. If the permit is an Individual Section 404 permit, upon approval by the State, prepare and submit a Tier 1 checklist or a Tier II 401 certification questionnaire and water quality certification documentation to TCEQ and USACE.
- d. The Engineer shall provide the State with documentation (including all original correspondence) of consultation with USACE and TCEQ.
- e. The Engineer shall keep the State informed during the permit coordination process.

21. USCG Section 9 Permit (33 USC 401)

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall:

- a. Determine whether streams or other water bodies crossed by a proposed transportation facility are navigable as defined in the USCG Commandant Publication P16591.3A, "Bridge Permit Application Guide."
- b. Consult with the USCG to obtain Coast Guard concurrence on navigability and the need, if any, for a USCG Bridge Permit.
- c. Provide the State with documentation (including all original correspondence) of consultation with the Coast Guard.
- d. Upon approval by the State, submit permit application and obtain a USCG Bridge Permit for bridges crossing navigable waters. The permit(s) shall be obtained in accordance with the USCG Commandant Publication P16591.3A, "Bridge Permit Application Guide."

22. Fish and Wildlife Coordination Act (FWCA)

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall identify water body modifications and impacts to wildlife. The Fish and Wildlife Coordination Act (FWCA) applies to projects that would result in the control or modification of a natural stream or body of water and would require a Section 404 Individual Permit.

23. Threatened or Endangered Species

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall perform biological services.

- a. Surveys for Protected Species or Habitat of Protected Species based on the most current State and TPWD Memorandum of Understanding (MOU Effective 2013.)

The Engineer shall:

- 1) Perform surveys of protected species or habitat of protected species. This shall include:
 - a) All species listed by the United States Fish and Wildlife Service (USFWS) as threatened or endangered or proposed for listing as threatened or endangered (50 CFR 17.11-12),
 - b) All species that are candidates for review for listing by USFWS as threatened or endangered (per most recently updated list in Federal Register),
 - c) Species listed as threatened or endangered species or species of greatest conservation need (SGCN) by the State of Texas Threatened and Endangered Species Listings, Texas Park and Wildlife Department (TPWD),
 - d) Species protected by the Migratory Bird Treaty Act (50 CFR 10.13) and the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c).
- 2) Examine existing data to determine the likelihood that rare species, protected species, their habitat, or designated critical habitat (per 50 CFR §17.94-95) could be impacted by the Transportation Activity. Existing data shall include the Element Occurrence Identification (EOID) records of the TPWD Natural Diversity Database, following the Guidelines set forth in the most current version of TPWD's Guidelines for TXNDD Data Analysis in TxDOT Environmental Documents.
- 3) Perform an effect determination pursuant to the Endangered Species Act (ESA) for all federally listed species. A determination of impact must be included for all state-listed species. The determination of effect and impact must be supported by evidence, and may require a detailed assessment. Any technical reports used to support the determination(s) must be referenced and provided to the State.

- 4) Determine whether critical habitat is present in the study area and whether the Transportation Activity will affect that critical habitat.
- 5) Perform species-specific habitat surveys, presence or absence surveys for protected species, or critical habitat (per 50 CFR 17.94-95) and rare species.
- 6) Conduct surveys for the presence or absence of protected species according to protocols adopted by USFWS and TPWD for all protected species for which such protocols have been established.
- 7) Personnel conducting presence or absence surveys for protected species shall hold appropriate USFWS and TPWD permits at the time surveys are performed.
- 8) Conduct presence or absence surveys during the time of the year appropriate for each species. If the Engineer's Technical Expert believes that a work authorization to conduct a presence or absence survey does not adequately consider timing of the survey, notify the State as soon as the issue with the survey timing is recognized.
- 9) Furnish the State with completed Biological Evaluation Form and Engineer's Technical Expert's field notes.
- 10) Coordinate between the State and USFWS or TPWD as directed by the State to ensure proper rules, regulations and policies are followed for biological services. All coordination between the Engineer's Technical Expert and resource agencies shall be approved in advance by the State.

b Habitat Analysis and Characterization of Project Study Area. The Engineer shall perform an analysis and characterization of habitat and habitat impacts for the study area and documented on the Biological Evaluation Form. The habitat analysis shall be based on the most current State and TPWD MOU and associated Programmatic Agreements.

- 1) For transportation activities involving no new right-of-way or easements, including temporary easements, this includes:
 - a) The habitat descriptions of habitat types (e.g., forested, prairie, riparian, floodplain, rangeland, agricultural) in the study area are based upon the 2013 MOU.
 - b) The habitat description shall indicate the vegetative type(s) listed for the study area in the 2013 MOU.
 - c) The habitat description shall include a description of the existing vegetation within and adjacent to the right-of-way, as per the 2013 MOU.
 - d) The habitat description shall describe habitat for protected species if such habitat occurs within or adjacent to the right-of-way.

- e) The description shall be supplemented with topographic maps (based on USGS 7.5' maps, aerial photos, on-site photographs and per the 2013 MOU.
- i. Maps and aerial photos shall be annotated to indicate the locations and areas of distinct vegetative types if any have been identified during field inspections.
 - ii. Photographs shall illustrate representative vegetation for each vegetation type. Aerial photographs (with dates) shall be provided when available.
- 2) If the vegetation within the right-of-way does not match the description as per the 2013 MOU or if there is an unusual difference between the vegetation in the right-of-way and outside the right-of-way, details shall be included in the description to clearly explain the differences in vegetative content between the existing vegetation and the 2013 MOU 4) For transportation activities involving new right-of-way or easements, including temporary easements, the habitat description shall address the entire study area. For projects with multiple alternatives, all alternatives shall be described to the same level of detail. If lack of access to the new location right-of-way limits field observation for the habitat description, existing published sources shall be used to provide an estimate. All elements of description required for projects with no new right-of-way (above) shall be included. Land use within and outside the proposed right-of-way shall be described. In addition, the description of vegetation in the new right-of-way or easements shall include the following:
- a) Dominant Species for each vegetation stratum (i.e., tree, shrub, vine, herbaceous [grass and forbs]) present,
 - b) Height of trees (range), if present,
 - c) Diameter at Breast Height (DBH) of trees (range and average), if present,
 - d) Percent canopy cover of trees, if present,
 - e) Acreage for each vegetation type present.
- 5) The habitat analysis shall contain a description of anticipated impacts to the following:
- a) Any vegetation, broken down by plant community (as above),
 - b) Unusual vegetation features (as above),
 - c) Special habitat features (as above),
 - d) Habitat for any protected species (as above),
 - e) Any other habitat feature identified by and considered to be important to the State's District.

Note: The description of anticipated impacts shall be based on impacts that can be predicted as a result of construction activities and the kind(s) of facility proposed for the Transportation Activity. If the Engineer's Technical Expert believes that the State has not provided sufficient

engineering and other data to support a description of anticipated impacts, notify the State, and the Engineer's Technical Expert and the State shall negotiate an appropriate level of description of anticipated impacts.

- c. Survey Reports and Habitat Analyses included in the appendices of the Biological Evaluation Form must follow all guidelines and requirements as specified by the TxDOT Environmental Compliance Toolkits.

- d. Analysis of Stream Modifications and Associated Habitats. The Engineer shall provide a habitat impact analysis when modification of a stream channel is included as part of the Transportation Activity where the streambed is being relocated, straightened, altered (deepened or widened), or cleaned as a part of road or bridge construction or as an easement involving drainage improvements.
 - 1) The report on the habitat impact analysis shall describe impacts; both direct and indirect, to the adjacent riparian habitats associated with stream modifications, and shall include:
 - a) A description of existing vegetation that includes all elements listed in this attachment,
 - b) Areal extent of temporary and permanent impacts, in acres, including impacts in temporary or permanent easements outside the State's proposed right of way,
 - c) Type of impacts proposed to affect the channel (e.g., channelization, fill, excavation) and adjacent surfaces (e.g., vegetation clearing for equipment operation).
 - 2) Stream Modification and Associated Habitats Reports shall include:
 - a) Sources for and results of preliminary data collection,
 - b) The name(s) of the person(s) performing the fieldwork,
 - c) Dates of fieldwork,
 - d) Weather conditions at the time of the survey(s),
 - e) Whether the protected species is absent or present,
 - f) Survey protocols or other methods used,
 - g) Analysis of the Transportation Activity's potential to affect the channel,
 - h) Appropriate ArcGIS shapefiles, 7.5 minute USGS topographic maps, and aerial photographs showing all areas surveyed; and,
 - i) Photographs typical of the area(s) surveyed.

24. Invasive Species

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall address Executive Order 13112 on Invasive Species as per the Ecological Resources Handbook (TxDOT Environmental Online Toolkit).

25. Essential Fish Habitat

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall perform Essential Fish Habitat studies. Studies shall fulfill the requirements of 50 CFR 600.920.

The Engineer shall:

- a. Determine if Essential Fish Habitat is present in the project area.
- b. Determine if the project will adversely affect Essential Fish Habitat.
- c. Describe adverse impacts, if any. (If Essential Fish Habitat will be impacted, then consultation is required)

26. Beneficial Landscaping

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

Address Executive Memorandum on Beneficial Landscaping of April 26, 1994 as per the Ecological Resources Handbook (TxDOT Environmental Online Toolkit).

27. Farmland Impacts

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

Determine farmland impacts. Identification of farmland impacts shall be in accord with the Farmland Protection Policy Act (FPPA) (7 USC 4201 et. seq.) and the Ecological Resources Handbook (TxDOT Environmental Online Toolkit) guidance on addressing FPPA, which includes determining whether the project is exempt or completion of form AD 1006 or CPA 106 as appropriate.

28. Initial Assessment of Hazardous Materials Impacts

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall:

- a. The Engineer shall perform an Initial Site Assessment (ISA) for potential hazardous materials impacts for the limits of the study area. The Engineer is responsible acquiring the latest version of TxDOT's Hazardous Materials Initial Site Assessment (ISA) located in the Hazardous Materials Toolkit (<http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/haz-mat.html>).

Note: The ISA shall determine the potential for encountering hazardous materials in the study area, including possible environmental liability, increased handling requirements (e.g. soil or groundwater), and potential construction worker health and safety issues.

Note: The Engineer is responsible for reviewing and being familiar with the State's guidance related to the development of the ISA and the Hazardous Material process. All guidance and information related to this can be found on the Hazardous Materials Toolkit.

- b. Produce and submit to the State a completed ISA using the State's ISA Environmental Compliance Toolkit guidance format.
- c. The Engineer's completed ISA shall include, when applicable, full copies of list search reports, including maps depicting locations, copies of agency file information, photographs, recommendations, and any other supporting information gathered by the Engineer to complete the ISA.
- d. Based on the ISA information, the Engineer shall provide the State a report discussing the known or potential hazardous materials impacts suitable for inclusion in the environmental document. The report of hazardous materials impacts shall include, when applicable:
 - 1) A concise summary of relevant information gathered during the ISA, including sufficient information to show that the study area for the Transportation Activity was adequately investigated for known or potential hazardous material contamination.
 - 2) A concise description of the scope of the hazardous materials ISA, disclosure of any limitations of the assessment, and a statement indicating who performed the assessment.
 - 3) A concise summary of the findings of the assessment for each alternative considered, along with an opinion of the potential of an identified site to impact the project during construction.
 - 4) A discussion of any commitments recommended for performing further investigation of suspect areas, and justification for postponement of further investigation.

- 5) A summary of efforts to be employed by the State to avoid or minimize involvement with known or suspected hazardous material contamination sites during construction, and justification for not avoiding contaminated sites within the preferred alternative or corridor alignment.
 - 6) Disclosure of known or suspected hazardous material contamination that is anticipated to be encountered during construction.
 - 7) A discussion of any required or recommended special considerations, contingencies or provisions to handle known or suspected hazardous material contamination during right-of-way negotiation and acquisition, property management, design and construction.
 - 8) A summary of any early coordination or consultation conducted with the regulatory agencies, local entities or property owners.
 - 9) A discussion of any further hazardous materials related coordination with, and approvals or permits required from, the regulatory agencies or other entities.
- g. Should the findings of the ISA conclude that additional investigation, special considerations, or other commitments from the State are required during future stages of project development, the Engineer shall review those findings and commitments with the State prior to completing the hazardous materials discussion for the environmental document.

29. Regional Toll Analysis (if required)

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

See Federal Highway Administration (FHWA) and Texas Department of Transportation (TxDOT) Joint Guidance for Project and Network Level Environmental Justice, Regional Network Land Use, and Air Quality Analyses for Toll Roads April 23, 2009

30. Public Involvement (23 CFR §771.111)

(This scope is for the corresponding section(s) as listed in the Public Involvement section of the EA.)

The Engineer shall:

- a. Perform public involvement activities in accordance with TAC, Title 43, Part 1, Chapter 2 and 36 CFR 800.2.
- b. Develop a plan for public involvement activities. The Public Involvement Plan (PIP) shall specify all activities to be performed and alternatives to be discussed during public involvement activities and address the cultural and human environmental potential impacts. Public involvement

activities must be carried out in compliance with EO 13166 and EO 12898. The plan shall also discuss outreach strategies for both the general public and targeted strategies for Environmental Justice and Limited English Proficiency populations.

- c. Compile, maintain and update a mailing list of people, agencies and organizations interested in the Transportation Activity.
- d. Make all arrangements and pay for meetings with affected property owners (MAPOs), public meetings and hearings, including the site of the meetings, mailing and publishing notices, preparation of exhibits, provision for taping or transcription of proceedings, and any other arrangements as directed by the State. The Engineer's Technical Expert shall not hold public meetings or hearings in the absence of State personnel.
- e. Submit all legal notices to the State for review no less than two weeks prior to publication.
- f. Arrange a meeting with the State to review all exhibits and other materials to be used prior to public meetings or hearings.
- g. Obtain the State's approval for all legal notices, exhibits, and other materials.
- h. Provide personnel to staff meetings and hearings, including a translator and people to perform registration, make presentations, and answer questions. Staffing levels of personnel to be provided shall be identified.
- i. Develop and submit to the State a public meeting documentation packet consistent with the Environmental Compliance Toolkits. the documentation packet shall be included in the environmental document.
- j. Develop and submit to the State a report consistent with the Environmental Compliance Toolkits
- k. Develop and send acknowledgement letters and response letters to commenters at public meetings or hearings. The Engineer's Technical Expert shall not distribute acknowledgement or response letters without prior approval by the State.
- l. Develop, publish, and distribute a newsletter on the Transportation Activity, including compiling and maintaining a mailing list, if directed by the State. The Engineer's Technical Expert shall not distribute the newsletter without prior approval by the State.
- m. Develop and maintain a web site to disseminate information on the Transportation Activity and to gather comments from the public, if directed by the State. The web site shall be approved by the State prior to making it available to the public over the internet. All updates to the web site must be approved by the State prior to posting.

31. Section 4(f) Evaluations.

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

- a. The 4(f) Section of the environmental document shall document all data necessary to address to the satisfaction of the State potential use of Section 4(f) properties in accordance with 23 CFR 774.
- b. All Section 4(f) evaluations shall meet the requirements set forth in the State's Environmental Compliance Toolkit guidance.

32. Section 6(f) Evaluation

(This scope is for the corresponding section(s) as listed in the Affected Environment and Environmental Consequences section of the EA.)

The Engineer shall determine if Land and Water Conservation Fund Act funds were used for the Section 4(f) property in accordance with the regulatory requirements and TPWD guidelines.

33. Re-evaluation

The Engineer shall develop re-evaluations in accordance with 23 CFR 771.129. All re-evaluations shall meet the requirements set forth in the State's Environmental Compliance Toolkit guidance.

34. Reference Documents

The Engineer shall adhere to the content of TxDOT's On-Line Environmental Compliance Toolkit guidance

General Standards for Surveying

All surveys must meet or exceed the standards set in the Professional Land Surveying Practices Act, the General Rules of Procedures and Practices promulgated by the Texas Board of Professional Land Surveying (TBPLS), and the Texas Department of Transportation (TxDOT) TxDOT Survey Manual, latest edition, and shall be accomplished in an organized and professional manner, subject to the approval of the State.

The Engineer's Surveyor shall use the State's ROW Vol. 1 - Procedures Preliminary to Release, (online at: <http://onlinemanuals.txdot.gov/txdotmanuals/ppr/index.htm>) and the TxDOT Survey Manual, latest edition, as the basis for the format and preparation of all right-of-way documents produced, including Right-of-Way (ROW) maps, property descriptions (including parcel plats), and other Right-of-Way work products, unless otherwise specified by the State.

The Engineer's Surveyor shall use the North American Datum of 1983 (NAD83), Texas Coordinate System of 1983 (State Plane Coordinates), applicable to the zone or zones in which the work is performed, with values in U.S. Survey Feet, as the basis for all horizontal coordinates derived, unless otherwise directed by the State. The Engineer's Surveyor shall use the datum adjustment currently in use by the State unless otherwise specified by the State.

Project or surface coordinates must be calculated by applying a Combined Adjustment Factor (CAF) to State Plane Coordinate values. The State may direct the Engineer's Surveyor to use a specific CAF for a project to: a) match existing or ongoing projects, b) conform to a county-wide surface adjustment factor, or c) be calculated specifically for the project area.

Elevations must be based on the North American Vertical Datum 88 (NAVD88), unless otherwise specified by the State.

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

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

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

The Engineer's Surveyor shall provide temporary signing and traffic control in and around survey operations; the signing and traffic control shall comply with provisions of the Texas Manual of Uniform Traffic Control Devices. All signs, flags and safety equipment shall be provided by the Engineer's Surveyor. The Engineer's Surveyor shall notify the Public Information Office of the District where the work is to be performed at least five working days in advance of any lane closures.

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

The Engineer's Surveyor shall provide Survey Data (original and processed) to the State on a compact disk or other approved medium. The Survey Data must be fully compatible with the State's computer system and with programs in use by the State at the time of the submission, without further modification or conversion. The current program formats used by the State are: *Microsoft Office Word 2010* for word processing, *MicroStation V8i* and *GEOPAK Survey* for graphics applications and ArcGIS for its Geo-Database platform. Data collection programs must be compatible with the current import formats allowed by *GEOPAK Survey* and be attributed with current Feature Codes. These programs may be replaced at the discretion of the State.

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

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

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

Specific Work To Be Performed

The Engineer's Surveyor shall perform surveying services for projects and locations as directed by the State per the function codes and description of work provided below.

FUNCTION CODE 130(130) – RIGHT-OF-WAY (ROW) DATA

ROW Mapping

ROW Mapping includes the performance of on the ground surveys and preparation of parcel maps, legal descriptions (metes and bounds descriptions), and right-of-way maps.

1. PURPOSE

The purpose of right-of-way mapping is to prepare documents suitable for the acquisition of real property interests and the probable issuance of a title policy.

2. DEFINITIONS

For purposes of this Contract, the following definitions shall apply:

- 2.1. Abstract Map (Working Sketch) – A drawing to scale prepared from record documents depicting proposed right-of-way lines, existing right-of-way lines, easement lines, and private property lines with relevant grantee names, recording data, and recording dates.
- 2.2. Closure/Area Calculation Sheet – A computer generated print-out of the area and the perimeter bearings, distances, curve data, and coordinates of an individual parcel of land to be acquired.
- 2.3. Denial of Access Line – A line which indicates specific location where access to the roadway is denied.

- 2.4. Property Description – A document prepared as an exhibit for the conveyance of a property interest, reflecting a boundary survey, signed and sealed by a Registered Professional Land Surveyor (RPLS), attached to an acquisition deed as Exhibit A, and consists of the following two (2) parts:
- i. A written metes and bounds description delineating the area and the boundary and describing the location of an individual parcel of land unique to all other parcels of land.
 - ii. A parcel plat – An 8 ½ inch by 11 inch formatted drawing to scale depicting all the information shown on the right-of-way map regarding an individual parcel of land to be acquired.
- 2.5. Owner – The most current title holder of record as determined by a study of the Real Property Records.
- 2.6. Parent Tract – A unit or contiguous units of land under one ownership, comprising a single marketable tract of land consistent with the principle of highest and best use.
- A parent tract may be described by a single instrument or several instruments. A single parent tract cannot be severed by a public right-of-way, easement, or separate ownership which destroys unity of use.
- 2.7. Parent Tract Inset – A small line drawing, to an appropriate scale, of the parent tract perimeter placed upon the right-of-way map in the proximity of the respective parcel. Parent tract insets are used in cases where the parent tract cannot be shown to the same scale as the right-of-way map. Since parent tract insets are used to identify the limits and location of parent tracts, they must include public right-of-ways, utility easements and fee strips, and identifiable water courses which bound the parent tract.
- 2.8. Point of Beginning (P.O.B.) – A corner of the parcel of land to be acquired, located on the proposed right-of-way line and being the beginning terminus of the first course of the property description.
- 2.9. Point of Commencing (P.O.C.) – A monumented property corner which can be identified in the Real Property Records and is located outside the proposed right-of-way corridor. For title purposes, the point of commencing must be a monumented back corner of the parent tract. In the event a monumented back corner of the parent tract cannot be recovered, the nearest identifiable monumented property corner located outside the proposed right-of-way corridor may be used.
- 2.10. Preliminary Right-of-Way Layout – A drawing to scale depicting proposed right-of-way lines; existing right-of-way lines; proposed pavement; access denial lines; the proposed centerline alignment, private property lines; easement lines; visible improvements; visible utilities; and the station and offset from the centerline alignment to each Point of Curvature (PC), Point of Tangency (PT), and angle point in the proposed right-of-way lines and to each PC, PT, and angle point in the existing right-of-way lines in areas of no proposed acquisition.

- 2.11. Right-of-Way Maps – A series of 22 inch by 34 inch drawings to scale depicting the results of relevant elements of records research, field work, analysis, computation, and map making required to determine title, delineate areas and boundaries, and locate and describe utilities and improvements to the extent necessary to appraise the value and negotiate the acquisition of individual parcels of private land for a proposed right-of-way project.

3. PROCEDURE

All standards, procedures and equipment used by the Engineer's Surveyor shall be such that, at a minimum, the results of the survey shall be in compliance with the "Precision and Accuracy Requirements" set forth by the latest Board Rule as promulgated by the Texas Board of Professional Land Surveying (TBPLS).

3.1. Abstract Map (Working Sketch)

The Engineer's Surveyor shall prepare an abstract map sufficient to determine the following:

- i. Any and all interests of public record held in the land to be acquired.
- ii. The total record holdings to be acquired from an owner contiguous to a land.
- iii. Any and all interests in land held in common to be acquired (shopping mall parking lots, subdivision reserves, etc.)
- iv. Any and all improvements proposed by other agencies which may have a bearing on project development.
- v. All called monuments, bearings, and distances as per recorded information.

3.2. Right-of-Way Map

The Engineer's Surveyor shall field locate items such as: property corners, existing right-of-way markers, improvements, and visible utilities. The Engineer's Surveyor shall verify and update the planimetric file as directed by the State.

The Engineer's Surveyor shall prepare a right-of-way map for each proposed right-of-way project. A right-of-way map must include a title sheet, an index sheet, a survey control index sheet, a horizontal control data sheet, and sufficient plan sheets to cover the proposed project, and other sheets as directed by the State. The State has developed standard title sheets, index sheets, and plan sheets, copies of which the Engineer's Surveyor shall request and secure for all purposes of this Contract.

By mutual agreement between the TBPLS and the State, right-of-way maps need not be signed and sealed by a RPLS.

Plan sheets must include, but need not be limited to, the following items of information:

- i. Proposed right-of-way lines delineated with appropriate bearings, distances, and curve data. Curve data must include the radius, delta angle, arc length, and long chord bearing and distance.
- ii. Existing right-of-way lines delineated with appropriate bearings, distances, and curve data to the extent necessary to describe the individual parcels of land to be acquired. Curve data must include the radius, delta angle, arc length, and long chord bearing and distance.
- iii. The proposed project baseline alignment delineated with appropriate bearings, distances, and curve data. Curve data must include the station of the curve, Point of Intersection (PI), radius, delta angle, arc length, tangent length, long chord bearing and distance, and the N and E coordinates of the curve PI. All alignment PCs, PTs, and even 500 foot stations must be labeled as to station.
- iv. Proposed paving lines combined with relevant existing paving lines must be shown to the extent necessary to compile a complete picture of proposed traffic movements. Proposed paving on the final product submitted to the State must be shaded with a dot pattern or highlighted by some other means acceptable to the State.
- v. Denial of Access lines must be shown sufficiently to indicate areas where access is to be denied and where access is to be permitted.
- vi. Private property lines must be delineated with appropriate bearings, distances, and curve data to the extent necessary to describe the individual parcels of land to be acquired. Curve data shall include the radius, delta angle, arc length, and long chord bearing and distance.
- vii. League lines and survey lines must be shown and identified by name and abstract number.
- viii. County lines and city limit lines must be located and identified by name.
- ix. A north arrow must be shown on each sheet, and, if possible, located in the upper right corner of the sheet.
- x. Monumentation set or found must be shown and described as to material and size.
- xi. A station and offset must be shown for each PC, PT, and angle point in the proposed right-of-way lines. Stations and offsets shall be shown with respect to the proposed centerline alignment.
- xii. Intersecting and adjoining public right-of-ways must be shown and identified by name, right-of-way width, and recording data.
- xiii. Railroads must be shown and identified by name, right-of-way width, and recording data.

- xiv. Utility corridors must be identified as to easement or fee.
- xv. Easements and fee strips must be shown and identified by width, owner, and recording data.
- xvi. Building lines or set-back lines must be shown and identified.
- xvii. Visible improvements located within the proposed right-of-way corridor or within 50 feet of a proposed right-of-way line must be shown and identified.
- xviii. Structures must be identified as commercial or residential, by number of stories, and as to type (brick, wood frame, etc.).
- xix. Structures which are severed by a proposed right-of-way line must be dimensioned to the extent necessary to completely delineate the severed parts.
- xx. Parking areas, billboards, and other on-premise signs which are severed by a proposed right-of-way line must be dimensioned to the extent necessary to delineate that portion of the parking area, billboard, or sign which is located within the proposed right-of-way corridor.
- xxi. In cases where structures are located outside the proposed right-of-way corridor and within ten feet of a proposed right-of-way line, the shortest distance between the structure and the proposed right-of-way line must be shown.
- xxii. If the structure is an element of the planimetric furnished to the Engineer's Surveyor by the State, the Engineer's Surveyor may snap to the structure to determine the shortest distance to the proposed right-of-way line. However, if the distance is less than three feet, the Engineer's Surveyor shall verify the distance in the field.
- xxiii. Visible utilities located within the proposed right-of-way corridor or within 50 feet of a proposed right-of-way line must be shown and identified.
- xxiv. Visible location of vents and filler caps of underground fuel storage tanks situated within the proposed right-of-way corridor or within 50 feet of the corridor must be determined and shown.
- xxv. Points of commencing and points of beginning must be shown and labeled. Points of beginning must be shown with their respective N and E surface coordinates. As an exception, a point of commencing will not be required in the case of a total taking without a remainder.
- xxvi. Each parcel of land to be acquired must be identified by a parcel number which shall appear in the ownership tabulation and on the right-of-way map in the proximity of the respective parcel. If the Engineer's Surveyor is unfamiliar with the criteria used by the State to assign parcel numbers, the Engineer's Surveyor shall seek the assistance of the State at the time the abstract map is complete.

- xxvii. An ownership tabulation must be shown that includes the parcel number, existing area of the parent tract, lot(s) and block(s) constituting the parent tract when applicable, owner's name, type of conveyance, film code, county clerk's file number, taking area, and remaining area of the parent tract located left and right of the centerline alignment or both. Types of conveyance, film code and file numbers refer to conveyances to the State and will be added to the right-of-way map by the State at a later date. The Engineer's Surveyor must provide several blank lines in the tabulation block to facilitate future map additions.
- xxviii. A parent tract inset must be shown for each parent tract which cannot be shown to scale on the right-of-way map. The use of broken scale lines must be avoided. When parent tract insets are used, the point of commencing with the appropriate bearing and distance to the point of beginning may be shown on the parent tract inset.
- xxix. A note must be included on the title sheet and each map sheet stating the source of bearings, coordinates, and datum used. The note must also include the National Geodetic Survey (NGS) or other basis monument(s) name or identification number, State Plane Coordinate zone information, EPOCH information, Grid or Surface values and the Combined Adjustment Factor or Surface Adjustment Factor.
- xxx. Appropriate notes must be included on the title sheet and each map sheet stating the following:
- Month(s) and year abstracting upon which the map is based.
 - Month(s) and year field surveys were conducted upon which the map is based.
 - Month and year the map was completed by the Engineer's Surveyor.
- xxxi. The right-of-way Control-Section-Job (CSJ) number, if available, shall be shown on each right-of-way map sheet.
- xxxii. The Engineer's Surveyor shall Place four Tick Marks, one in each quadrant of the map sheet, showing the Latitude and Longitude (Lat/Long) and the surface coordinate of each mark. The tick marks may be placed on the match lines of each map sheet, if convenient. A foot note must also be placed on the sheet defining the tick marks as Lat/Long in Decimal Degrees.

3.3. Exhibits

The Engineer's Surveyor shall prepare a Property Description for each parcel or tract consisting of two parts: (1) a metes and bounds description of the property and (2) a parcel plat. Each part of a Property Description must be signed and sealed by a RPLS.

- i. Metes and bounds description

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A metes and bounds description must be prepared for each parcel of land to be acquired. The State has developed standard formats for metes and bounds descriptions, copies of which the Engineer's Surveyor shall request and secure for all purposes of this Contract. Metes and bounds descriptions must include, but need not be limited to, the following items of information:

- State, County, and Survey within which the proposed parcel of land to be acquired is located.
- A reference to unrecorded and recorded subdivisions by name, lot, block, and recording data to the extent applicable.
- A reference by name to the grantor and grantee, date and recording data of the most current instrument(s) of conveyance describing the parent tract.

Where possible, the Engineer shall use execution dates in deed references as opposed to recording or filing dates. In any case, the metes and bounds description shall make clear which date is being used.

- A point of commencing.
- A point of beginning with the appropriate N and E surface coordinates.
- A series of courses, identified by number and proceeding in a clockwise direction, describing the perimeter of the parcel of land to be acquired, and delineated with appropriate bearings, distances, and curve data.

Curve data must include the radius, delta angle, arc length, and long chord bearing and distance.

Each course must be identified either as a proposed right-of-way line, an existing right-of-way line, or a property line of the parent tract. Each property line of the parent tract must be described with an appropriate adjoiner call.

- A description of all monumentation set or found shall include, as a minimum, size and material.
- A reference to the source of bearings, coordinates, and datum used.

ii. Parcel plat

A parcel plat must be prepared for each parcel of land to be acquired. The State has developed standard formats for parcel plats, copies of which the Engineer's Surveyor shall request and secure for all purposes in this Contract. Parcel plats must include each and every item of information shown on the right-of-way map which concerns the individual parcel.

4. ADHERENCE TO STANDARDS

For purposes of clarity, consistency, and ease of understanding, the State, as an acquiring agency of private property for public use, has adopted standards and formats for right-of-way mapping which have proven to facilitate the processes of negotiation, appraisal, relocation assistance, and condemnation. The Engineer's Surveyor shall adhere to these standards and formats to every extent possible to ensure that the needs of the State are met.

5. GENERAL SPECIFICATIONS

For purposes of this Contract, the following general specifications for right-of-way mapping apply:

- a. Completed right-of-way maps must be submitted to the State in both Microstation CADD files and Adobe PDF format that conform to producing a final print or plot which is 22 inches by 34 inches in size with a 21 inch by 32 inch printed border positioned $\frac{1}{2}$ inch from the top, bottom, and right edge of the sheet.
- b. Parcel plats must be submitted to the State on 8 $\frac{1}{2}$ inch by 11 inch bond paper with respective borders of 7 $\frac{1}{2}$ inches by 10 inches, positioned $\frac{1}{2}$ inch from the top, bottom, and right edge of the sheet. Match lines must be used where more than one sheet is required.
- c. Right-of-way maps must be drawn to a scale of 1 inch = 50 feet. An appropriate scale other than 1 inch = 50 feet may be used on some proposed right-of-way projects with prior approval by the State.
- d. The smallest size lettering acceptable on a right-of-way map shall be 1/10 of one inch (Leroy #100) because right-of-way maps are reduced in size by one-half for archiving purposes, t . A right-of-way map which contains any lettering smaller than 1/10 of one inch will not be accepted by the State.
- e. Parcel plats must be drawn to a preferred scale of 1 inch = 50 feet. An appropriate scale other than 1 inch = 50 feet may be used on some proposed right-of-way projects with prior approval by the State. In the case of a very large parcel which would be difficult to show with clarity on a single 8 $\frac{1}{2}$ inch by 11 inch sheet, the Engineer's Surveyor shall use multiple 8 $\frac{1}{2}$ inch by 11 inch sheets with matching lines.
- f. The smallest size lettering acceptable on a parcel plat shall be 0.06 of an inch (Leroy #60).
- g. Property descriptions shall be submitted on 8 $\frac{1}{2}$ inch by 11 inch bond paper.
- h. The Engineer's Surveyor shall obtain State approval prior to using a paper product not previously approved by the State.

5. GENERAL REQUIREMENTS

For purposes of this Contract, the following general requirements shall apply:

- 6.1. Copies of instruments of record submitted to the State must be indexed by parcel number.
- 6.2. Coordinates appearing on right-of-way maps, on parcel plats, and in property descriptions must be surface coordinates based on the Texas Coordinate System. The appropriate combined adjustment factors (sea level factor multiplied by the scale factor) for each zone of the coordinate system, which have been developed by the State, must be noted.

In order to obtain surface coordinates, the Engineer's Surveyor shall multiply grid coordinates by the appropriate combined adjustment factor for each zone, as provided by the State (The Grid coordinates multiplied by the combined adjustment factor = surface coordinates).

- 6.3. Line and curve tables may be used when necessary.
- 6.4. The number of centerline alignment stations to be shown on a single plan sheet are restricted to the extent necessary to allow approximately four inches between match lines and sheet borders for future details and notes.
- 6.5. A minimum four inch by four inch space shall be reserved at the bottom right corner of each map sheet for future revision notes.
- 6.6. Based on the discretion and direction of the State, a 5/8 inch Iron Rod with the State's Aluminum Cap (or other appropriate monument) may be set on the proposed right-of-way line, and may be replaced at a later date with the State's Type II right-of-way marker.

When the State's 5/8" iron rod with the State's Aluminum Cap is set for PCs, PTs, Pls, and 1500 foot stations, the double asterisk symbol (**) must be shown on the map sheets and written into and shown in the property description and must be accompanied by the following note:

**The monument described and set may be replaced with the State's Type II right-of-way marker upon the completion of the construction project, under the supervision of a RPLS, either employed or retained by the State.

7. GIS SUBMISSION REQUIREMENTS AND STANDARDS

All ROW Mapping project work authorizations are subject to the following submission requirements and standards:

- 7.1. The required geo-referenced parcel data (features) must be submitted in ArcGIS 10 format or the current version in use by the State and in the format of the current ROW Geo-Database Template, which shall be provided by the State.
- 7.2. The template is available for download from the ROW Division's webpage on the State's internet site (txdot.gov), along with more detailed requirements.

- 7.3. The template's Coordinate System is Geographic coordinates (longitude and latitude), North American Datum of 1983 in Decimal Degrees (8 or more place after the decimal point).
- 7.4. The data must be geospatially correct and submitted to the State in the exact format of the template.

8. ELECTRONIC RIGHT-OF-WAY MAPPING STANDARDS

The primary purpose of this section is to provide instructions for the graphics standards, file management structure, and naming conventions, for right-of-way mapping electronic deliverables submitted to the State's Right-of-Way Division by the Districts, other Divisions, and Consultants, as an integral part of the right-of-way mapping package.

The software, file types and file formats must be compatible with those used by the District/Division Design for Schematics and PS&E (e.g., native *MicroStation V8i* files for graphics, *Microsoft Office Word 2010* for metes and bounds descriptions).

8.1. *MicroStation V8i*

All graphic files for Map Sheets and Parcel Plats must be native DGN files created using *MicroStation V8i* with the State's current seed files and the State's workspace environment, settings, and resource files.

8.2. Level Library Files

The Engineer's Surveyor shall use the State's current *MicroStation V8i* Level Library Files for right-of-way mapping. The files contain all the predefined levels that will normally be needed for right-of-way mapping and to show existing utilities.

8.3. Separate DGN Files for Each Map Sheet

The Engineer's Surveyor shall provide one DGN file for each map sheet so that each right-of-way map sheet is spatially correct (snapping on elements gives correct coordinate values), This allows multiple users to work on different sheets at the same time from a server in production, with all the sheets utilizing the same master reference files. (Note: It is possible to have all the sheets in one DGN, but only one person at a time would be able to work on the project.)

The sheet file naming convention is "ROW CSJ_Sheet Number.dgn", with an example as follows: "212104065_S01.dgn"

In the example above, the first nine (9) numbers "212104065" is the right-of-way CSJ for the project and "S01" is the sheet number, beginning with number 1 as the cover sheet.

8.4. Format of the MDF/MRF (Master Design File or Master Right-of-Way Files) DGN Reference Files and Map Sheet Naming Conventions

The recommended naming prefix for design files is MDF (Master Design File). Therefore, the prefix must be different for the right-of-way files because the location of the existing and proposed right-of-way in the design files from the schematic will change to some degree after an on the ground survey is made for right-of-way mapping. Therefore, the prefix could be MRF for Master Right-of-Way File.

The corrected Master Right-of-Way Files shall be given to the design engineer to be used in the final PS&E so that all features of construction and the relocation of utilities shall be correctly placed in relation to the highway right-of-way and the right-of-way of cross streets or roadways.

The Master Right-of-Way File naming convention is: "MRF ROW CSJ_Logical Name.dgn", with examples as follows: MRF212104065_Schematic90.dgn (Schematic layout 90% submittal);

MRF212104065_Schematic100.dgn (Schematic layout 100% submittal);
 MRF212104065_SchemApprov.dgn (Final Approved [State & FHWA] Schematic);
 MRF212104065_PSEDesign.dgn (Final P.S.&E. Design);
 MRF212104065_ExROW.dgn (Existing right-of-way determined by RPLS);
 MRF212104065_PropROW.dgn (Proposed right-of-way of final design);
 MRF212104065_DeedPlot.dgn (Deed Record);
 MRF212104065_Planimetric.dgn (Aerial mapping topography);
 MRF212104065_ROWTopo.dgn (Improvements data collection);
 MRF212104065_DesignTopo.dgn (Design level data collection topography);
 MRF212104065_ExUtil.dgn (Existing utilities), etc.

All sheet files with a plan view must have the MRF referenced to allow more than one sheet file to be worked on at the same time.

8.5. File Structure of Master and Reference DGN Files

If possible, the file structure will not have any subfolders, to allow better transfer of data to different PC or server drive names or CD/DVD's without path problems to reference files when the sheet files are opened.

8.6. Lines Weights, Line Styles, Colors, Text Size, Text Fonts, Scale, and Annotations

Legibility is the primary concern when choosing the scale, line weights and text size. Not only must the sheets be legible at full scale sheet size (22 inches x 34 inches), they must be completely legible at half scale sheet size (11 inches x 17 inches). Even if the originals or first generation plots are legible, the reproductions (copies) must also be legible.

The normal scales for the full scale sheet size must be 1 inch = 50 feet (urban) and 1 inch = 100 feet (rural), which shall be 1 inch = 100 feet and 1 inch = 200 feet, respectively, when plotted or reduced to the half scale sheet size.

Minimum line weights, text size and text font are dictated by legibility at half scale sheet size (11 inches x 17 inches). Even if the originals or first generation plots are legible, the reproductions (copies) must also be legible.

Standard cell library: TxdotSurv_04.cel or current State cell files; Standard Font: 1 Leroy; and standard State color tables: V256COLR.ctb or Txgpk.ctb.

The Engineer's Surveyor shall use the State's current *GEOPAK Survey* SMD file that sets up new feature codes in SMD file for alignment chains, parcel chains and survey chains that can be drawn by *GEOPAK Survey* from the GPK file with the correct line styles, colors and weights to the designated levels loaded into the dgn by the State's current level library files.

The Engineer's Surveyor shall use *MicroStation Packager* for the submission of electronic deliverables, which would capture any non-State standard rsc, cel, text, etc. files that were used in the mapping that look and plot differently in the State's *MicroStation® V8i* workspace.

8.7. Text and Line Colors When Using Color Digital Orthoimagery in the Background

The predominate colors of the digital orthoimagery (greens, browns, etc) dictate which line and text colors stand out and are legible. Some degree of trial and error is sometimes needed.

8.8. Required Data in the *GEOPAK* Right-of-Way GPK File

Alignments, chains of proposed and existing right-of-way lines, parent tracts and taking parcels, and all otherpoints collected in the field (start with schematic or design GPK file) are required.

If the design GPK file is too detailed for right-of-way use, input files can be created for the information sought from the design GPK file to load into the right-of-way GPK file.

8.9. Surface Coordinate and the ROW GIS Geo-Database

Surface adjustment factors and basis of datum must be well documented in the electronic deliverables "file structure/deliverables read me" file.

8.10. Requirements for Electronic Deliverables

Native *MicroStation V8i* DGN files (reference files, sheets files, and parcel plats files);

GEOPAK Survey GPK files;

Separate comma delimited point files (ASCII file) and .csv file in the following types of coordinates: Surface or Projected Coordinates, Grid Coordinates (Texas Coordinate System of 1983 in U.S. Survey feet) and Geographic Coordinates (WGS-84 in decimal degrees) in the following format: point number, northing or latitude, easting or longitude, elevation, feature code, description. Text/.csv point

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file naming convention is: ROWCSJ_Type of Coordinates.csv (Example: 212101065_Surface.csv, 212101065_Grid.csv, and 212101065_WGS84.csv);

PDF's created in *MicroStation V8i* of Map Sheets (both 22 inches x 34 inches and 11 inches x 17 inches, one set in black and white and another set in color if there is orthoimagery for the background;

PDF's of signed and sealed Property Descriptions, Parcel Plats, and Engineer's Surveyor's Reports and *Microsoft Office Word 2010* documents of Property Descriptions and Engineer's Surveyor's Reports;

Raw and processed GPS files including adjustment reports.

DELIVERABLES

In preparing right-of-way maps, the following are required:

- An Abstract Map (Working Sketch) of the current record title holders.
- A Preliminary Map showing the proposed schematic and existing right-of-way.
- A Right-of-Way map for the project limits under cover of Title Sheet, Index Sheet, Control Data Sheet, and Exhibits of the property descriptions and parcel plats.
- Documentation stating that the appropriate monuments were set on the proposed right-of-way lines at intersecting property lines, and at all PCs, PTs, angle points, intersecting right-of-way lines of side streets, and at 1,500 foot stations.
- Documentation stating that the appropriate monuments were set on the existing right-of-way lines in areas of no acquisition at all PCs, PTs, angle points, and 1,500 foot stations, and as directed by the State.
- The Engineer's Surveyor's report, outlining the approach, reasons or basis for the existing right-of-way determination, and conclusions made.
- A copy of the State's right-of-way mapping check list, signed by the Engineer's Surveyor.

FUNCTION CODE 160(150) – ROADWAY DESIGN

A. Design Surveys and Construction Surveys

Design Surveys and Construction 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.

The purpose of a construction survey is to provide field data in support of highway construction.

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. Obtain or collect data to create cross-sections and digital terrain models.
- ii. Locate existing utilities.
- iii. Locate topographical features and existing improvements.
- iv. Provide details of existing bridge structures.
- v. Provide details of existing drainage features, (e.g., culverts, manholes, etc.).
- vi. Locate wetlands.
- vii. Establish additional 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 existing right-of-ways.
- ix. Review right-of-way maps.
- x. Locate boreholes.

- xi. Perform hydrographic surveys.
- xii. 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.

3.2. Construction Surveys

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

- i. Stake existing or proposed right-of-ways.
- ii. Stake existing or proposed baseline/centerline.
- iii. Stake proposed bridge structures.
- iv. Stake proposed drainage structures (e.g., manholes, culverts, etc.).
- v. Set grade stakes.
- vi. Recover and check existing control points.
- vii. Establish additional control points.
- viii. Check elevations and locations of structures.
- ix. Determine and resolve conflicts associated with survey data.

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

- 6.1. Planimetric design files (DGN) must be fully compatible with the State's *MicroStation V8i* graphics program without further modification or conversion.
- 6.2. 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.
- 6.3. 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:

- 5.1. Digital Terrain Models (DTM) and the Triangular Irregular Network (TIN) files in a format acceptable by the State.
- 5.2. Maps, plans, or sketches prepared by the Engineer's Surveyor showing the results of field surveys.
- 5.3. Computer printouts or other tabulations summarizing the results of field surveys.
- 5.4. Digital files or media acceptable by the State containing field survey data (ASCII Data files).
- 5.5. 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.
- 5.6. Field survey notes, as electronic and hard copies.
- 5.7. 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 MicrosoftOffice Word 2010 format will be provided by the State.
- 5.8. A digital and hard copy of all computer printouts of horizontal and vertical conventional traverses, GPS analysis and results, and survey control data sheets.
- 5.9. All GEOPAK GPK files.
- 5.10. Survey reports in a format requested by the State.

B. Aerial Mapping

Aerial Mapping involves the collection and reduction of aerial survey data, and preparation of site maps and topographic maps.

1. PURPOSE

The purpose of aerial mapping is to provide planimetric digital mapping (DGN) and DTM in support of roadway design.

2. DEFINITIONS

For purposes of this Contract, the following definitions shall apply:

- 2.1. Aerial Photograph – A vertical photograph taken from an aircraft at an altitude above mean terrain elevation to produce a photo scale of 1:3,000.
- 2.2. Analytical triangulation – The process of expanding a skeletal network of ground control points to provide the dense control network to reference each individual photogrammetric stereo model to the actual ground.
- 2.3. Ground control – Ground control targets sufficient in number and geospatial distribution to allow analytical triangulation and mapping to meet American Society for Photogrammetry and Remote Sensing (ASPRS) Class standard for 1” = 40’ scale map accuracy with a one foot contour interval.
- 2.4. Airborne GPS/IMU – An airborne GPS receiver on-board the aircraft recording GPS data to be included in the analytical triangulation with the purpose of reducing the number of ground control points required for an aerial mapping task. Inertial Measurement Unit (IMU) data to supplement the analytical triangulation is optional and its use is at the discretion of the Certified Photogrammetrist.
- 2.5. DGN – A two or three dimensional graphics file produced by *MicroStation V8i*. These files may contain features and improvements plotted in a horizontal plane along the N and E axes which correspond to Texas State Plane Coordinates. These files may contain 2D or 3D elements representing topographic, existing, proposed, schematic, and general layout features.
- 2.6. Digital terrain Model (DTM) – A three dimensional digital model of the ground containing those features necessary to define surface relief. A three dimensional model does not normally contain those planimetric features not necessary to define relief.
- 2.7. Flight Map – A map depicting the flight line layout over the project area.
- 2.8. Horizontal and Vertical Ground Control – Survey control points for which the N and E coordinate and elevation have been determined by on-the-ground surveys.
- 2.9. Low Altitude Photography – Aerial photography with a film photo scale of 1:3000 or a digital image with a ground pixel size of 5 cm or less.
- 2.10. Medium Altitude Photography – Aerial photography with a film photo scale of 1:12,000 or a digital image with ground pixel size of 20 cm.
- 2.11. Planimetric Map – A two dimensional map containing natural ground features and improvements plotted in a horizontal plane along the N and E axes. A planimetric map does not include relief elements such as spot elevations, cross-sections, or contours.
- 2.12. Project Photo Length – The distance over which photographs are required to be taken.

3. TASKS TO BE COMPLETED

3.1. Aerial Photography

The Engineer's Surveyor shall provide aerial photography for low altitude aerial mapping appropriate for detailed design.

i. Ground Control Accuracy Standards

- The Engineer's Surveyor shall provide horizontal ground control that meets standards of accuracy required by the State and 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.
- The Engineer's Surveyor shall provide vertical ground control that meets standards of accuracy required by the State and 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.

ii. Paneling Placement Specifications

For purposes of this Contract, all standards and specifications shall be in accordance with established guidelines and recommended or approved by the State.

iii. Aerial Photography Standards and Specifications

For purposes of this Contract, all standards and specifications shall be in accordance with established guidelines and recommended or approved by the State.

iv. LiDAR Technology

The use of LiDAR Technology (mobile, terrestrial or aerial) will be acceptable when approved by the State and the accuracies of the specified tasks it will be used for are met or exceeded.

DELIVERABLES

The Engineer's Surveyor shall provide:

- Digital Orthophotos on CD or DVD.
- A photo index of the scanned aerial film frames or digital image frames for each frame of photography in the project.

3.2. DGN, DTM and TIN Files

The Engineer's Surveyor shall prepare DGN, DTM and TIN files covering the specific work location, meeting standards and specifications as required.

i. Horizontal Ground Control Accuracy Standards

The Engineer's Surveyor shall provide horizontal ground control that meets standards of accuracy required by the State and 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.

ii. Vertical Ground Control Accuracy Standards

The Engineer's Surveyor shall provide vertical ground control that meets standards of accuracy required by the State and 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.

iii. Map Accuracy Standard

Aerial mapping must meet or exceed the requirements for ASPRS Class 1 standard for 1" = 40' scale mapping with a one foot contour interval.

Field verification of adherence to the required accuracy specification is at the discretion of the State.

iv. Statement of Map Accuracy

For maps that are not field checked but have been compiled to meet the State's accuracy standard, the Engineer's Surveyor shall include the following statement along with the Photogrammetrist's seal on the delivered hard copy and digital versions of the map:

"This map was compiled to meet the ASPRS Standard for Class 1 map accuracy."

If the map was checked and found to conform to this spatial accuracy standard, the statement above and the following statement must also be included on the delivered hard copy and digital versions of the map, and in the field check summary:

"This map was checked and found to conform to the ASPRS Standard for Class 1 map accuracy."

v. DGN File Specifications

- Files must be fully compatible with the State's *MicroStation* graphics system without further modification or conversion.
- File features and level structure must be in compliance with the State's current *Photogrammetry Mapping Legend*.

- Files must be capable of plotting maps to a 1 inch = 40 feet scale with the smallest text size being one tenth of one inch (1/10”).

vi. DTM and TIN Files Specifications

- Files must be fully compatible with the State’s *GEOPAK* graphics system without further modification or conversion.
- The State’s current Level Library Files for Photogrammetry mapping will be provided by the State.
 - File features and level structure must be in compliance with the State’s current *Photogrammetry Mapping Legend*.
 - Files must be capable of plotting maps to a 1 inch = 50 feet scale with the smallest text size being one tenth of one inch (1/10”).

DELIVERABLES

The Engineer’s Surveyor shall provide:

- DGN, DTM and TIN files on a medium and in a format acceptable to the State, delivered on CD, DVD, flash-drive, or hard-drive.
- Orthophotography (created using the DTM) delivered on CD, DVD, flash-drive, or hard-drive in tiff format (3 banded) with world files. If digital, depending on intended use, deliverable formats must include:
 - Raw tiff image – rectified – 4 Band Tiff (for archive only).
 - Color photography – rectified – 3 Band Tiff and Mr. Sid.
 - Infrared Photography – rectified – 3 Band Tiff and Mr. Sid.
- The State’s *Photogrammetry Mapping Legend* and supplements

C. Horizontal and Vertical Control for Aerial Mapping

Horizontal and Vertical Control for Aerial Mapping involves the establishment of the horizontal and vertical control for aerial mapping.

1. PURPOSE

The purpose of an aerial photography control survey is to provide ground control in support of aerial Photogrammetry.

2. DEFINITIONS

An aerial photography control 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 in setting the scale of aerial photographs and determining the relative position of elements visible in said photographs.

3. TASKS TO BE COMPLETED

The following is an outline of the tasks to be performed. The Engineer's Surveyor shall:

- 3.1. Prepare and submit an Aerial Ground Control Layout showing the proposed control and offsite control points, and aerial ground control points, for approval by the State.
- 3.2. Establish and determine the coordinates of the offsite and control points, and aerial ground control points.
- 3.3. Establish and determine the elevations of the offsite and control points, and aerial control points.
- 3.4. Place aerial ground control target material at the established points and maintain until the photographs from the flight are approved.
- 3.5. Prepare, to scale, a Survey Control Index Sheet, a Horizontal and Vertical Control Sheet, and an individual control data sheet for each offsite and control point, and aerial control point.

4. TECHNICAL REQUIREMENTS

- 4.1. Aerial photography control surveys must be performed under the direct supervision of a RPLS currently registered with the TBPLS.
- 4.2. The coordinate location of the aerial control points shall be based on acceptable methods, conducted by the Engineer's Surveyor, and must meet the standards of accuracy as set forth below:

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. The elevation of the aerial control points must be based on acceptable methods, conducted by the Engineer's Surveyor, and shall meet the standards of accuracy as set forth below:

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.

- 4.4. The elevation of aerial control points based on side shots or short traverses must meet the following criteria:
- i. Side shots or short traverses must begin and end on vertical ground control as described above.
 - ii. Standards, procedures, and equipment used must be such that the vertical location relative to the control may be reported to within 0.02 of one (1) foot.

5. AUTOMATION REQUIREMENTS

Post processing of field data will be reviewed by the State. Data processed by standard calculators, computers, and other business hardware and software normally maintained and used by the Engineer's Surveyor shall be considered acceptable.

DELIVERABLES

The Engineer's Surveyor shall:

- Submit a final aerial control point layout showing the location of the points and labeled with their respective alpha-numeric designations.
- Submit a plot and computer graphics of an 11 inch by 17 inch index map showing an overall view of the project and the relationship of primary monumentation and control used in the preparation of the project, signed and sealed by a RPLS, and as directed by the State.
- Submit a plot and computer graphics of an 11 inch by 17 inch horizontal and vertical control sheet showing the primary survey control monumentation used in the preparation of the project, signed and sealed by a RPLS, and as directed by the State.
- Submit an 8 ½ inch by 11 inch data sheet for each aerial ground control point which must include, but need not be limited to, a location sketch, a physical description of the point, surface coordinates, the elevation, and datums used.
- Submit a CD or DVD containing the graphics files and scanned images of the control data sheets.
- Submit a written statement describing the datum used along with copies of all relevant NGS and data sheets.
- Submit a written tabulation of all aerial control points with their respective alpha-numeric designations, surface coordinates (for center panel points only), and elevations.

FUNCTION CODE 130(130) – RIGHT OF WAY (ROW) DATA

A. State Land Surveying

State Land Surveying includes the performance of land surveying associated with “the location or relocation of original land grant boundaries and corners; the calculation of area and the preparation of field note descriptions of both surveyed and un-surveyed land or any land in which the State or the Public Free School Fund has an interest; the preparation of maps showing such survey results; and the field notes and maps of which are to be filed in the General Land Office,” as quoted in the Surveyors Act.

1. PURPOSE

The purpose of state land surveying is to survey all State owned real property under the management of the General Land Office (GLO) or the School Land Board (SLB), to be used by the State for highway purposes.

A survey performed by a Texas Registered Professional Land Surveyor (RPLS) is acceptable except in those circumstances in which the anticipated improvements may cause permanent shoreline alteration or other change or modification of a GLO property shoreline boundary. In such cases, a coastal boundary survey in the form and manner provided by Section 33.136, Texas Natural Resources Code, must be performed by a Texas Licensed State Land Surveyor (LSLS).

2. TASKS TO BE COMPLETED BY A LICENSED STATE LAND SURVEYOR

The State will request state land surveying on an as needed basis. The services shall include, but are not limited to the following:

The Engineer's Surveyor shall:

- 2.1. Survey the coastal and water boundaries, navigable streams or rivers, and other waters that are tidally affected, requiring the determination of the gradient boundary or the mean high water, as appropriate.
- 2.2. Survey the profile of the waterway, along the proposed baseline of the highway.
- 2.3. Survey original land grant boundaries and un-surveyed lands.
- 2.4. Prepare field note descriptions, area calculations, parcel plats, and updating the current right-of-way maps, which are to be filed in the General Land Office.

3. GROUND CONTROL ACCURACY STANDARDS

The Engineer's Surveyor shall provide:

- 3.1. Horizontal ground control in accordance with the current project datum.
- 3.2. Vertical ground control in accordance with the current project datum.

DELIVERABLES

The Engineer's Surveyor shall:

- Prepare all deliverables and present according to current right-of-way mapping standards.

B. Traffic Control

The Engineer's Surveyor shall control traffic in and near surveying operations adequately to comply with provisions of the latest edition of the Texas Manual on Uniform Traffic Control Devices – Part VI which can be found on the State's internet site.

In the event field crew personnel must divert traffic or close traveled lanes, a Traffic Control Plan based upon principles outlined in the latest edition of the Texas Manual on Uniform Traffic Control Devices – Part VI shall be prepared by the Engineer's Surveyor and approved by the State prior to commencement of field work. A copy of the approved plan shall be in the possession of field crew personnel on the job site at all times and shall be made available to the State's personnel for inspection upon request.

C. Underground Excavation

The Engineer's Surveyor shall contact the "Texas Excavation Safety System, Inc." (DIGTESS), or call telephone number 811, to mark underground utilities prior to digging the holes for monuments, as necessary. The Engineer's Surveyor shall maintain documentation of all notification calls. The Engineer's Surveyor shall comply with the States excavation laws as they appear in the Texas Administrative Code (TAC).

D. Preventative Measures to Prevent the Spread of Oak Wilt Contamination

The Engineer's Surveyor shall take the following preventive measures while cutting, pruning, or removing oak trees in counties which have confirmed cases of Oak Wilt or at the direction of the State:

- When possible, employ alternative methods instead of pruning or cutting oak trees.
- When possible, perform necessary pruning and cutting of healthy trees during the winter months of January and February when Sap Beetles are least active. Also, if possible, avoid pruning or cutting during Spring months when Sap Beetles are most active.
- Treat wounds with pruning paint in Oak Wilt infected counties to discourage insects, especially during warm weather.
- Sterilize all pruning tools between each tree with either Lysol™ spray or a 70 percent rubbing alcohol solution. The use of chlorine bleach solutions to sterilize pruning tools is discouraged due to premature oxidation or rusting of steel parts.
- Destroy the tree cuttings by burning or burying the wood, or dispose of the wood in another approved method.

E. Additional Requirements

1. ADHERENCE TO SCHEDULE

If at any time during the Contract Period the Engineer's Surveyor determines that it is unable to meet a scheduled submission date, the Engineer's Surveyor shall notify the State in writing immediately. This notification shall consist of an explanation as to the reason(s) for the delay and a revised submission schedule, which shall to the extent possible, incorporate a plan to recover days lost as a result of subject delay.

If at any time during the Contract Period the Engineer's Surveyor encounters unforeseen circumstances which may materially affect the scope, complexity or character of the work authorized by the State, the Engineer's Surveyor shall notify the State in writing immediately with a complete description of the circumstances encountered.

2. TRANSMITTAL

All documents submitted to the State shall be accompanied by a letter of transmittal which shall include, but need not be limited to, the highway number, project limits, county, CSJ, contract number, work authorization number and an inventory of attachments.

3. RIGHT-OF-ENTRY

It shall be the responsibility of the Engineer's Surveyor to secure permission to enter private property for purposes of survey. **It is the stated policy of the State to make every effort to maintain positive relations with the general public.** In pursuance of that policy, the Engineer's Surveyor shall not commit acts which will result in damages to private property and the Engineer's Surveyor shall make every effort to comply with the wishes and address the concerns of private property owners.

F. Compensation

1. Payment requests shall include the Engineer's Surveyor's invoice.
2. Progress Report

The Engineer's Surveyor shall submit a monthly progress report electronically by the 5th of each month following the month through which status is being reported. Progress and percent complete shall be according to the task as included in the scope.

With each payment request, the Engineer's Surveyor shall submit the corresponding project progress report which shall, as a minimum, include the percentage of total work complete as of the date of the payment request and a description of current work activity. The percentage of total work complete shall not be based simply on the percentage of funds expended, but shall be based on the best judgment of the Engineer's Surveyor as to the percentage of actual work complete.

ATTACHMENT D
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.

The maximum contract time is the time needed to complete all work authorizations that will be issued in the first two years of the contract. All work authorizations must be issued within the initial two-year period, starting from the contract execution date.

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.
<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 **\$5,000,000.00**

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

* Maximum amount payable must be negotiated for each work authorization.

ATTACHMENT E- FEE SCHEDULE			
SPECIFIED RATE AND LUMP SUM PAYMENT BASIS			
PRIME PROVIDER NAME:		Lockwood, Andrews & Newnam, Inc.	
DIRECT LABOR			
LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	10 to 20	\$67.69	\$203.58
Quality Manager	10 to 20	\$62.25	\$187.22
Senior Engineer	15+	\$60.00	\$180.45
Project Engineer	10 to 15	\$49.00	\$147.37
Design Engineer	5 to 10	\$42.00	\$126.32
Engineer-In-Training	1 to 5	\$30.00	\$90.23
Senior Engineer Tech	15+	\$39.00	\$117.29
Engineer Tech	5 to 15	\$29.00	\$87.22
Senior Transportation Planner	15+	\$45.00	\$135.34
Admin/Clerical		\$22.00	\$66.17
Traffic Engineer	5 to 10	\$58.00	\$174.44
Traffic Engineer- Modeler/Analyst	5 to 10	\$35.50	\$106.77
Senior Structural Engineer	15+	\$67.00	\$201.50
Structural Engineer	5 to 15	\$55.00	\$165.41
Senior Hydrologist	15+	\$61.50	\$184.96
Hydrologist	5 to 15	\$46.50	\$139.85
Utilities Coordinator		\$38.00	\$114.29
3D Visualization Technician	1 to 5	\$42.00	\$126.32
3D Modeler	5 to 10	\$55.00	\$165.41
INDIRECT COST RATE:	173.41%		
PROFIT RATE:	10.0%		
<p>Contract rates include labor, overhead, and profit.</p> <p>All rates are negotiated rates and are not subject to change or adjustment.</p> <p>Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.</p> <p>Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.</p> <p>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.</p>			

ATTACHMENT E- FEE SCHEDULE			
SPECIFIED RATE AND LUMP SUM PAYMENT BASIS			
SUBPROVIDER NAME:		AMEC Foster Wheeler Environment & Infrastructure, Inc.	
DIRECT LABOR			
LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	10 to 20	\$58.80	\$160.13
Quality Manager	10 to 20	\$53.58	\$145.91
Senior Engineer	15+	\$55.00	\$149.78
Project Engineer	10 to 15	\$42.00	\$114.38
Design Engineer	5 to 10	\$36.00	\$98.04
Engineer-In-Training	1 to 5	\$32.00	\$87.14
Senior Engineer Tech	15+	\$37.10	\$101.03
Engineer Tech	5 to 15	\$26.25	\$71.49
Junior Engineer Tech	1 to 5	\$19.20	\$52.29
Senior CADD Operator	15+	\$31.00	\$84.42
CADD Operator	5 to 15	\$26.00	\$70.81
Junior CADD Operator	1 to 5	\$18.00	\$49.02
Admin/Clerical		\$20.00	\$54.47
Certified Value Specialist (CSV)		\$75.03	\$204.33
INDIRECT COST RATE:	147.57%		
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.			
Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.			
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 AND LUMP SUM PAYMENT BASIS			
SUBPROVIDER NAME:		Civil Associates, Inc.	
DIRECT LABOR			
LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	10 to 20	\$72.00	\$230.62
Quality Manager	10 to 20	\$66.00	\$211.40
Senior Engineer	15+	\$65.00	\$208.20
Project Engineer	10 to 15	\$52.00	\$166.56
Design Engineer	5 to 10	\$43.00	\$137.73
Engineer-In-Training	1 to 5	\$33.00	\$105.70
Senior Engineer Tech	15+	\$37.00	\$118.51
Engineer Tech	5 to 15	\$31.00	\$99.30
Senior CADD Operator	15+	\$35.00	\$112.11
CADD Operator	5 to 15	\$28.00	\$89.69
Senior Environmental Planner	15+	\$62.00	\$198.59
Environmental Planner IV	10 to 15	\$46.00	\$147.34
Environmental Planner III	5 to 10	\$32.00	\$102.50
Environmental Planner I/II	1 to 5	\$26.00	\$83.28
Project Controller	5 to 15	\$29.00	\$92.89
Admin/Clerical		\$23.00	\$73.67
Senior GIS Operator		\$42.00	\$134.53
GIS Operator		\$34.00	\$108.91
Senior Structural Engineer	15+	\$69.50	\$222.61
Structural Engineer	5 to 15	\$53.35	\$170.88
Senior Designer	20+	\$49.00	\$156.95
INDIRECT COST RATE:	191.19%		
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.			
Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.			
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 AND LUMP SUM PAYMENT BASIS			
SUBPROVIDER NAME:		Dallas Aerial Surveys, Inc.	
DIRECT LABOR			
LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Coordinator - AM		\$45.70	\$124.26
Certified Photogrammetrist		\$36.93	\$100.41
Analytical Triangulation Specialist		\$29.17	\$79.31
Aerial Mapping Technician		\$25.10	\$68.25
Orthophoto Specialist		\$27.50	\$74.77
Mapping Editor (includes QA/QC, Finishing, & Finalization)		\$25.72	\$69.93
Aerial Office Technician		\$17.55	\$47.72
Project Coordinator - AP		\$39.31	\$106.88
Aerial Processing Technician		\$28.99	\$78.82
Project Coordinator - FWAL		\$37.72	\$102.56
Airborne LiDAR Processing Technician		\$29.49	\$80.18
Project Coordinator - HAL		\$37.72	\$102.56
Helicopter LiDAR Processing Technician		\$29.49	\$80.18
Photo Lab Specialist		\$18.00	\$48.94
Photo Processing Technician		\$18.00	\$48.94
Admin/Clerical		\$24.00	\$65.26
INDIRECT COST RATE:	147.18%		
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.			
Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.			
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 AND LUMP SUM PAYMENT BASIS			
SUBPROVIDER NAME:		Dal-Tech Engineering, Inc.	
DIRECT LABOR			
LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
RPLS - Project Manager	15+	\$63.00	\$152.46
RPLS - Task Leader	10 to 15	\$40.00	\$96.80
Senior Survey Tech (Must be Surveyor in Training (SIT), or have a minimum of five year's surveying experience)	5 to 10	\$28.90	\$69.94
Survey Tech	1 to 5	\$23.00	\$55.66
GIS Technician		\$30.00	\$72.60
Abstractor (Property Deed Researcher, Courthouse or Internet research)		\$22.00	\$53.24
Admin/Clerical		\$18.00	\$43.56
INDIRECT COST RATE:	120.00%		
PROFIT RATE:	10.0%		
<p>Contract rates include labor, overhead, and profit.</p> <p>All rates are negotiated rates and are not subject to change or adjustment.</p> <p>Specified Rate Payment Basis - Contract rates to be billed. Documentation of hours must be maintained and is subject to audit.</p> <p>Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.</p> <p>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.</p>			

ATTACHMENT E- FEE SCHEDULE			
SPECIFIED RATE AND LUMP SUM PAYMENT BASIS			
SUBPROVIDER NAME:		Othon, Inc.	
DIRECT LABOR			
LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	10 to 20	\$67.69	\$181.84
Quality Manager	10 to 20	\$62.25	\$167.22
Senior Engineer	15+	\$60.10	\$161.45
Project Engineer	10 to 15	\$48.00	\$128.94
Design Engineer	5 to 10	\$40.50	\$108.80
Engineer-In-Training	1 to 5	\$32.00	\$85.96
Senior Engineer Tech	15+	\$36.00	\$96.71
Engineer Tech	5 to 15	\$31.00	\$83.28
Junior Engineer Tech	1 to 5	\$25.00	\$67.16
Senior CADD Operator	15+	\$33.00	\$88.65
CADD Operator	5 to 15	\$27.00	\$72.53
Junior CADD Operator	1 to 5	\$24.50	\$65.81
Senior Project Controller	15+	\$35.00	\$94.02
Project Controller	5 to 15	\$30.00	\$80.59
Admin/Clerical		\$23.00	\$61.79
Traffic Engineer	5 to 10	\$55.00	\$147.75
Traffic Engineer- Modeler/Analyst	5 to 10	\$39.50	\$106.11
Senior Structural Engineer	15+	\$65.00	\$174.61
Structural Engineer	5 to 15	\$54.00	\$145.06
INDIRECT COST RATE:	144.21%		
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.			
Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.			
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 AND LUMP SUM PAYMENT BASIS			
SUBPROVIDER NAME:		Raba Kistner, Inc.	
DIRECT LABOR			
LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE	HOURLY BASE RATE	HOURLY CONTRACT RATE
Project Manager	10 to 20	\$67.69	\$200.67
Senior Engineer	15+	\$60.10	\$178.17
Project Engineer	10 to 15	\$48.00	\$142.30
Design Engineer	5 to 10	\$35.00	\$103.76
Engineer-In-Training	1 to 5	\$28.50	\$84.49
Senior Engineer Tech	15+	\$32.50	\$96.35
Engineer Tech	5 to 15	\$25.50	\$75.60
Junior Engineer Tech	1 to 5	\$19.50	\$57.81
Senior CADD Operator	15+	\$28.00	\$83.01
CADD Operator	5 to 15	\$24.00	\$71.15
Junior CADD Operator	1 to 5	\$17.00	\$50.40
Senior Geologist	15+	\$43.00	\$127.48
Geologist	5 to 15	\$30.92	\$91.67
Senior Environmental Planner	15+	\$50.00	\$148.23
Environmental Planner IV	10 to 15	\$36.00	\$106.73
Environmental Planner III	5 to 10	\$30.00	\$88.94
Environmental Planner I/II	1 to 5	\$28.00	\$83.01
Senior Environmental Specialist	15+	\$34.00	\$100.80
Environmental Specialist	5 to 15	\$29.00	\$85.97
Junior Environmental Specialist	1 to 5	\$26.00	\$77.08
Senior Environmental Scientist	15+	\$48.00	\$142.30
Environmental Scientist IV	10 to 15	\$36.00	\$106.73
Environmental Scientist III	5 to 10	\$30.00	\$88.94
Environmental Scientist I/II	1 to 5	\$26.00	\$77.08
Senior Biologist	15+	\$41.00	\$121.55
Biologist IV	10 to 15	\$35.00	\$103.76
Biologist III	5 to 10	\$30.00	\$88.94
Biologist I/II	1 to 5	\$26.00	\$77.08
Senior Archeologist-Principal Investigator	15+	\$47.61	\$141.15
Archeologist IV	10 to 15	\$35.00	\$103.76
Archeologist III	5 to 10	\$30.00	\$88.94
Archeologist I/II	1 to 5	\$27.00	\$80.04
Senior Field Tech (Environmental, Biological, Archeological)	15+	\$33.00	\$97.83
Field Tech (Environmental, Biological, Archeological)	5 to 15	\$27.00	\$80.04
Admin/Clerical		\$22.00	\$65.22
Senior GIS Operator		\$30.00	\$88.94
GIS Operator		\$28.00	\$83.01
GIS Technician		\$24.00	\$71.15
INDIRECT COST RATE:	169.51%		
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.			
Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.			
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 AND LUMP SUM PAYMENT BASIS

SUBPROVIDER NAME: Cox McLain Environmental Consulting, Inc.

DIRECT LABOR

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE		HOURLY CONTRACT RATE
Project Manager	10 to 20		\$150.00
Quality Manager	10 to 20		\$149.57
Senior CADD Operator	15+		\$83.55
CADD Operator	5 to 15		\$67.38
Junior CADD Operator	1 to 5		\$64.49
Senior Environmental Planner	15+		\$138.00
Environmental Planner IV	10 to 15		\$115.00
Environmental Planner III	5 to 10		\$96.00
Environmental Planner I/II	1 to 5		\$75.00
Senior Environmental Specialist	15+		\$110.00
Environmental Specialist	5 to 15		\$70.00
Junior Environmental Specialist	1 to 5		\$65.00
Senior Environmental Scientist	15+		\$125.00
Environmental Scientist IV	10 to 15		\$102.44
Environmental Scientist III	5 to 10		\$85.00
Environmental Scientist I/II	1 to 5		\$68.00
Senior Biologist	15+		\$99.72
Biologist IV	10 to 15		\$85.00
Biologist III	5 to 10		\$75.46
Biologist I/II	1 to 5		\$70.07
Senior Archeologist-Principal Investigator	15+		\$98.00
Archeologist IV	10 to 15		\$96.96
Archeologist III	5 to 10		\$66.78
Archeologist I/II	1 to 5		\$57.63
Senior Field Tech (Environmental, Biological, Archeological)	15+		\$58.08
Field Tech (Environmental, Biological, Archeological)	5 to 15		\$45.00
Senior Historian	15+		\$97.02
Historian IV	10 to 15		\$85.00
Historian III	5 to 10		\$72.99
Historian I/II	1 to 5		\$68.72
Senior Architectural Historian	15+		\$97.02
Architectural Historian	5 to 15		\$88.94
Senior Public Involvement Officer	15+		\$99.72
Public Involvement Officer	5 to 15		\$86.15
Senior Public Involvement Specialist	15+		\$95.30
Public Involvement Specialist	5 to 15		\$81.68
Junior Public Involvement Specialist	1 to 5		\$60.00
Environmental Inspector	5+		\$75.00
Admin/Clerical			\$51.21
Senior GIS Operator			\$83.55
GIS Operator			\$67.38
GIS Technician			\$62.59

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.

Lump Sum Payment Basis - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.

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 AND LUMP SUM PAYMENT BASIS****SUBPROVIDER NAME:** Nancy Ledbetter & Associates, Inc.**DIRECT LABOR**

LABOR/STAFF CLASSIFICATION	YEARS OF EXPERIENCE		HOURLY CONTRACT RATE
Project Manager	10 to 20		\$166.00
Engineer Tech	5 to 15		\$83.60
Senior Public Involvement Officer	15+		\$158.00
Public Involvement Officer	5 to 15		\$134.00
Senior Public Involvement Specialist	15+		\$113.00
Public Involvement Specialist	5 to 15		\$91.00
Junior Public Involvement Specialist	1 to 5		\$55.00

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.**Lump Sum Payment Basis** - Invoice by deliverable, according to the table of deliverables. Documentation of hours worked not required.**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/Method	UNIT	COST
Volumetric Shrinkage	ASTM D427	each	\$80.00
Standard Proctor Test	ASTM D698	each	\$220.00
Modified Proctor Test	ASTM D1557	each	\$245.00
Standard Penetration Test (SPT)	ASTM D1586	LF	\$27.50
California Bearing Ratio (Single Sample without MD Curve)	ASTM D1883	test	\$200.00
Unconfined Compressive Strength (Soil)	ASTM D2166	each	\$50.00
Hydraulic Conductivity Permeability	ASTM D2434	each	\$300.00
One Dimensional Consolidation Properties of Soil	ASTM D2435	each	\$375.00
Unconfined Compressive Strength (Rock)	ASTM D2938	each	\$60.00
Direct Shear Test of Soils Under Consolidated Drained Conditions	ASTM D3080	set of 3	\$800.00
Splitting Tensile of Intact Rock Core	ASTM D3967	each	\$125.00
Water Stand Pipes	ASTM D4043	LF	\$24.00
Calcium Carbonate Content of Soils	ASTM D4373	each	\$50.00
Hydraulic Conductivity Permeability	ASTM D4511	each	\$305.00
One Dimensional Swell, Methods A & B	ASTM D4546	each	\$160.00
One Dimensional Swell, Method C	ASTM D4546	each	\$185.00
Permeability of Silt and Clays	ASTM D5084	each	\$400.00
Suction Test (Filter Method)	ASTM D5298	each	\$80.00
Casagrande Type Piezometers	N/A	each	\$30.00
Casagrande Type Piezometers Installation	N/A	each	\$250.00
Vertical Inclinator	N/A	each	\$300.00
Vertical Inclinator Installation	N/A	each	\$732.00
Vibrating Wire Piezometer	N/A	each	\$850.00
Vibrating Wire Piezometer Installation	N/A	each	\$970.00
Soil Boring with SPT	ASTM D1586	LF	\$25.00
Soil Boring/Rock Coring with TCP (< 60 ft.)	Tex-132-E	LF	\$32.00
Soil Boring/Rock Coring with TCP (> 60 ft.)	Tex-132-E	LF	\$39.00
Soil Boring/Rock Coring without TCP (< 60 ft.)	N/A	LF	\$25.00
Soil Boring /Rock Coring without TCP (> 60 ft.)	N/A	LF	\$27.00
Soil Boring without TCP (< 60 ft.):			
(a) Utilizing Continuous Sampler	ASTM D1587	LF	\$29.50
(b) Shelby Push Tubes Extruded in Field	ASTM D1587	LF	\$24.00
(c) Augering	N/A	LF	\$18.00
Soil Boring without TCP (> 60 ft.):			
(a) Utilizing Continuous Sampler	ASTM D1587	LF	\$29.50
(b) Shelby Push Tubes Extruded in Field	ASTM D1587	LF	\$30.00
Core/drill operator/technician and coring equipment used to drill flexible and rigid pavement (2-man crew)	N/A	Trip	\$300.00
(a) 4-in. diameter cores	N/A	Inch	\$25.00
(b) 6-in. diameter cores	N/A	Inch	\$28.00

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		UNIT	COST
1 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$95.00
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$145.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$170.00
Mobilization for Aerial Photography/LiDAR Fixed Wing Aircraft (Includes aircraft, Pilot, Camera/LiDAR Operator, fuel and transportation cost)		project	\$22,500.00
Aerial Photography Flight Crew Fixed Wing Aircraft (Includes Pilot and Camera Operator)		hour	\$205.00
LiDAR Flight Crew Fixed Wing Aircraft (Includes Pilot and LiDAR Operator)		hour	\$205.00
Mobilization for Helicopter Airborne LiDAR (Includes helicopter, Pilot, LiDAR Operator, fuel and transportation cost)		project	\$22,500.00
Helicopter Flight Crew Fixed Wing Aircraft (Includes Pilot and LiDAR Operator)		hour	\$205.00

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		UNIT	COST
SUE Mobilization/Demobilization This cost is intended to be a one-time expense compensation for mobilizing/demobilizing personnel and equipment portal to portal. Vacuum excavation truck (non-local)		mile	\$4.30
SUE (Quality Level C and D) Includes labor and equipment for records research, CADD, and mapping		LF	\$0.45
SUE (Quality Level B - Utility Designation) Includes labor and equipment for records research, designating, engineering, CADD, mapping and limited traffic control.		LF	\$1.50
Includes labor and equipment for surveying and limited traffic control		LF	\$0.45
Level B - (Total)		LF	\$1.95
SUE (Quality Level A- Utility Locate, Test Holes) Level A: 0 to 5 ft (Includes labor and equipment for vacuum excavation, engineering, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.		each	\$935.00
Level A: 0 to 5 ft. (Includes labor and equipment for surveying and limited traffic control)		each	\$50.00
Level A: 0 to 5 ft (Total)		each	\$985.00
Level A: 5 to 8 ft (Includes labor and equipment for vacuum excavation, engineering, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.		each	\$1,300.00
Level A: 5 to 8 ft. (Includes labor and equipment for surveying and limited traffic control)		each	\$50.00
Level A: 5 to 8 ft (Total)		each	\$1,350.00
Level A: 8 to 13 ft (Includes labor and equipment for vacuum excavation, engineering, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.		each	\$1,600.00
Level A: 8 to 13 ft. (Includes labor and equipment for surveying and limited traffic control)			\$50.00
Level A: 8 to 13 ft (Total)			\$1,650.00
Level A: 13 to 20 ft (Includes labor and equipment for vacuum excavation, engineering, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.		each	\$2,200.00
Level A: 13 to 20 ft. (Includes labor and equipment for surveying and limited traffic control)			\$50.00
Level A: 13 to 20 ft (Total)			\$2,250.00
Level A: >20 ft (Includes labor and equipment for vacuum excavation, engineering, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.		LF	\$150.00
Level A: >20 ft. (Includes labor and equipment for surveying and limited traffic control)		LF	\$15.00
Level A: >20 ft (Total)		LF	\$165.00
Note: When the above unit prices are not utilized, the following appropriate rates will apply			
Subsurface Utility Engineering (SUE) Field Services			
One (1) Designating Person with equipment		hour	\$100.00
Two (2) Designating Person with equipment		hour	\$185.00
The unit costs shown include labor, overhead, and profit. Payment based on units completed. No partial payments.			

ATTACHMENT E- FEE SCHEDULE

UNIT COST PAYMENT BASIS

**RATES SHOWN APPLY TO PRIME PROVIDER AND ALL
SUBPROVIDERS**

SERVICES TO BE PROVIDED		UNIT	COST
<p>All unit costs are negotiated costs and are not subject to change or adjustment.</p>			
<p>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.</p>			
<p>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.</p>			

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

SERVICES TO BE PROVIDED	Test Code/Method	UNIT	COST
24-Hour Automated Tube Counts - Volume	N/A	per counter/day	\$200.00
24-Hour Automated Tube Counts - Bi-directional	N/A	per counter/day	\$175.00
24-Hour Automated Tube Counts - Urban Freeway Main Lanes	N/A	per counter/day	\$435.00
24-Hour Automated Tube Counts - Rural Main Lanes	N/A	per counter/day	\$350.00
24-Hour Automated Tube Counts - Speed or Class	N/A	per counter/day	\$225.00
24-Hour Volume Video Counts - Main Lanes	N/A	per camera/day	\$450.00
24-Hour Classification Video Counts - Main Lanes	N/A	per camera/day	\$550.00
Intersection Turning Movement Counts	N/A	per counter/hour/day	\$120.00
Turning Movement Count (12-hour Manual) Minor Intersection	N/A	each	\$850.00
Turning Movement Count (12-hour Manual) Major Intersection	N/A	each	\$1,350.00
2-hour Turning Movement Count, Minor Intersection, Weekday	N/A	each	\$200.00
2-hour Turning Movement Count, Major Intersection, Weekday	N/A	each	\$350.00
2-hour Turning Movement Count, Minor Intersection, Weekend	N/A	each	\$250.00
2-hour Turning Movement Count, Major Intersection, Weekend	N/A	each	\$500.00
Travel Time Runs in DMI-Equipped Vehicle (Includes labor and mileage)	N/A	hour	\$150.00
Speed Zone Study for District or Project	N/A	per project	\$250.00
Speed Survey (location)	N/A	per location	\$220.00
Intersection Diagrams / Sketches	N/A	per intersection	\$95.00
Intersection Photography	N/A	per intersection	\$50.00
Video Origin & Destination (capture)	N/A	per camera intersection/location	\$500.00
Personal Surveys O&D Interviews	N/A	per site (one-way)	\$250.00

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	MAXIMUM COST
Lodging/Hotel - Taxes and Fees	day/person		\$30.00
Lodging/Hotel (Taxes/fees not included)	day/person		Current State Rate
Meals (Excluding alcohol & tips) (Overnight stay required)	day/person		Current State Rate
Mileage	mile	Current State Rate	
Rental Car Fuel	day		\$25.00
SUV or ATV Rental (Includes taxes and fees; Insurance costs will not be reimbursed)	day		\$150.00
Rental Car Fuel	gallon		\$3.75
Rental Car (Includes taxes and fees; Insurance costs will not be reimbursed)	day		\$60.00
Air Travel - In State - Short Notice (Coach)	Rd Trip/person		\$475.00
Air Travel - In State - 2+ Wks Notice (Coach)	Rd Trip/person		\$375.00
Air Travel - Out of State - 2+ Wks Notice (Coach)	Rd Trip/person		\$500.00
Air Travel - Out of State - Short Notice (Coach)	Rd Trip/person		\$700.00
Oversize, special handling or extra baggage airline fees	each		\$75.00
Taxi/Cab fare	each/person		\$30.00
Parking	day		\$20.00
Toll Charges	each		\$3.50
Standard Postage	letter	Current Postal Rate	
Certified Letter Return Receipt	each	Current Postal Rate	
Overnight Mail - letter size	each		Current Postal Rate
Overnight Mail - oversized box	each		\$40.00
Courier Services	each		\$30.00
Photocopies B/W (11" X 17")	each	\$0.20	
Photocopies B/W (8 1/2" X 11")	each	\$0.10	
Photocopies Color (11" X 17")	each	\$1.00	
Photocopies Color (8 1/2" X 11")	each	\$0.75	
Digital Ortho Plotting	sheet	\$2.00	
Plots (B/W on Bond)	per sq. ft.	\$0.50	
Plots (Color on Bond)	per sq. ft.	\$1.75	
Plots (Color on Photographic Paper)	per sq. ft.	\$4.00	
Color Graphics on Foam Board	square foot	\$4.00	
Presentation Boards 30" X 40" Color Mounted	each		\$90.00
Report Printing	each		\$45.00
Report Binding and tabbing	each	\$5.00	
Notebooks	each		\$5.00
Reproduction of CD/DVD	each		\$3.00
CDs	each	\$1.00	
4" X 6" Digital Color Print	picture	\$0.25	
Tx Parks & Wildlife Data Request Fees	each		\$45.00
Hazardous Materials Database Search	per search		\$400.00
Noise Meter Rental	per project		\$150.00
Environmental Database Search	per mile		\$50.00
Environmental Database Search	per project		\$750.00
Environmental Field Supplies (lathes, stakes, flagging, spray paint, etc.)	day		\$40.00
Curator (Drawer & TX Archaeological Research Lab for artifacts & report)	per project		\$1,350.00
Newspaper Advertisement	per publication		\$5,500.00
Court Reporter	page		\$7.50
Court Reporter (Public Meetings, Hearings & Transcription)	day		\$500.00

ATTACHMENT E- FEE SCHEDULE**OTHER DIRECT EXPENSES****RATES SHOWN APPLY TO PRIME PROVIDER AND ALL
SUBPROVIDERS**

SERVICES TO BE PROVIDED	UNIT	FIXED COST	MAXIMUM COST
Translator (English to Spanish, other language as appropriate, or Sign Language) for Public Involvement	event		\$400.00
Translator (English to Spanish, other language as appropriate, or Sign Language)	hour		\$100.00
Custodian for Public Involvement	hour/custodian		\$25.00
Sound Technician for Public Involvement	event		\$250.00
Public Involvement Facility Rental (estimate)	4 hours		\$750.00
Public involvement Facility Rental (estimate)	8 hours		\$3,000.00
Public Involvement Facility Rental (estimate)	hour		\$150.00
Public Involvement Facility Rental	event		\$1,200.00
Audio - Equipment Rental	each		\$225.00
Audio - Visual Equipment Rental	event		\$375.00
Public Notices - Mass Mailing (500 pieces)	per mailing		\$450.00
Public Notices - Mass Mailing/with Self Addressed Return Envelope (500 pieces)	per mailing		\$800.00
Electronic Message Signs	day		\$150.00
Website UR Rental	per year		\$30.00
FEMA FIS (Manual)	each		\$5.00
FEMA FIS Backup Data Request	each		\$300.00
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)	each		\$5,000.00
FEMA Model/Floodplain Hardcopy	each		\$250.00
Railroad - Flagger (Service provided by RR)	hour		\$60.00
Railroad - Insurance in addition to STD Minimum Required (Minimum coverage of \$1 Million required by RR.)	each		\$2,500.00
Railroad - Permit	each		\$500.00
Railroad - Safety Training (If required - Heavy Rail Safety Training Certificate, includes classroom training and employee certification card.)	Per Person		\$150.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Large Project (Includes labor, equipment and fuel)	day		\$2,000.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Medium Project (Includes labor, equipment and fuel)	day		\$1,375.00
Traffic Control Services, Arrow Boards and Attenuator trucks - Small Project (Includes labor, equipment and fuel)	day		\$1,000.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)	day		\$400.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)	day		\$250.00
Flashing Arrow Board	day		\$120.00
Portable Message Board	day		\$200.00
Law Enforcement/Uniform Officer (including vehicle)	hour		\$50.00
Required Permit Fees (non- railroad)	each		\$100.00
Boat with Motor	day		\$150.00
Fathometer	day		\$90.00
Backhoe Rental	day		\$1,200.00
Rental Equipment - Gasoline Powered Auger	day		\$60.00
ManLift Equipment Rental or Bridge Inspection Equipment Rental	each		\$1,500.00
GPS Receiver (rates applied to actual time GPS units are in use)	hour		\$26.25
GPS RTK (rates applied to actual time GPS units are in use)	hour	\$25.00	
GPS Static (rates applied to actual time GPS units are in use)	hour	\$25.00	
Map Records	sheet		\$2.00
Deed Copies	sheet	\$1.00	
Certified Deed Copies	sheet	\$2.50	

ATTACHMENT E- FEE SCHEDULE**OTHER DIRECT EXPENSES****RATES SHOWN APPLY TO PRIME PROVIDER AND ALL
SUBPROVIDERS**

SERVICES TO BE PROVIDED	UNIT	FIXED COST	MAXIMUM COST
Historical Aerial Images	unit		\$150.00
Aerial Photographs (1" = 500' scale)	each		\$24.00
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	\$50.00	
Type II ROW Monument - Poured 2-3 Feet (includes One Call, crew time, equipment, materials, rentals, labor). Brass Marker supplied by TxDOT	each	\$200.00	
Reprographics	per sq. ft.	\$3.00	
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use)	hour	\$75.00	
Ground Target (includes paint, panel material, etc.)	each	\$15.00	
Helicopter Equipment LiDAR - Project Flight Miles (On project flight miles)	per mile	\$60.00	
Helicopter Equipment LiDAR - Transit Miles (including turn, maneuver miles and local airport to project)	per mile	\$15.00	
Fixed Wing Airborne LiDAR - Project Flight Miles (On project flight miles)	per mile	\$30.00	
Fixed Wing Airborne LiDAR - Transit Miles (including turn, maneuver miles and local airport to project)	per mile	\$8.00	
Aerial Photography - Airborne GPS/IMU Data collection/Processing	Per Project	\$2,275.00	
Aerial Photography - Project Flight Miles (On project flight miles)	Per Mile	\$30.00	
Aerial Photography - Transit miles (including turn, maneuver miles and local airport to project)	Per Mile	\$7.00	
Photo Lab Service - Black and White Processing (film, development, scanning)	Per Frame	\$20.00	
Photo Lab Service - Color Infrared Processing (film, development, scanning)	Per Frame	\$25.00	
Photo Lab Service - Color Processing (film, development, scanning)	Per Frame	\$30.00	
Photo Lab Service - Digital image processing	Per Frame	\$27.00	
Photo Lab Service - Enlargements, Lamination, Mounting	per sq. ft.	\$6.00	
Written Translation Services	per word	\$0.15	

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. Itemized receipts must be maintained for audit purposes, and may be required to be submitted as a basis for reimbursement. **For Lump Sum** - No documentation required. Invoicing by physical percent complete includes combination of direct labor 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 F

Not Applicable

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. Symbolology, 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

WAs Used

Contract No. 36-7IDP5034

PS No. 6473

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: _____

DRAWING INDEX

CSJ NO. _____ HIGHWAY NO. _____

MEDIA LABEL _____ OF _____ CONTRACT NO. _____

DESIGN FILE NAME	DESCRIPTION/STATION LIMITS	SIZE	SHEET	REFERENCE
102ral01.dgn	Alignment File			

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.**

- 8) 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.

9) **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.

- 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.

12/06
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EXHIBIT H-1**Texas Department of Transportation
Subprovider Monitoring System
Commitment Worksheet**Contract #: 36-7IDP5034/6473 Assigned Goal: 23.7% Federally Funded _____ State Funded XPrime Provider: Lockwood, Andrews & Newnam, Inc. Total Contract Amount: \$5,000,000.00

Prime Provider Info: DBE ___ HUB ___ Both ___

Vendor ID #: 17413815915 DBE/HUB Expiration Date: _____

(First 11 Digits Only)

If no subproviders are used on this contract, please indicate by placing "N/A" on the 1st line under Subproviders.

Subprovider(s) (List All)	Type of Work	Vendor ID # (First 11 Digits Only)	D=DBE H=HUB	Expiration Date	\$ Amount or % of Work *
AMEC Foster Wheeler Environment & Infrastructure, Inc.	18.1.1, 18.2.1	19116417726			5.00 %
Civil Associates, Inc.	2.1.1, 2.2.1, 2.4.3	14120967543	D H	07/31/2017 07/23/2019	5.00 %
Cox McLain Environmental Consulting, Inc.	2.3.1, 2.4.1, 2.4.2, 2.5.1, 2.6.1, 2.6.2, 2.6.3, 2.7.1, 2.8.1, 2.9.1, 2.10.1, 2.11.1, 2.12.1, 2.13.1, 2.14.1	12607199796	D H	11/02/2017 08/05/2019	17.00 %
Dallas Aerial Surveys, Inc.	15.3.1	17516161738	H	06/11/2019	2.00 %
Dal-Tech Engineering Inc.	15.1.1, 15.2.1, 15.4.1	17523551723	H	07/02/2019	5.00 %
Nancy Ledbetter & Associates, Inc.	NLC-3 Public Involvement	17530599855	D H	11/25/2017 01/30/2019	5.00 %
Othon, Inc.	1.5.1, 3.2.1, 10.2.1, NLC-2 Traffic Projections	17605064827	D H	01/31/2018 08/28/2017	10.00 %
Raba Kistner, Inc.	2.3.1, 2.12.1, 2.13.1, 14.2.1	17416115347			8.00 %
Subprovider(s) Contract or % of Work* Totals					57.00 %

*For Work Authorization Contracts, indicate the % of work to be performed by each subprovider.

Total DBE or HUB Commitment Dollars \$ _____

Total DBE or HUB Commitment Percentages of Contract 44.00 %

(Commitment Dollars and Percentages are for Subproviders only)

12/06 DBEH1.AT

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 (Including all additional pages.)	\$ _____

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.

Provider Name: Address: Phone # & Fax #: Email:	Name: _____ <i>(Please Print)</i> Title: _____ <hr/> <div style="display: flex; justify-content: space-between;"> Signature Date </div>
DBE/HUB Sub Provider Subprovider Name: VID Number: Address: Phone # & Fax #: Email:	Name: _____ <i>(Please Print)</i> Title: _____ <hr/> <div style="display: flex; justify-content: space-between;"> Signature Date </div>
Second Tier Sub Provider Subprovider Name: VID Number: Address: Phone # & Fax #: Email:	Name: _____ <i>(Please Print)</i> Title: _____ <hr/> <div style="display: flex; justify-content: space-between;"> Signature Date </div>
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).	

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: _____

