



**COMMISSIONERS COURT
COMMUNICATION**

COURT ORDER NUMBER 145379
PAGE 1 OF 101
DATE: 6/3/2025

**SUBJECT: CONSIDERATION OF A PROFESSIONAL SERVICES AGREEMENT
WITH LJA ENGINEERING, INC. FOR ENGINEERING SERVICES FOR
THE BONDS RANCH ROAD IMPROVEMENT PROJECT**

***** CONSENT AGENDA *****

COMMISSIONERS COURT ACTION REQUESTED

It is requested that the Commissioners Court consider a professional services agreement with LJA Engineering, Inc. (LJA) for engineering services for the Bonds Ranch Road Improvement Project.

BACKGROUND

On September 5, 2023, the Commissioners Court, through Court Order #141673, approved the programming of 2021 Transportation Bond Program funds from the Countywide Initiatives and Partnerships category for the Bonds Ranch Road corridor improvement project.

The second segment of Bonds Ranch Road, from West of Business 287 to West of Blue Sky Drive, is ready to proceed to the schematic and environmental design phase. Staff reviewed the qualifications from RFQ F2025021, Professional Engineering and Planning Services, and recommends that the Commissioners Court approve a Professional Services Agreement with LJA for design services related to this project.

The Professional Services Agreement has been reviewed as to form by the Criminal District Attorney's Office.

FISCAL IMPACT

The fiscal impact to Tarrant County will be \$3,361,164.31. Funds are available in account 47800- 2025 2021 Transportation Bond Election Fund/6840100000 Transportation/579061 - County Projects (Countywide Initiatives and Partnerships category)

SUBMITTED BY	Transportation Services	PREPARED BY:	Sarah VanTassel
		APPROVED BY:	Scott Hall

EXHIBIT A

SCOPE OF BASIC SERVICES TO BE PROVIDED BY THE ENGINEER TO TARRANT COUNTY

The Engineer shall provide preliminary engineering services for development of a design schematic, environmental documents and studies in support of the schematic work, public involvement, permit procurement, data collection and analysis, drainage studies, conceptual traffic control, traffic projections, traffic engineering and operations including capacity analysis, traffic simulations, safety analysis, 3-D modeling, surveying and mapping, subsurface utility engineering (SUE), utility coordination, and geotechnical investigation for the Bonds Ranch Road Segment 2 project. The study area extends along Bonds Ranch Road from just west of BUS 287 to just west of Blue Sky Drive including the interchange areas extending along BUS 287, the UPRR and BNSF rail lines from Hicks Field Road to Peden Road. This project will connect with Bonds Ranch Road Segment 1 to the west and Bonds Ranch Road Segment 3 to the east which are both being developed by Tarrant County.

The scope, rates, and fee for potential additional services related to PS&E design, and construction related services of the Bonds Ranch Road Segment 2 will be developed and approved after the schematic has been approved and construction limits have been identified by Tarrant County ("the County") and/or the Texas Department of Transportation (TxDOT or the "State").

GENERAL REQUIREMENTS

1.1. Coordination.

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

The Engineer shall notify the County and coordinate with adjacent engineers on all controls at project interfaces. The Engineer shall document the coordination effort, and each engineer must provide written concurrence regarding the agreed project controls and interfaces. In the event the Engineer and the other adjacent engineers are unable to agree, the Engineer shall meet jointly with the County, State and each adjacent engineer to resolve disagreements. If the engineers are unable to resolve an issue with the County as mediator, the County may decide the issue and the decision will be final.

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

1.2. Progress Reporting and Invoicing.

The Engineer shall invoice according to function code breakdowns shown in *Exhibit "B" - Fee Schedule*. The Engineer shall submit each invoice in a format acceptable to the County.

The Engineer shall complete the services according to the milestone work schedule. The Engineer shall submit a monthly written progress report to the County indicating

the actual work accomplished during the month, scheduled work to be accomplished for the month, the estimated work to be accomplished for the coming month, problems encountered, and actions taken to remedy them, list of meetings attended, and overall status. The progress report must use a bar chart diagram to indicate the percentage complete of each task shown on the previous report and the percentage complete of each task. The Engineer is required to meet with the designated County project manager or environmental coordinator on a monthly basis for progress tracking purposes unless prior written agreement is made with County 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 (7) calendar days after each meeting.

The Engineer shall prepare a project work schedule, using the latest version of Microsoft software or another scheduling program approved by the County in writing. The schedules shall indicate tasks, subtasks, critical dates, milestones, deliverables and review requirements in a format that depicts the interdependence of the various items. The work schedule must incorporate an allocation of time for stage reviews of the design schematic and the environmental documents by County personnel. The Engineer shall present the work schedule to the County for review/acceptance and provide assistance in interpreting the proposed work schedule. The Engineer shall provide advance written notice to the County if the Engineer is not able to meet the scheduled milestone review date.

Once the project has been completed and accepted by the County and State, the Engineer shall deliver all electronic files to the County within 30 calendar days of County's written request.

Condition precedents to final payment by the County are the County's receipt of all electronic files and confirmation by the County's Project Manager that (1) the electronic files can be opened and are usable by the County utilizing the County-owned version of the intended software, (2) all files are formatted Computer Graphics Files for Document and Information Exchange, and (3) all the County and State's review comments have been addressed.

The Engineer shall prepare a letter of transmittal to accompany each document submittal to the County and State. At a minimum, the letter of transmittal must include the County contract number, State control-section-job (CSJ) number, the highway number, county, project limits.

1.3. Quality Assurance (QA) and Quality Control (QC).

The Engineer shall provide peer review at all levels. For each deliverable, the Engineer shall retain evidence of their internal review and mark-up of that deliverable as preparation for submittal. A milestone submittal is not considered complete unless the required milestone documents and associated internal mark-ups are submitted. If requested by the County's Project Manager, the Engineer shall submit the Engineer's internal mark-up (e.g., red-lines, comments) developed as part the Engineer's quality control step. When internal mark-ups are requested by the County in advance, the County may reject the actual deliverable if the Engineer fails to provide sufficient evidence of quality control. The Engineer shall clearly label each document submitted for quality assurance as an internal mark-up document.

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

1.4. Personal Protective Equipment (PPE).

The Engineer shall, and shall require its subcontractors to, (1) provide personal protective equipment (PPE) to their personnel, (2) provide business vehicles for their personnel, and (3) require their personnel to use PPE and drive only business vehicles while performing work on or near roadways. The PPE must meet all (1) current standards set by Occupation Safety and Health Administration (OSHA) and (2) TxDOT requirements (e.g., safety glasses, Type 3 (TY 3) pants for night work). Each business vehicle must be clearly marked with the Engineer's business name, or the name of the appropriate subcontractor, such that the name can be identified from a distance.

1.5. Training Requirements.

A. The Engineer shall ensure that each member of the Engineer's project team performing design or plan review tasks completes the following Environmental Management System (EMS) e-Learning courses prior to working on the project:

1. Storm Water Compliance Requirements in Construction (ENV433)
2. EMS Awareness Training (ENV414)
3. AP&D Stage Gate Checklist (DES435)
4. Design Erosion & Sediment Control (EL4030)
5. EPIC Sheet (DES908)
6. PS&E Stage Gate Checklist (DES907)
7. How to Comply with Section 404 Permits (ENV457)
8. CGP Compliance and Enforcement (ENV432)

Information about these online courses may be accessed at:

<https://www.txdot.gov/inside-txdot/division/environmental/ems-courses.html>.

The Engineer shall ensure that the required training is repeated by each member of the project team based on the repeat requirements stated in the EMS training matrix that may be accessed at: <https://www.txdot.gov/inside-txdot/division/environmental/ems-courses.html>.

B. Deliverable:

The Engineer shall provide a list, signed by the Engineer's Project Manager that includes the following:

1. The names and titles of all personnel performing design or plan review tasks
2. The names of the training courses completed by each person on the list
3. The completion dates for the training courses completed by each person on the list

The Engineer shall update and resubmit this list when new personnel are assigned to the project team.

TASK DESCRIPTIONS AND FUNCTION CODES

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

FUNCTION CODE 102(110) – FEASIBILITY STUDIES

ROUTE AND DESIGN STUDIES

The Engineer shall prepare alternative analyses to determine the preferred alternative and proposed roadway schematic layout that includes projected traffic volumes and existing and proposed typical sections. The Engineer shall furnish Microsoft Office and Bentley OpenRoads Designer computer generated media containing the roadway schematic layout to the County. All supporting attachments and exhibits must accompany the schematic layout. All Bentley OpenRoads Designer computer generated files containing the roadway design schematic must be fully compatible with the software used by the County and State without further modification or conversion.

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 must be utilized in accordance with the requirements for schematic development and consistent with the policies of the County and State.

The Engineer shall prepare preliminary drawings to identify any potential impacts and constraints within the project corridor, including impacts to the nature, cultural, and human environment. The potential impacts and constraints identified must include all existing and proposed utilities (both public and private), structures, burial grounds, neighborhood communities, historical landmarks, and undeveloped areas. Any potential utility conflicts and structural impediments must be identified as such. The Engineer shall propose alternative alignments that avoid or minimize displacements and damages and prepare any additional attachments or exhibits required to illustrate a preferred alternative alignment. The Engineer shall assist the County with agency meetings during the development of the schematic design as requested by the County or State. If requested by the County, the Engineer shall prepare a Notice and Opportunity to Comment and assist the County with property owners, stakeholders and technical working group meetings, public meetings, and a public hearing.

An itemization of the schematic design and engineering work activity to be performed under this contract is detailed below. The Engineer shall prepare all designs in accordance with the latest version of:

- A. *Roadway Design Manual*, published by TxDOT;
- B. *TxDOT Project Development Process Manual*, published by TxDOT;
- C. *Policy on Geometric Design of Highways and Streets*, published by the American Association of State Highway and Transportation Officials' (AASHTO);
- D. *Standard Specifications for Construction of Highways, Streets, and Bridges*, published by TxDOT;
- E. *Texas Manual on Uniform Traffic Control Devices* (TMUTCD), published by TxDOT;
- F. *Highway Capacity Manual* (HCM), published by the Transportation Research Board (TRB);
- G. *Highway Safety Manual* (HSM), published by AASHTO;
- H. *Hydraulic Design Manual*, published by TxDOT;
- I. *Access Management Manual*, published by TxDOT; and

J. other State approved manuals and guides.

When design criteria are not identified in these manuals, the Engineer shall notify the County and request direction.

The design schematic horizontal layout must adhere to a design scale of 1 inch = 100 foot (or 1 inch = 200 foot, when directed by the County.) The Engineer shall develop the schematic layout, exhibits, and attachments in English units. All Microsoft Office, MicroStation, Keyhole Markup Language (KML), Keyhole Markup Language Zipped (KMZ), and Bentley OpenRoads Designer computer graphic files furnished to the County must be submitted on CD, DVD, or USB flash drive to the County in their native format, which must be fully compatible with the programs currently used by the County. Schematics must follow TxDOT and Federal Highway Administration (FHWA) standards. The schematic must follow TxDOT's computer-aided design and drafting (CADD) standards. The Engineer shall submit the schematic as an original document, accompanied with an original MicroStation formatted graphics file. Final copies of the schematic design must be signed and sealed by a professional engineer licensed in the state of Texas.

110.1. Schematic Design Work Outline:

A. Develop Base Maps

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

B. Planimetrics and Aerial Mapping

The Engineer shall utilize TNIRIS and/or NCTCOG 0.5-meter LiDAR data or Nearmap data until the Engineer can obtain aerial LiDAR survey data.

C. Analyze Existing Conditions

Using collected data and base maps, the Engineer shall develop an overall analysis of the existing conditions to develop the schematic design. The analysis shall include, where readily available, the following:

1. ROW and easement determination
2. Horizontal alignment
3. Vertical alignment
4. Pavement cross slopes and pavement type
5. Soil exploration
6. Geotechnical testing
7. Roadway-rail grade crossing studies
8. Intersection design and analysis
9. Sight distance
10. Level of service
11. Safety (i.e., crash data)
12. Locations of critical constraints
13. Drainage
14. Traffic control and construction phasing sequence

D. Schematic Alternatives

1. The Engineer shall identify and analyze schematic alternatives to avoid/minimize potential adverse impacts, safety impacts, ROW impacts, environmental impacts, major utility conflicts, structural impediments, or exceptions to the State or FHWA design criteria.
2. The Engineer shall consider alternative evaluation input via project staff meetings and from community and agency input.
3. Public and agency coordination shall be considered to eliminate non-viable alternatives. Based on the Engineer's analysis (including identification of a Technically Preferred Alternative (TPA)) and public/agency feedback, a Locally Preferred Alternative (LPA) will be identified by the County and carried forward to detailed geometric schematic design.
4. Feasible Alternatives - The Engineer will prepare plan views on 11' x 17" sheets and analyze at a limited level of detail up to three (3) feasible alternatives. For the feasible alternatives, the Engineer shall develop a rational screening process and alternative evaluation matrix based on meeting project objectives, community and environmental impacts, and costs. The Engineer shall include comparison to the No-Build Alternative.
5. Conceptual Design Schematics (30% complete schematics) - After these three (3) feasible alternatives are screened, they will be reduced to a preferred alternative for analysis at a greater level of detail. Design of the conceptual schematic for the preferred alternative shall be developed to the detail indicated in Section 110.3.
6. Geometric Design Schematics (60% complete schematics) – The preferred alternative will be developed into 60% complete schematics . Design of 60% complete schematics shall be developed to the detail indicated in Section 110.4.
7. Geometric Design Schematics (90% and 100% complete schematics) - After final evaluation and public involvement, the geometric-design schematic shall be developed to the 90% and 100% complete levels. Design of 90% and 100% complete schematics shall be developed to the detail indicated in Section 110.4.
8. The Engineer shall develop a technical memorandum including general criteria, exhibits, and summarizing the alternatives analysis.

E. Deliverable Schematic

The Engineer shall evaluate and document the following in the analysis to optimize the design:

1. Efficient use of the allocated ROW
2. Control of access (COA) and driveway locations
3. Roadway and intersection geometry
4. Cross sections
5. Bicycle and pedestrian layout
6. Drainage and hydraulic design to a preliminary level
7. Stopping sight distance
8. Level of service
9. Safety
10. Traffic and signal operations
11. Construction, ROW, easement, and utility costs
12. Construction sequencing
13. Traffic control during construction
14. Roadside safety appurtenances

15. Environmental mitigation (e.g., noise walls)
16. Bridge layouts and clearance to a preliminary level
17. Railroads
18. Accommodation of ultimate corridor configuration.
19. Accommodation of future cross street expansion as described in local thoroughfare plan (if applicable)
20. Avoidance of utility lines (if feasible)
21. Identification in the implementation plan of when major utilities need to be relocated to avoid delaying construction activities
22. Lane balance diagram for each alternative alignment and the preferred alignment.

F. Data Collection

1. The Engineer shall conduct field reconnaissance and collect data as necessary to complete the schematic design. Design data from record drawings of existing and proposed facilities
2. Existing and future design year traffic data
3. Historical crash data
4. Roadway inventory information, including the number of lanes, speed limits, pavement widths and rating, bridge widths and ratings, and ROW widths
5. Aerial photos, planimetric mapping, and DTM
6. Environmental data
7. Previously prepared drainage studies
8. Adopted land use maps and plans (if available)
9. Federal Emergency Management Agency (FEMA) flood boundary maps and flood insurance studies and models
10. Public and private utility information
11. Plat research for adjacent properties (if available)
12. Local major thoroughfare plan

G. Roadway Design Criteria

The Engineer shall develop the roadway design criteria based on the TxDOT *Roadway Design Manual* and AASHTO *Policy on Geometric Design of Highways and Streets* guidelines. The design criteria must include the following roadway design elements: design speed, lane and shoulder widths, pavement structure and slopes, horizontal curvatures, horizontal and vertical clearances, range of vertical profile grades, and side slopes. If there is a discrepancy between the two sources, the *Roadway Design Manual* will govern unless otherwise directed by the County.

H. Preliminary Design Conference

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

110.2. Schematic Design – General Tasks

A. ROW Property Base Map

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

B. 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.

C. Environmental Constraints

The Engineer shall evaluate and document impacts to environmentally sensitive sites (as identified by the Engineer and verified by the County) 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.

D. Drainage

The Engineer shall use data from as-built plans and FEMA maps to locate drainage out falls 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 must (1) identify the impacts to abutting properties and the 100-year floodplain due to proposed highway improvements; (2) identify the water surface elevations for the 2, 5, 10, 25, 50, and 100-year storm events; (3) identify and locate outfalls; (4) provide drainage outfall descriptions; (5) provide overall drainage area map, sub-drainage area map (as necessary), and storm water detention facilities (if applicable); and provide a preliminary drainage study report identifying the results of the study. The preliminary drainage study report, which must be signed and sealed by a professional engineer licensed in Texas, must include applicable hydrologic and hydraulic models (e.g., HEC-1 and HEC-2, HEC-RAS, HEC-HMS, XP-SWMM). Although Scour Analysis is done as part of PS&E design and omitted from the schematic scope, mitigation strategies to protect drainage, bridge and roadway structures (e.g., gabions, riprap, etc.) from anticipated erosion and scour shall be incorporated into required ROW and easements for the schematic plans.

Drainage Study/Report: The Engineer shall prepare a comprehensive drainage study/report for the drainage design elements for the project. The report shall consist of a summary of the hydrological and hydraulic design considerations and analyses with recommendations for the drainage design for the project limits. Include the 11" x 17" preliminary sheets for the: Drainage Area Maps, Hydraulic Computations, Bridge Hydraulic Data Sheets, and culvert cross-section sheets as an attachment to the report. Cross drainage design shall be performed using HEC-RAS, unless another method is approved by the County.

The Engineer shall perform the following:

1. Hydrologic Analysis
 - a. Drainage Area Map:

As needed, the Engineer shall delineate the drainage area boundaries within the project area using U.S. Geological Survey (USGS) or suitable topographic maps, available LiDAR elevation data, and other appropriate information. Drainage Area Map shall be included on the Preliminary Hydraulic Data Sheets for inclusion in Drainage Report for the project.
 - b. Runoff Computations:

The Engineer shall follow Atlas 14 criteria and the methodology outlined in the State Hydraulic Design Manual. The Engineer shall also use a hydrologic check method (such as Regional Regression Equations) for areas greater than 200-Acres to compute peak runoff rates at the studied areas. The report must include the full range of frequencies (50%, 20%, 10%, 4%, 2%, and 1% AEP). The Engineer shall select the methodology depending on the size of watershed and site conditions. Information used in the analysis shall include: the project Drainage Area Maps, aerial photographs, field observations, and channel cross section survey data. The existing FEMA effective hydrologic data will be verified and compared before it is utilized for FEMA coordination and modeling (if available). Runoff Computations shall be included on the Preliminary Hydraulic Data Sheets for inclusion in the Drainage Report for the project.
2. Hydraulic Analysis

The Engineer shall use information collected via field survey, field observations, review of as-built construction plans, and the effective FEMA Models (if available) to develop hydraulic modeling data for existing bridges and FEMA Zoned drainage structures. Software acceptable to the State such as HEC-RAS shall be utilized. Based on the results of the existing conditions hydraulic modeling and analysis, the Engineer shall propose and evaluate a design with the objective of reducing flooding potential, protecting structures from erosion and scour, and mitigating potential impacts on flood levels and flow rates. The hydraulic models for the FEMA Zone A/AE locations consist of:

 - a. Existing Model
 - b. Updated Model, Zone AE only (if applicable)
 - c. Corrected Existing Model, Zone AE only (if applicable)
 - d. Proposed Model
 - e. Floodway Models, Zone AE with defined floodways only (if applicable)
3. Preliminary Hydraulic Data Sheets
 - a. FEMA Zone Structures:

The Engineer shall develop (11" x 17") Preliminary Hydraulic Data Sheets for each bridge or FEMA Zone A/AE drainage structure for inclusion in Drainage Report for the project.
 - b. Non-FEMA Zone Structures: The Engineer shall develop (11" x 17") Hydraulic Computation Sheets that summarize the input parameters and hydraulic results in table format for the comparison of the existing and proposed structures for the project.
4. Preliminary Culvert cross-section Sheets: Culverts shall be designed as part of the hydraulic analysis and in coordination with the roadway design (geometry and preliminary pavement design), major utility crossings, and anticipated longitudinal drainage systems (storm drains and ditches). The Engineer shall develop (11" x 17") cross-section sheets FEMA Zone A/AE, Bridge-Class

culverts, and non-bridge-class culverts along the project at a scale approved by the County and to determine if additional ROW and easements will be required at the structure.

5. Longitudinal Storm Drains and Ditches

The Engineer shall provide the following services:

- a. Coordination of preliminary parallel ditch designs that convey the approved storm design capacity and incorporate them into the roadway cross-sections.
- b. Develop preliminary estimated size of trunklines and approximate number of inlets for the construction estimate based on the site conditions in the urban design areas along the project.
- c. Determine if area drains are needed due to site conditions and determine additional ROW/easements required as a result.
- d. Determine if there are any underground utility crossings that may conflict with the proposed storm drain design.
- e. Verify storm drains and longitudinal ditches can be developed for gravity flow to outfalls based on the proposed roadway profile designed.

E. ROW Requirements

The Engineer shall determine the ROW requirements based on the proposed alignment, typical sections, design cross sections, access management, terrain, construction requirements, drainage, clear zone, maintenance, intelligent transportation system (ITS), and environmental constraints and mitigation requirements.

F. Design Exceptions

The Engineer shall identify design exceptions and waivers. The Engineer shall determine the necessity for each design exception or waiver for approval. If the County agrees that design exception or waiver is necessary, the Engineer shall prepare the State's required design exception or design waiver documentation. The Engineer shall document the operational and safety analysis for comparison of the no-build, build with standard design, and build with proposed design alternatives. For interstate facilities, the safety analysis must include the following:

1. Expected change in crashes from existing conditions to standard design conditions
2. Expected change in crashes from existing conditions to the proposed design

G. Traffic Data and Projections

The Engineer shall obtain the base year traffic data from TxDOT, County, and the North Central Texas Council of Governments (NCTCOG). 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 the TxDOT Transportation and Programming Division (TPP). The developed traffic projections must be utilized for design and environmental analysis.

The Engineer shall hold a methodology meeting with Tarrant County, TxDOT, and NCTCOG to discuss the traffic projections methodology and assumptions to evaluate traffic demand and future demographics for the conceptual corridor.

The Engineer shall develop traffic forecasts for the roadway and intersections, for

no-build and up to three (3) build alternatives. These projections must 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 traffic analysis package and TxDOT-TPP Standard Operating Procedures. The Engineer shall review the proposed methodology with the County and refine it based on these discussions. The Engineer shall submit the AM and PM peak hour and 24-hour traffic volumes developed by the Engineer to TxDOT for review and approval. The Engineer shall revise the traffic volumes based on TxDOT's comments.

H. Financial Plan and Project Management Plan

The Engineer shall prepare a financial plan (FP) and project management plan (PMP), in accordance with the most recent FHWA Financial Plan Guidance, for submission by the State to the FHWA Division Office for review and approval. The purpose of the FP is to document the project schedule, total project cost, and revenue structure and provide reasonable assurance that sufficient financial resources will be available to implement and complete the project as planned. The FP must 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.

1. The initial FP shall consist of at least six (6) main sections including:
 - a. Schedule
 - b. Cost estimate
 - c. Implementation plan
 - d. Financing and revenues
 - e. Cash flow
 - f. Risk identification and mitigation factors
2. The Engineer, in coordination with County, shall identify and document significant project risks, ownership of each risk, and response strategies as they relate to the financial management of the project's delivery. Risks shall show impacts to costs and schedule, as applicable, and will be either threats or opportunities to cost, schedule and/or funding. The Engineer shall develop a risk matrix to track identified risks and add additional risks as they are identified. The risk register shall be maintained through project development by the Engineer. For scoping purposes, the Engineer shall review and update the risk matrix a minimum of every 6 months or as directed by the County. The risk matrix will be used during the CSRA workshop and for the development of the initial FP and subsequent annual updates.
3. The Engineer shall prepare for and attend a cost and schedule risk assessment (CSRA) 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 CSRA, the Engineer shall conduct a risk analysis assessment and attend, with TxDOT, a risk workshop to quantify schedule and cost impacts for each of the identified risks. The Engineer shall also provide cost spreadsheets and models for input into the FHWA's probability modeling software, review and provide comments on the CSRA summary report, and update cost information in the initial FP to reflect confidence limits established during the CSRA.

4. The Engineer shall provide one (1) annual update (AU) to the initial FP reflecting changes in project finances and funding resources. The update must include revisions to the five (5) 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.
5. The Engineer shall submit the PMP, FP, and FP AU to the County for review and comment. For scoping purposes, it is assumed that the initial drafts of the FP and FP AU will be reviewed concurrently by the TxDOT Fort Worth District, the TxDOT Design Division, and TxDOT Finance Division. The Engineer shall address the County'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 (3) 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 number of lanes, offset to obstructions, lane widths, and intersection operation and geometry), traffic flow patterns, and transit and traffic operations. The Engineer shall conduct capacity analysis studies for designated locations and sections of roadway and make recommendations for improving traffic flow. Intersection turning movement counts will be obtained for up to 72 hours at Bond Ranch Rd and BUS 287 intersection and 72-hour segment counts at a maximum of two roadway segments. Intersection analyses will be performed using Synchro software. The analysis must be done for existing/base year, opening year, design year (opening+20 year), and interim year (if needed) for existing and up to three (3) build alternatives. HCS will be used as needed to document segment operations. Results of this analysis must be incorporated into the schematic design and used to support quantitative air quality analyses. The Engineer shall develop and submit to TxDOT a traffic and operational analysis report summarizing all analysis performed. The Engineer shall develop and calibrate an existing condition traffic model using microsimulation. The calibration memo must be included in the traffic analysis report. The analysis must be performed using the latest versions of TxDOT-approved software (e.g., HCS, Synchro, VISSIM).

J. Safety Analysis

The Engineer shall review and analyze historical crash data for latest 5 full calendar years (i.e., January 1 to December 31, inclusive) with respect to crash characteristics such as severity, crash types, frequency, rates, patterns, clusters, and their relationship to crash contributing factors. The purpose of the historical crash analyses is to determine safety performance of the existing conditions to understand any safety issues within the study area.

Predictive, or quantitative safety analysis, involves using HSM-based methods that use safety performance functions (SPFs) or crash modification factors (CMFs) to estimate anticipated change in crashes from existing condition to the proposed design. The predictive safety analysis must be done for no-build and build

conditions for design year. The purpose of the predictive safety analysis is to compare the safety performance of the no-build and build alternatives to help determine the preferred alternative and to determine the countermeasures, if necessary, to improve safety. Predictive safety analysis must be performed using HSM based tools including Interactive Highway Safety Design Model (IHSDM), Enhanced Interchange Safety Analysis Tools (ISATe), HSS, or other tools acceptable to the County. The Engineer shall develop and submit to the County a safety analysis report summarizing all analysis performed.

K. Bicycle and Pedestrian Accommodations

The Engineer shall comply with the United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations and TxDOT's Bicycle Accommodation Design Guidance. The inclusion of bicycle and pedestrian facilities must be evaluated when the project is scoped. Public input when applicable, as well as local city and metropolitan planning organization for bicycle and pedestrian plans must be considered in this evaluation. These accommodations will be shown conceptually, without full geometric design.

110.3. 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. The Engineer shall develop a single recommended design alternative that optimizes traffic flow and access. The conceptual schematics are to be plan view only. Profile work must be done only to the extent necessary to lay out the proper horizontal geometry.

The schematics must contain the following design elements:

- A. Roadway alignment
- B. Pavement edges, face of curbs, and shoulder lines of roadways, intersections, interchanges, and connecting highways or streets
- C. Typical sections of existing and proposed roadways
- D. Anticipated structure locations (including wildlife crossings and fencing structures)
- E. Anticipated retaining wall and sound wall locations
- F. Anticipated conveyance of major drainage elements
- G. Preliminary ROW and easement requirements and control-of-access locations
- H. Direction of traffic flow and the number of lanes on all roadways
- I. Existing and projected traffic volumes
- J. Existing utilities
- K. Waters of the United States (WOTUS)

110.4. Geometric Design Schematics

The Engineer shall develop geometric design schematics based on the conceptual schematics after the basic layout, lane arrangement, and anticipated ROW and easement impacts depicted on the conceptual schematics are approved. The Engineer shall use Bentley OpenRoads Designer tools in performing this task. The geometric design schematics must include both a plan view and profile view.

- A. The geometric schematic plan view must contain the following design elements:
 - 1. Bentley OpenRoads Designer calculated roadway alignments for mainlanes and cross streets at major intersections and grade separations
 - 2. Horizontal curve data shown in tabular format

3. Pavement edges, curb lines, sidewalks for all roadway improvements
 4. Typical sections of existing and proposed roadways
 5. Proposed bridge structures, including bridge deck, abutment, bent, and rail locations
 6. Proposed retaining walls and sound/noise barrier walls
 7. Proposed cross-drainage structures with outfall flow arrows and significant drainage features or waterways identified
 8. Existing utilities and proposed utilities
 9. Existing property lines and respective property ownership information
 10. Existing ROW and easements
 11. Proposed ROW and easements adequate for preparation of ROW maps
 12. Waters of the US (WOTUS)
 13. Existing and projected traffic volumes
 14. Lane lines, shoulder lines, and direction of traffic flow arrows indicating the number of lanes on all roadways
- B. The geometric schematic profile view must contain the following design elements:
1. Calculated profile grade and vertical curve data including “K” values for all curves and sight distance values for crest vertical curves on the roadways
 2. Existing ground line profiles along the roadways
 3. Grade separations and overpasses including preliminary abutment and bent locations, girder type, and span lengths
 4. Calculated vertical clearances at grade separations and overpasses
 5. Anticipated cross-drainage structures with approximate inlet and outfall elevations
 6. Approximate locations of existing and proposed major utility crossings

110.5. Cross-Sections

The Engineer shall use a Bentley 3D OpenRoads Designer model to generate preliminary cross-sections at 50 feet intervals (unless otherwise directed by the County) and at culvert locations in conjunction with the geometric schematic. The Engineer shall determine earthwork volumes for use in the cost estimate. The Engineer shall prepare 11” x 17” or roll plots of the cross-sections.

110.6. Retaining Walls

The Engineer shall prepare preliminary retaining wall concepts to be shown on schematics, typical sections, and cross sections.

- A. The Engineer shall determine if any additional walls are required and verify the need for and length of the retaining wall as shown on the ultimate schematic.
- B. The Engineer shall compute and tabulate retaining wall quantities for preliminary design milestone plans submittal.

110.7. 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, the Engineer shall create one rendering for each of the three (3) feasible alternatives. The Engineer shall create a 3D model to support development of a rendering and traffic animation for the preferred alternative from: horizontal and vertical alignments, existing

and proposed DTMs, proposed typical sections, traffic counts, and ground photography. When requested by the County, the Engineer shall use aerial video footage captured by unmanned aircraft systems (UAS).

The use of UAS is regulated by the Federal Aviation Administration (FAA). The Remote Pilot in Command (RPIC) must possess a current FAA Remote Pilot Certificate (14 CFR Part 107) and be sufficiently trained, capable, and competent to operate the type of system in the environment in which it is to be operated. The RPIC must be responsible for the safe conduct of the UAS flight. Visual Observers as required must be familiar with UAS operations and in positive two-way communication with the RPIC. Additionally, operators must comply with the general safety protocols established in TxDOT's *Flight Operations Manual*.

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

110.8. Preliminary Construction Sequence

The Engineer shall prepare preliminary construction sequence layouts in conjunction with the geometric design schematic depicting the major phasing and traffic detours anticipated to safely convey traffic. The layouts must demonstrate that adequate horizontal and vertical alignments are maintained, sufficient lane widths and shoulder widths or barrier offsets are feasible, and construction zones are adequate for constructability of all proposed features. Proposed construction detours must ensure that adequate superelevation is provided. The layouts must indicate how existing pedestrian and bicycle facilities are accommodated for each phase.

110.9. 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 must be used in preparation of the estimate. The cost estimate will be for each milestone submittal (30%, 60%, 90% and Final schematic).

110.10. Engineering Summary Report

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

110.11. Support or Attendance at Value Engineering Study

The Engineer shall provide staff to participate in a (5) day Value Engineering (VE) study for the Ultimate Project. The project manager must attend the first day for the project overview and last day for summary of the VE study.

110.12. Schematic Design Project Deliverables

In conjunction with the performance of the services included under Function Code 110 of this exhibit, the Engineer shall provide the following draft and final documents and associated electronic files as applicable

A. Draft and final copies of the engineering summary report

- B. Draft and final copies of the traffic and operational analysis report and safety analysis report
- C. Draft copies of the preliminary drainage study
- D. Draft and final copies of the feasible alternatives on 11" x 17" cut sheets or rolls, as requested by the County
- E. Draft and final copies of the conceptual design schematics roll plots
- F. Draft and final copies of the geometric schematic layouts (1 inch = 100 feet)
- G. Draft and final copies of the design schematic cross-sections on 11" x 17" cut sheets or roll plot format, as requested by the County
- H. Electronic 3D model copy of the preliminary cross-sections created using Bentley OpenRoads Designer software
- I. Six final copies of the preliminary drainage study
- J. Electronic submittal of the hydrologic and hydraulic model digital files from the drainage study
- K. Copies of the preliminary construction sequence layouts in a roll plot or 11" x 17" format, as requested by the County
- L. Copies of the preliminary construction sequence typical sections in 11" x 17" format
- M. Electronic copy of the renderings for the feasible alternatives and 3D rendering and traffic simulation for the preferred alternative
- N. Electronic files shall be furnished to the County on a USB flash drive
- O. Traffic data schematics
- P. Traffic projections methodology memo
- Q. Average daily corridor traffic projections report
- R. Risk management plan
- S. Participation in CER
- T. Draft project management plan
- U. Draft financial plan
- V. Final project management plan
- W. Final financial plan
- X. Line schematics with traffic data shown
- Y. Utility plan – electronic file in latest version of MicroStation fully compatible with Bentley OpenRoads Designer civil design system
- Z. Design exception and design waiver documents
- AA. Hard copy of a draft hydraulic report for review and comment
- BB. For major culvert crossings (FEMA Zone A/AE and Bridge-Class), hydraulic data sheets and preliminary layouts
- CC. Drainage report – one (1) hard copy of final drainage report, one (1) electronic copy of the entire drainage report in PDF format, and computer files of hydrologic and hydraulic modeling with appropriate labeling of location, CSJ, and submittal date
- DD. Retaining wall concept layouts
- EE. Geotechnical report
- FF. Cost estimates for each milestone submittal
- GG. KMZ or KML file of conceptual design schematic created from applicable DGN files for reviewing in Google Earth
- HH. Final schematic 3D model created using Bentley OpenRoads Designer software
- II. Draft and final copies of traffic analysis report

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

SOCIAL, ECONOMIC AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT

120.1. Environmental Documentation Standards

Each environmental service provided by the Engineer must have a deliverable. Deliverables must summarize the methods used for the environmental services and the results achieved. The summary of results must be sufficiently detailed to provide satisfactory basis for thorough review by the State and (where applicable) other agencies with regulatory oversight. All deliverables must meet regulatory requirements for legal sufficiency and adhere to the requirements for reports enumerated in the State's National Environmental Policy Act of 1969 (NEPA) Memorandum of Understanding (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 all supporting environmental documentation to determine whether documents conform with:

1. Current Environmental Compliance Toolkit guidance, documentation requirements, and templates published by TxDOT's Environmental Affairs Division (ENV) 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. Guidelines contained in *Improving the Quality of Environmental Documents, A Report of the Joint AASHTO/ACEC Committee in Cooperation with the Federal Highway Administration* (May 2006) and the AASHTO Practitioner's Handbook 15 – *Preparing High-Quality NEPA Document for Transportation Projects* (July 2014) for:
 - a. Readability, and
 - b. Use of evidence and data in documents to support conclusions.

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

- B. The Engineer shall provide materials to support maintenance of the project environmental record in TxDOT's Environmental Compliance Oversight System (ECOS), including project review, completing the work development plan screens, uploading documents, and completing activities as assigned by the TxDOT Fort Worth District. All required materials will be uploaded to ECOS by the Fort Worth District Environmental Manager or as instructed by TxDOT Fort Worth District Environmental staff.
- C. Deliverables must contain all data acquired during the environmental service and be written to be understood by the public in accordance with the TxDOT's Environmental Toolkit guidance, documentation standards, and current guidelines, policies, and procedures.
- D. Electronic versions of each deliverable must be written in software that is fully compatible with the software currently used by the County and State and provided in the native format of the document for future use by the County and 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 must be a single, searchable .pdf file. The Engineer shall deliver the electronic files in both the document's native format and the PDF format.

- E. When the environmental service is to apply for a permit (e.g., USCG permit or USACE permit), the Engineer shall provide the permit application and all supporting documentation to the State and County as the deliverable.
- F. Submission of Deliverables
 - 1. Deliverables must consist of the preparation of Environmental Assessment (EA). Technical reports and documentation must be prepared to support the EA.
 - 2. All deliverables must comply with all applicable state and federal environmental laws, regulations, procedures, and TxDOT's ENV Compliance Toolkits, documentation requirements, and templates.
 - 3. All deliverables will consist of draft and final documents.
 - 4. On the cover page of any environmental documentation, the Engineer shall insert the following language in a way that is conspicuous to the reader:
"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 9, 2019, and executed by FHWA and TxDOT."
- G. The County will 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 and County 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. To include with the revised document a comment response form (matrix) in the format provided by the State.
 - 5. If after the second round of review and comment by the State and County are not satisfactory the Engineer will schedule a meeting to resolve the comments to minimize the number of revisions required for technical as well as the environmental document.
- H. The Engineer shall provide photographs and graphics that clearly depict details relevant to an evaluation of the project area.

120.2. Environmental Assessment (EA) Content and Format

- A. The Engineer shall provide an EA and ensure that:
 - 1. The EA meets the requirements of 23 CFR §771.119 and TAC, Title 43, Part 1, Chapter 2 and the EA content is sufficiently detailed to meet regulatory requirements for legal sufficiency and current (at the time of creation) TxDOT ENV guidance and Environmental Compliance Toolkits.
 - 2. Exhibits to be included in reports or EAs must not exceed 11 inches x 17 inches and must be in color. Text pages must be 8.5 inch x 11 inch. Exhibits and text in

reports or EAs must be reproducible via photocopying without loss of legibility. The EA documents must be reproduced on plain white paper unless otherwise approved in advance in writing by the State.

3. The EA must use quality maps and exhibits, and must incorporate by reference and summarized background data and technical analyses to support the concise discussions of the alternatives and their impacts.

B. Minimum Deliverables: (Additional deliverables to be identified in a work authorization based on work assigned.)

- i. Preliminary Draft EA for District review
- ii. Revised Draft EA (per District comments)
- iii. Draft EA for State review
- iv. Revised Draft EA (per State comments)
- v. Draft EA for Public Hearing
- vi. Final EA with FONSI

120.3. Environmental Technical Analyses and Documentation

A. Definition of technical analyses and documentation for environmental services

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

The State may determine what technical reports and documentation are necessary for any given project. The Engineer shall prepare all technical reports and documentation for the State with sufficient detail and clarity to support environmental determinations. All technical reports must be compliant with TxDOT's Environmental Compliance Toolkits, documentation requirements, and templates. The environmental document must reference the technical reports.

Environmental technical reports and documentation must include appropriate NEPA or federal regulatory language in addition to the purpose and methodology used in delivering the service. Technical reports and forms must use templates and documentation standards as applicable and include sufficient information to determine the significance of impacts.

The Engineer shall prepare and maintain an environmental constraints map. The Engineer shall provide the traditional electronic and hard copy of the constraints map.

B. Minimum Deliverables:

1. TxDOT Fort Worth District Environmental Information Form
2. Environmental Constraints Map
3. Project Scoping Materials
4. Draft technical analyses and documentation and requested revisions thereof
5. Final technical analyses documentation (approved by TxDOT)
6. EPIC Sheets

C. The environmental technical analyses and documentation anticipated include:

1. Protected Lands

The Engineer shall identify and evaluate the potential for impacts to occur to the following types of protected lands:

- a. Section 4(f) Evaluations
Identify the protected 4(f) properties including public lands and historic sites. The Engineer shall provide Section 4(f) Evaluations appropriate to the level of anticipated unavoidable impact. The Section 4(f) Evaluation must conform to the appropriate TxDOT Section 4(f) checklist for exceptions, *de minimus*, and programmatic evaluations. For individual Section 4(f) Evaluations, the format and outline must be approved by the State beforehand. All Section 4(f) Evaluations must meet the requirements set forth in TxDOT's ENV Compliance Toolkits. The 4(f) Section of the environmental document states the reason a Section 4(f) evaluation is being completed. The 4(f) Section of the environmental document discusses the presence of all Section 4(f) properties located in the project area.
 - b. Section 6(f) Evaluation
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 and document. – NOT APPLICABLE
 - c. Chapter 26 Properties
Identify and address potential impacts to properties protected by Chapter 26 of the Texas Parks and Wildlife Code. – NOT APPLICABLE
2. Community Impacts Analysis
The Engineer shall provide community impact analyses. Community impacts includes environmental justice, limited English proficiency, and other issues as addressed in TxDOT environmental guidance. The community impact analyses may include a Community Impact Narrative Report. The report must follow guidance provided in TxDOT's Community Impacts Assessment Toolkit. The assessment may include:
 - a. A community profile;
 - b. A displacement analysis;
 - c. An access and travel pattern analysis;
 - d. A community cohesion analysis;
 - e. Summary of public involvement process including methods used to accommodate persons with limited English proficiency; and
 3. Induced Growth Impact Analysis and Cumulative Impacts Analysis
The Engineer shall perform analysis to fulfill the requirements of NEPA and the most current version of TxDOT's Guidance on Preparing Impact Analyses and Cumulative Impacts Analysis Guidelines in TxDOT's ENV Compliance Toolkits.
 4. Air Quality Studies
The Engineer shall prepare all required technical reports and the air quality section of all environmental documents in accordance with the current version of the TxDOT's *Environmental Handbook for Air Quality* and Air Quality Toolkit. The State may determine what technical reports and documentation are required for any given project. The required technical reports and documentation may include:
 - a. Transportation Conformity Report Form and applicable coordination
 - b. Carbon Monoxide Traffic Air Quality Analysis (CO TAQA) technical report,
 - c. Quantitative MSAT technical report and conference call,

- d. Congestion management process analysis,
 - e. Applicable disclosure statements in the environmental document as prescribed in the Guidance for Preparing Air Quality Statements,
 - f. Air quality cumulative and induced growth impacts analysis as specified above in paragraph 120.5, C, 5-Induced Growth Impact Analysis and Cumulative Impacts Analysis and included in the environmental document, and
 - g. Response to public comments received on air quality issues.
5. Noise Analysis Technical Reporting
 The Engineer shall prepare all necessary noise analyses and technical reporting.
- a. Noise Analysis Technical Reporting Requirements:
 - (1) Computer modeling of existing and predicted noise levels using existing and predicted design year traffic data (k-factor, annual average daily traffic (AADT), fleet mix and turning movements);
 - (2) Field measurements of existing noise levels and validation of existing model;
 - (3) Determining predicted noise impact contours for undeveloped property;
 - (4) Barrier analysis for impacted receptors.
 - b. Noise Analysis General Requirements.
 - (1) The Engineer shall use TxDOT's .DGN file coordinate system for all traffic noise modeling, so that all design files and traffic noise modeling software coordinate systems are the same.
 - (2) The Engineer shall provide TxDOT with all .DXF files used for the traffic noise model.
 - (3) The Engineer shall review all proposed noise barrier locations as part of the traffic noise modeling process.
 - (4) The Engineer shall not begin identification of noise sensitive land uses unless TxDOT's Environmental Affairs Division's Historical Studies Branch (ENV-Historical Studies) has approved a Project Coordination Request (PCR).
6. Water Resources
 The Engineer shall provide environmental documentation, conduct field surveys, and provide analysis of water resources for compliance with state and federal regulations as described in the Environmental Guide: Volume 2 Activity Instructions, <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/060-06-gui.pdf>, and the associated forms, templates, and guidance found in the Water Resources section of the Natural Resources Toolkit, <https://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/natural-resources.html>.
- The Engineer shall provide the following water analysis:
- a. Surface Water Analysis Form, including analysis of:
 - (1) Section 404 of the Clean Water Act
 - (2) Section 303(d) of the Clean Water Act
 - (3) General Bridge Act/Section 9 of the Rivers and Harbors Act
 - (4) Section 10 of the Rivers and Harbors Act
 - (5) Section 401 of the Clean Water Act
 - (6) Executive Order 11990, Protection of Wetlands
 - b. TCEQ Edwards Aquifer Rules Analysis – NOT APPLICABLE–

- c. International Boundary Water Commission (IBWC) approval – NOT APPLICABLE
 - d. Coastal Barrier Resources Act (CBRA) analysis – NOT APPLICABLE
 - e. National Wild and Scenic Rivers Act (NWSRA) analysis – NOT APPLICABLE
 - f. Texas Coastal Management Program (TCMP) analysis – NOT APPLICABLE
 - g. WOTUS Delineation report prepared in accordance with the most recent Water Features Delineation Report including all supporting forms and exhibits
 - h. Section 404/10 Impacts Table prepared in accordance with TxDOT ENV's Section 404/10 Impacts Table and Instructions.
 - i. Section 404/10/9 Permitting Package – TO BE INCLUDED DURING PS&E
 - j. For all WOTUS surveys, the Engineer shall:
 - (1) Provide the results of the land survey in electronic DGN file format to be incorporated into the schematic and plans. GIS and KMZ files of the land survey must also be provided.
 - (2) Determine the acres of permanent and temporary impacts and linear feet of impacts at each WOTUS, and provide figures of the WOTUS and associated impacts overlaying the schematic and plan sheets.
7. Biological Resources
 The Engineer shall provide environmental documentation, conduct field surveys, and provide analysis of biological natural resources for compliance with state and federal regulations as described in the Environmental Guide: Volume 2 Activity Instructions, <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/060-06-gui.pdf>, and the associated forms, templates, and guidance found in the Natural Resources Toolkit, <https://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/natural-resources.html>. The Engineer shall provide the following biological/natural resource analysis:
- a. Species Analysis Form, including:
 - (1) Species Analysis Spreadsheet, including a habitat analysis for the project area and field surveys for protected species or suitable habitat
 - (2) EMST Mapping and Field Verification for coordination with TPWD Bald and Golden Eagle Protection Act (BGEPA) analysis and coordination assistance.
 - b. Farmland Protection Policy Act (FPPA) analysis and completion of the Farmland Conversion Impact Rating for Corridor Type Projects NRCS-CPA-106 form.
 - c. Marine Mammal Protection Act (MPPA) analysis – NOT APPLICABLE
 - d. Essential fish habitat (EFH) analysis – NOT APPLICABLE
 - e. Preparation of USFWS/National Marine Fisheries Service (NMFS) species consultation – NOT APPLICABLE
 - f. For all projects within a USFWS Designated Karst Zone or Critical Habitat: - NOT APPLICABLE
8. Initial Site Assessment (ISA) with Hazardous Materials Project Impact Evaluation Report
 The Engineer shall provide an ISA for the limits of the proposed project in accordance with Statement of Work for Hazardous Materials Processes related to NEPA in the TxDOT Hazardous Materials Management Toolkit

<http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/haz-mat.html>).

9. Archeological Survey and Documentation

The Engineer shall provide archeological resource identification, evaluation, and documentation services. In compliance with TxDOT's ENV Compliance Toolkits, the Engineer shall provide the following archeological services/deliverables using report templates provided by the State:

- a. Archeological Background Study (ABS) – prepared prior to initiating any field work and following TxDOT's ENV Compliance Toolkits
- b. Antiquities Permit – if results of the ABS indicate field survey is warranted, the Engineer shall prepare a Scope of Work and Antiquities Permit application to be submitted to TxDOT ENV's Archeological Studies Branch (ENV-ARCH) for review and processing. The ENV-approved Scope of Work and permit application will be submitted by the Engineer to the Texas Historical Commission (THC) for approval prior to conducting any field surveys.
- c. Archeological Survey – The Engineer shall conduct an archeological survey for the reasonable alternatives sufficient to satisfy state and federal regulations where ROEs have been obtained. The archeological field survey shall include pedestrian reconnaissance and shovel testing within the Area of Potential Effects (APE). The Engineer shall follow the THC-approved Archeological Survey Standards for Texas outlined by the Council of Texas Archeologists (Survey Standards). All excavated soil will be screened through ¼-inch mesh and artifacts will be analyzed in the field and reburied; no artifacts will be collected. All sites found within the APE shall be recorded on State of Texas TexSite Archeological Site Data forms and documented in accordance with the Survey Standards. The Engineer also assumes that backhoe trenching may be required within the APE. All backhoe trenching excavations shall conform to the Survey Standards. The Engineer shall prepare an archeological resources survey report that conforms to the ENV-ARCH Review Standards for Archeological Survey Reports. The report shall summarize the results of the fieldwork and provide recommendations for any additional archeological work, if required, with appropriate justification. The report will evaluate the National Register of Historic Places (NRHP)/State Antiquities Landmark (SAL) eligibility for all sites documented during the survey. The draft report will be presented in electronic format to the County and the State for review and comment. Upon receipt of review comments, the Engineer shall prepare the final report and distribute in compliance with the terms of the permit. All notes and records must be curated at a federally approved curatorial facility

10. Historic Resource Identification, Evaluation, and Documentation

The Engineer shall provide historic resource identification, evaluation, and documentation services. In compliance with TxDOT's ENV Compliance Toolkits, the Engineer shall provide the following historic resource services/deliverables:

- a. Project Coordination Request of Historic Resources (PCR),
- b. Historic Resources Research Design, and
- c. Historic Resource Survey Report including coordination with potential consulting parties

All services, except the historic resource PCR, must have prior approval by TxDOT's Environmental Affairs Division's Historical Studies Branch (ENV-HIST)

to be performed. The historic resource PCR must be accepted by ENV-HIST prior to survey field work. Any resources determined NRHP-eligible where impacts are possibly unavoidable may require an Intensive Survey at the discretion of ENV-HIST. The Intensive Survey would be contracted separately by ENV-HIST and the results shared with the project team for inclusion in the HRSR and NCTCOG's Environmental Document.

11. Floodplain Impacts

The Engineer shall determine whether the transportation activity has the potential to affect floodplains. Studies for floodplain impacts must fulfill the requirements of Executive Order 11988 and 23 CFR 650, Subpart A.

Documentation must:

- 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 FEMA mapped floodplains, including 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 might encroach on the base (100-year) floodplain (encroachments), where an alternative might support incompatible floodplain development, and the potential impacts of encroachments and floodplain development. This identification must 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, 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 must include an evaluation and discussion of practicable alternatives to the structure or to the significant encroachment. The report must 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, provide a preliminary indication of whether the encroachment is consistent with or requires a revision to the regulatory floodplain. If the preferred alternative encroaches on a regulatory floodplain, the report must discuss the consistency of the action with the regulatory floodplain. In addition, the report must document coordination with FEMA and local or state agencies with jurisdiction indicating that a revision is acceptable or that a revision is not required.
- i. If the preferred alternative includes a floodplain encroachment having significant impacts, the report must include a finding that it is the only practicable alternative as required by 23 CFR 650, Subpart A. The finding must refer to Executive Order 11988 and 23 CFR 650, Subpart A. In such cases the report must document compliance with the Executive Order 11988 requirements and must 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

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

The Engineer shall:

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

120.4. Public Involvement

- A. The Engineer shall provide public involvement activities, which might include:
 1. Conducting up to twelve (12) meetings with property owners, airport owners, developers, stakeholders, local governments and various agencies to discuss and review the schematic design and the NEPA process. The Engineer shall document all meetings.
 2. Developing a public involvement plan that specifies all activities to be performed. Public involvement activities must be carried out in compliance with the contract. The plan must also discuss outreach strategies for both the public and targeted strategies for limited English proficiency populations.
 3. Compiling and updating a mailing list of people, agencies, and organizations interested in the transportation activity.
 4. Prepare Fact Sheet and Project Location Map.
 5. Prepare project updates for TxDOT and County websites.
 6. Conducting up to three (3) stakeholder workshops and three (3) technical working group meetings including making arrangements for the meetings, preparing invites and PowerPoint presentations and meeting minutes.
 7. Attend pre-meetings with the State, preparing the Roles and Responsibilities Spreadsheet and conducting up to three (3) public meetings including the following:
 - two (2) public meetings at one location; and
 - one (1) public hearing at one location during the project development process.

All meetings will be held virtually with an in-person option. The Engineer shall prepare schematic exhibits, constraints maps, and other necessary exhibits, and assist the State with all presentations. The Engineer shall not hold public meetings or hearings in the absence of State personnel.

8. Coordinating, reserving, and paying for all meeting locations and facilities.
9. Preparing the adjacent property owner and resident list; mailing out and paying for notices; preparing, publishing and paying for notices to major and local newspapers.
10. Hiring law enforcement for public meetings and court reporter for hearing.
11. Coordinating and paying for audio and visual rental equipment and changeable message boards.
12. Arranging a pre-meeting with the County to review all exhibits and other materials to be used at public meetings or hearings.

13. Coordinating project marketing with project stakeholders including the Tarrant County Community Relations and other local agencies and governments. This includes developing press releases, FAQs, and social media content for others to post on existing websites and social media accounts.
14. Providing personnel to staff meetings and hearings; including, people to perform registration, make presentations, and answer questions.
15. Developing and submitting to the County up to three (3) documentation packages for public meetings and public hearing documentation. The Engineer shall include in the packets all public comments received and responses to comments. Packets will be posted to the project website and the Engineer shall send an email to interested parties notifying them of the posting as a response to comments. The Engineer shall comply with the State's environmental compliance toolkits related to public involvement.
16. Providing up to four (4) email updates to project stakeholders and interested persons about the project.

120.5. Right of Entry.

Prior to performing any work outside of the City, County or State's right of way, the Engineer shall request right of entry from public and private landowners to allow services (e.g., environmental services, surveying services, geotechnical services) to be performed and shall request concurrence from the County. The Engineer shall prepare right of entry permissions, which must be signed by the landowner. Letters or other materials seeking right of entry must 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 these services. Rights of Entry for environmental studies shall be requested following the TxDOT ENV process and using TxDOT's Right of Entry Agreement Forms for Environmental Investigations. The Engineer shall not commit acts which will result in permanent damages to private property and shall make every effort to comply with the wishes and address the concerns of private property owners.

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

A. General Requirements Underground Excavation

If necessary, the Engineer shall contact Texas Excavation Safety System, Inc. (DIGTESS) or call telephone number 811 to have underground utilities marked prior to digging the holes for monuments. The Engineer shall maintain documentation of all notification calls. The Engineer shall comply with Texas' excavation laws.

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

The Engineer shall take the following preventive measures while cutting, pruning, or removing oak trees in counties which have confirmed cases of Oak Wilt or when directed by the State:

1. When possible, employ alternative methods instead of pruning or cutting oak trees.
2. When possible, perform necessary pruning and cutting of healthy trees during the winter months of January and February, when Sap Beetles are least active, and avoid pruning or cutting during Spring months when Sap Beetles are most active.
3. Treat wounds with pruning paint in Oak Wilt infected counties to discourage insects, especially during warm weather.

4. Sterilize all pruning tools between each tree with either Lysol™ spray or a 70 percent rubbing alcohol solution.
5. Destroy tree cuttings by burning or burying the wood or dispose of the wood in another approved method.

130.1. General Standards for Surveying*

The Engineer shall ensure that all survey work meets or exceeds the standards set in the Professional Land Surveying Practices Act, the General Rules of Procedures and Practices of the Texas Board of Professional Engineers and Land Surveyors (TBPELS), and the TxDOT *Survey Manual*, latest edition. All survey work must be accomplished in an organized and professional manner. All survey work is subject to review and approval by the County.

The Engineer shall use TxDOT *ROW Preliminary Procedures for Authority to Proceed Manual*, (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 (ROW) documents produced, including ROW maps, property descriptions (including parcel plats), and other ROW work products, unless otherwise instructed by the State.

Unless otherwise directed by the County and State, the Engineer shall use (1) 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 and (2) the datum adjustment currently in use by the State unless otherwise instructed by TXDOT.

Project or surface coordinates must be calculated by applying a combined adjustment factor (CAF) to State Plane Coordinate values. If provided by the State, the Engineer shall use a project specific CAF. Reasons to use a project specific CAF include (1) to match existing or ongoing projects, (2) to conform to a county-wide surface adjustment factor, or (3) to be calculated specifically for the project area.

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

All work utilizing the Global Positioning System (GPS), whether primary control surveys or other, must meet or exceed the requirements provided by the TxDOT *Survey Manual*, latest edition, to the order of accuracy specified in the categories listed below. If the order of accuracy is not specified in this exhibit the work must meet or exceed the order of accuracy specified in the publications listed in this section.

All conventional horizontal and vertical control surveys must meet or exceed the requirements provided by 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. If the order of accuracy is not specified in this exhibit, the work must meet or exceed the order of accuracy specified in the publications listed in this section.

If requested by the County, the Engineer shall cause the performing registered professional land surveyor (RPLS) to certify the work performed as true and correct

according to Federal Geodetic Control Subcommittee (FGCS) standards, the TxDOT *Survey Manual*, latest edition, or the TSPS *Manual of Practice for Land Surveying in the State of Texas*, as applicable.

The Engineer shall provide survey data (both original and processed) to the County on a CD, DVD, USB flash drive, 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 Word, Bentley MicroStation, Bentley OpenRoads Designer civil design system, Bentley GEOPAK Survey, Microsoft Excel, and ESRI ArcGIS. 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 County or State.

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

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 County.

130.2. Specific Work to Be Performed

The Engineer shall provide surveying services for projects and locations as directed by the County per the function codes and description of work provided below.

A. ROW Mapping

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

1. Purpose

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

2. Definitions

In this exhibit, the following definitions apply:

- a. Abstract Map means a scale drawing prepared from record documents depicting proposed ROW lines, existing ROW lines, easement lines, and private property lines with relevant grantee names, recording data, and recording dates.
- b. Closure/Area Calculation Sheet means 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.
- c. Denial of Access Line means a line that indicates specific location where access to the roadway is denied.
- d. Property Description means 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 consisting of the following two parts:
 - (1) 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.

- (2) Parcel plat, which is an 8.5" x 11" formatted scaled drawing depicting all the information shown on the ROW map regarding an individual parcel of land to be acquired.
 - e. Owner means the most current title holder of record as determined by a study of the real property records.
 - f. Parent Tract means 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 ROW, easement, or separate ownership which destroys unity of use.
 - g. Parent Tract Inset means a small line drawing, to an appropriate scale, of the parent tract perimeter placed upon the ROW 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 ROW map. Since parent tract insets are used to identify the limits and location of parent tracts, they must include public ROW, utility easements and fee strips, and identifiable water courses which bound the parent tract.
 - h. P.O.B. means point of beginning, which is a corner of the parcel of land to be acquired, located on the proposed ROW line and being the beginning terminus of the first course of the property description.
 - i. P.O.C. means point of commencing, which is a monumented property corner which can be identified in the real property records and is located outside the proposed ROW 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 ROW corridor may be used.
 - j. Preliminary ROW Layout means a drawing to scale depicting proposed ROW lines; existing ROW 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 ROW lines and to each PC, PT, and angle point in the existing ROW lines in areas of no proposed acquisition.
 - k. ROW means right of way
 - l. ROW Maps means a series of 22" x 34" 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 ROW project.
3. Procedure
- The Engineer shall ensure that the survey meets or exceeds the precision and accuracy requirements of the TBPELS.
- a. Abstract Map
The Engineer shall prepare an abstract map sufficient to determine the following:
 - (1) All interests of public record held in the land to be acquired.

- (2) The total record holdings to be acquired from an owner contiguous to a land.
- (3) All interests in land held in common to be acquired (shopping mall parking lots, subdivision reserves, etc.)
- (4) All improvements proposed by other agencies that might have a bearing on project development.
- (5) All called monuments, bearings, and distances shown in record documents.

b. ROW Map

The Engineer shall field locate significant items such as: property corners, existing ROW markers, improvements, and visible utilities. The Engineer shall verify and update the planimetric file as directed by the County.

The Engineer shall prepare a ROW map for each proposed ROW project. A ROW 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 County. The Engineer shall use TxDOT standard title sheets, index sheets, and plan sheets, copies of which the Engineer shall request and secure for all purposes of this Contract.

By mutual agreement between the TBPELS and the State, ROW maps need not be signed and sealed by a RPLS.

Plan sheets must include the following:

- (1) Proposed ROW lines. Proposed ROW lines must be labeled with appropriate bearings, distances, and curve data. Curve data must include the radius, delta angle, arc length, and long chord bearing and distance.
- (2) Existing ROW lines. Existing ROW lines must be labeled 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.
- (3) Proposed project baseline alignment. Proposed project baseline alignment must be labeled with appropriate bearings, distances, and curve data. Curve data must include the station of curve, point of intersection (PI), radius, delta angle, arc length, tangent length, long chord bearing, and distance, and the northing (N) and easting (E) coordinates of the curve PI. Each alignment PCs, PTs, and even 500-foot station must be clearly labeled with its station value.
- (4) Proposed paving lines. 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 County must be shaded with a dot pattern or highlighted by some other means acceptable to the County.
- (5) Denial of Access lines. Denial of Access lines must sufficiently indicate areas where access is to be denied and where access is to be permitted.

- (6) Private property lines. Private property lines must be labeled 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.
- (7) League lines and survey lines. League lines and survey lines must be shown and identified by name and abstract number.
- (8) County lines and city limit lines. County lines and city limit lines must be located and identified by name.
- (9) North arrow. A north arrow must be shown on each sheet, and, if possible, located in the upper right corner of the sheet.
- (10) Monuments. Monumentation set or found must be shown and described as to material and size.
- (11) PC, PT, and angle points. Station and offset must be shown for each PC, PT, and angle point in the proposed ROW lines. Stations and offsets must be shown with respect to the proposed centerline alignment.
- (12) Intersecting and adjoining ROW. Intersecting and adjoining public ROW must be shown and identified by name, ROW width, and recording data.
- (13) Railroads. Railroads must be shown and identified by name, ROW width, and recording data.
- (14) Utilities corridors. Utility corridors must be identified as to easement or fee.
- (15) Easements. Easements and fee strips must be shown and identified by width, owner, and recording data.
- (16) Set-back lines. Set-back lines (e.g., building lines) must be shown and identified.
- (17) Improvements. Visible improvements located within the proposed ROW corridor or within 50 feet of a proposed ROW line must be shown and identified.
- (18) Structures.
 - i. Structures must be identified as commercial or residential, by number of stories, and as to type (e.g., brick, wood frame).
 - ii. Structures that are severed by a proposed ROW line must be dimensioned to the extent necessary to completely delineate the severed parts.
 - iii. Parking areas, billboards, and other on-premise signs that are severed by a proposed ROW 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 ROW corridor.
 - iv. For structures located outside the proposed ROW corridor but within ten feet of a proposed ROW line, the shortest distance between the structure and the proposed ROW line must be shown.
 - v. If the structure is an element of the planimetric furnished to the Engineer by the State, the Engineer may determine the shortest distance to the proposed ROW line by measuring it in the

planimetric. However, if the distance is less than three feet, the Engineer shall verify the distance in the field.

- (19) Utilities. Visible utilities located within the proposed ROW corridor or within 50 feet of a proposed ROW line must be shown and identified.
- (20) Underground fuel storage tanks. Visible location of vents and filler caps of underground fuel storage tanks situated within the proposed ROW corridor or within 50 feet of the corridor must be determined and shown.
- (21) Points of commencing and points of beginning. 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. A point of commencing is not required in the case of a total taking without a remainder.
- (22) Parcels. Each parcel of land to be acquired must be identified by a parcel number, which must appear in the ownership tabulation and on the ROW map in the proximity of the respective parcel. If the Engineer is unfamiliar with the criteria used by the State to assign parcel numbers, the Engineer shall seek the assistance of the State at the time the abstract map is complete.
- (23) Ownership tabulation. An ownership tabulation must be shown that includes the parcel number, existing area of the parent tract, lots and blocks 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 or 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 ROW map by the State. The Engineer must provide several blank lines in the tabulation block to facilitate future map additions.
- (24) Parent tract inset. A parent tract inset must be shown for each parent tract that cannot be shown to scale on the ROW 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.
- (25) Data sources. 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 name or identification number, State Plane Coordinate zone information, epoch information, grid or surface values and the combined adjustment factor or surface adjustment factor.
- (26) Notes. Appropriate notes must be included on the title sheet and each map sheet stating the following:
 - i. Month (or months) and year abstracting upon which the map is based.
 - ii. Month (or months) and year field surveys were conducted upon which the map is based.
 - iii. Month and year the map was completed by the Engineer.
- (27) ROW CSJ number. The ROW CSJ number, if available, must be shown on each ROW map sheet.

- (28) Tick marks. The Engineer 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.

c. Exhibits

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

(1) Metes and bounds description

A metes and bounds description must be prepared for each parcel of land to be acquired. The Engineer shall follow the standard formats for metes and bounds descriptions that the State has developed. If requested by the Engineer, the State will provide copies of the standard formats. Metes and bounds descriptions must include the following:

- i. State, county, and survey within which the proposed parcel of land to be acquired is located.
- ii. Reference to unrecorded and recorded subdivisions by name, lot, block, and recording data to the extent applicable.
- iii. Reference by name to the grantor and grantee, date and recording data of the most current instruments 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 must make clear which date is being used.
- iv. A point of commencing.
- v. A point of beginning with the appropriate N and E surface coordinates.
- vi. 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 labeled 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 ROW line, an existing ROW line, or a property line of the parent tract. Each property line of the parent tract must be described with an appropriate adjoiner call.
- vii. A description of all monumentation set or found, which must include size and material.
- viii. A reference to the source of bearings, coordinates, and datum used.

(2) Parcel plat

The Engineer shall prepare a parcel plat for each parcel of land to be acquired. The Engineer shall follow the standard formats for parcel plats that the State has developed. If requested by the Engineer, the State will provide copies of the standard formats. Parcel plats must

include all items of information shown on the ROW map that concern 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 ROW mapping which have proven to facilitate the processes of negotiation, appraisal, relocation assistance, and condemnation. The Engineer shall adhere to these standards and formats to every extent possible to ensure that the needs of the State are met.

5. General Specifications

The following general specifications are applicable for ROW mapping:

- a. Completed ROW 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. ROW 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 ROW projects with prior approval by the State.
- d. The smallest size lettering acceptable on a ROW map shall be 1/10 of one inch (Leroy #100) because ROW maps are reduced in size by one-half for archiving purposes. A ROW map that 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 ROW 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 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 8.5" x 11" bond paper.
- h. The Engineer shall obtain State approval prior to using a paper product not previously approved by the State.

6. General Requirements

- a. Copies of instruments of record submitted to the State must be indexed by parcel number.
- b. Coordinates appearing on ROW maps, on parcel plats, and in property descriptions must be surface coordinates based on the Texas Coordinate System of 1983. 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 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).

- c. Line and curve tables may be used when necessary.
 - d. 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.
 - e. A minimum four inch by four-inch space shall be reserved at the bottom right corner of each map sheet for future revision notes.
 - f. The State may allow the Engineer to set a 5/8-inch iron rod with the state's aluminum cap (or other appropriate monument) on the proposed ROW line to be later replaced with the State's Type II ROW marker.
If the State's 5/8" iron rod with the State's aluminum cap is set for PCs, PTs, PIs, or 1500-foot station, the Engineer shall indicate so using the double asterisk symbol (**) on the map sheets and in the property description and include following note:
**The monument described and set may be replaced with the State's Type II ROW 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 is subject to standards and required ArcGIS deliverables detailed in Chapter 4, Section 8 of the TxDOT *ROW Preliminary Procedures for the Authority to Proceed Manual*.
8. Electronic ROW Mapping Standards
The primary purpose of this section is to provide instructions for the graphics standards, file management structure, and naming conventions, for ROW mapping electronic deliverables submitted to the TxDOT Right of Way Division by engineering and surveying service providers as an integral part of the ROW mapping package.
The software, file types, and file formats must be compatible with those used by the managing TxDOT District or Division for schematics and PS&E (e.g., native MicroStation files for graphics, Microsoft Word for metes and bounds descriptions).
- a. MicroStation
All graphic files for map sheets and parcel plats must be native DGN files created using MicroStation with the State's current seed files and the State's workspace environment, settings, and resource files.
 - b. Level Library Files
The Engineer shall use the State's current MicroStation level library files for ROW mapping. The files contain all the predefined levels that are normally needed for ROW mapping and to show existing utilities.
 - c. Separate DGN Files for Each Map Sheet
The Engineer shall provide one DGN file for each map sheet so that each ROW map sheet is spatially correct (i.e., snapping on elements in MicroStation 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 ROW CSJ for the project and “S01” is the sheet number, beginning with number 1 as the cover sheet.

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

The Engineer shall provide the corrected master ROW files to the design engineer to be used in the final plans, specifications, and estimate (PS&E) so that all features of construction and the relocation of utilities are correctly placed in relation to the highway ROW and the ROW of cross streets or roadways.

The master ROW file naming convention is: MRF ROW CSJ_Logical Name.dgn. For example:

MRF212104065_Schematic90.dgn (for schematic layout 90% submittal)

MRF212104065_Schematic100.dgn (for schematic 100% submittal)

MRF212104065_SchemApprov.dgn (for final schematic, approved by State and FHWA)

MRF212104065_PSEDesign.dgn (for final PS&E design)

MRF212104065_ExROW.dgn (for existing ROW determined by RPLS)

MRF212104065_PropROW.dgn (for proposed ROW of final design)

MRF212104065_DeedPlot.dgn (for deed record)

MRF212104065_Planimetric.dgn (for aerial mapping topography)

MRF212104065_ROWTopo.dgn (for improvements data collection)

MRF212104065_DesignTopo.dgn (for design level data collection topography)

MRF212104065_ExUtil.dgn (existing utilities)

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.

- e. File Structure of Master and Reference DGN Files
If possible, the file structure must not have any subfolders to allow better transfer of data to different PCs, server drive names, or CDs, DVDs, or USB flash drives without path problems to reference files when the sheet files are opened.
- f. 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. Sheets must be completely legible at full scale sheet size (22 inches x 34 inches and when reduced to half scale sheet size (11 inches x 17 inches). It is not sufficient that originals or first-generation plots are legible, reproductions (copies) must retain legibility.

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.

For all ROW mapping, the Engineer shall use the 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 shall use TxDOT's current GEOPAK Survey SMD file that sets up new feature codes in SMD file for alignment chains, parcel chains, and survey chains that GEOPAK Survey plots from the GPK file with the correct line styles, colors, and weights to the designated levels loaded into the DGN file by the State's current level library files.

The Engineer shall use MicroStation Packager for the submission of electronic deliverables, which captures any non-State standard files (e.g., rsc, cel, text) that were used in the mapping that look and plot differently in the State's MicroStation® workspace.

- g. Text and Line Colors When Using Color Digital Orthoimagery in the Background
The predominate colors of the digital orthoimagery (e.g., greens, browns) dictate which line and text colors stand out and are legible. Some degree of trial and error is often needed, and the Engineer shall maximize legibility.
- h. Required Data in the GEOPAK ROW GPK File
Alignments, chains of proposed and existing ROW lines, parent tracts and taking parcels, and all other points collected in the field (start with schematic or design GPK file) are required.
If the design GPK file is too detailed for ROW use, the Engineer shall create input files for the information needed for the design GPK file to load into the ROW GPK file.
- i. 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.
- j. Requirements for Electronic Deliverables
 - (1) Native MicroStation DGN files (reference files, sheets files, and parcel plats files);
 - (2) GEOPAK Survey GPK files;
 - (3) 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 file naming convention is: ROWCSJ_Type of Coordinates.csv (e.g., 212101065_Surface.csv, 212101065_Grid.csv, 212101065_WGS84.csv);
 - (4) PDFs created in MicroStation 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;

- (5) PDF's of signed and sealed Property Descriptions, Parcel Plats, and Engineer's Reports and Microsoft Word documents of Property Descriptions and Engineer's Reports;
 - (6) Raw and processed GPS files including adjustment reports.
- 9. Deliverables
 - In preparing ROW maps, the following are required:
 - a. An Abstract Map of the current record title holders.
 - b. A Preliminary Map showing the proposed schematic and existing ROW.
 - c. A ROW map for the project limits under cover of title sheet, index sheet, control data sheet, and exhibits of the property descriptions and parcel plats.
 - d. Documentation stating that the appropriate monuments were set on the proposed ROW lines at intersecting property lines, and at all PCs, PTs, angle points, intersecting ROW lines of side streets, and at 1,500-foot stations.
 - e. Documentation stating that the appropriate monuments were set on the existing ROW lines in areas of no acquisition at all PCs, PTs, angle points, and 1,500-foot stations, and as directed by the State.
 - f. The Engineer's report, outlining the approach, reasons, and basis for the existing ROW determination, and conclusions made.
 - g. A copy of the State's ROW mapping check list, signed by the supervising RPLS.

FUNCTION CODE 145 (145,164) - MANAGING CONTRACTED/DONATED PE

CONTRACT MANAGEMENT AND ADMINISTRATION

145.1. Contract Management and Administration

The Engineer shall:

- A. Act as an agent for the County.
- B. Produce a complete and acceptable deliverable for each environmental service performed for environmental documentation.
- C. Incorporate environmental data into identification of alternatives.
- D. Notify the County of its schedule, in advance, for all field activities.
- E. Notify the County and 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 accordance with 40 Code of Federal Regulations (CFR) 1500-1508). Inform the County and State of the basis for concluding there are significant impacts and the basis for concluding that the impacts might require mitigation.
- F. Notify the County and 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 might elevate the transportation activity's status from a categorical exclusion or environmental assessment. The County and State will reassess the appropriate level of documentation.

145.2. 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 County review requirements. The

project work schedule must depict the order of the various tasks, milestones, and deliverables. The Engineer shall review the schedule monthly and provide updates regarding its progress on the schedule to the County.

- C. The Engineer shall submit written monthly progress reports to the County.
- D. The Engineer shall provide ongoing quality assurance and quality control to ensure completeness of product and compliance with the County procedures.
- E. The Engineer shall conduct site visits in both the AM and PM peak hour and develop a technical report that includes photographs outlining the findings and observations.

FUNCTION CODE 160(150) – ROADWAY DESIGN

150.1. 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 to design a project, or during layout and staking of projects for construction.

A. 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.

B. Definitions

Design survey means the combined performance of research, field work, analysis, computation, and documentation necessary to provide detailed topographic (3-dimensional) mapping of a project site. Design surveys might include locating existing right of way (ROW), cross-sections, and 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 ROW maps, and establishing control points.

Construction survey means 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.

C. Tasks to be Completed

1. Design Surveys

The Engineer shall perform design surveys. Design survey tasks include:

- a. Obtain or collect data to create cross-sections and DTMs.
- b. Locate existing utilities.
- c. Locate topographical features and existing improvements.
- d. Provide details of existing bridge structures.
- e. Provide details of existing drainage features, (e.g., culverts, manholes,).
- f. Locate all WOTUS, including wetlands.
- g. 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 (e.g., National Geodetic Survey (NGS), Federal Emergency Management Agency (FEMA)) and other local entities as directed by the County.
- h. Locate existing ROW.

- i. Review ROW maps.
- j. Locate boreholes.
- k. Perform hydrographic surveys.
- l. Update existing control data and prepare survey control data sheets, as directed by the State, for inclusion into a construction plan set.

The Engineer shall prepare a Survey Control Index Sheet and Horizontal and Vertical Control Sheets, which must be 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. Horizontal and Vertical Control sheets identify 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 Sheets must be used in conjunction with each other as a set. The TxDOT forms for these sheets can be downloaded from the TxDOT website.

The Survey Control Index Sheet must show the following:

- a. Overall view of the project and primary control monuments set for control of the project.
- b. Identification of the control points.
- c. Baseline or centerline.
- d. Graphic (bar) scale.
- e. North arrow.
- f. The note: *The survey control information has been accepted and incorporated into this PS&E*, which must be signed, sealed and dated by a Texas Professional Engineer.
- g. RPLS signature, seal, and date.
- h. The State's title block containing district name, county, highway, and CSJ.

All Horizontal and Vertical Control Sheets must show the following:

- a. Location for each control point, showing baseline or centerline alignment and North arrow.
- b. Station and offset (with respect to the baseline or centerline alignments) of each identified control point.
- c. Basis of Datum for horizontal control (base control monument/benchmark name, number, datum).
- d. Basis of Datum for the vertical control (base control monument, benchmark name, number, datum).
- e. Date of current adjustment of the datum.
- f. Monumentation set for Control (description, district name/number and location ties).
- g. Surface adjustment factor and unit of measurement.
- h. Coordinates (State Plan Coordinates (SPC) zone and surface or grid).
- i. Relevant metadata.
- j. Graphic (bar) scale.
- k. The note: *The survey control information has been accepted and incorporated into this PS&E*, which must be signed, sealed, and dated by a Texas Professional Engineer.

- l. RPLS signature, seal and date.
- m. The State's title block containing district name, county, highway, and CSJ.

D. Technical Requirements

- 1. Design surveys and construction surveys must be performed under the supervision of a registered professional land surveyor (RPLS) currently registered with the TBPELS.
- 2. Horizontal ground control used for design surveys and construction surveys, furnished to the Engineer by the State or based on acceptable methods conducted by the Engineer, 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 applicable.

- 3. Vertical ground control used for design surveys and construction surveys, furnished to the Engineer by the State or based on acceptable methods conducted by the Engineer, 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 applicable.

- 4. Side shots or short traverse procedures used to determine horizontal and vertical locations must meet the following criteria:
 - a. Side shots or short traverses must begin and end on horizontal and vertical ground control as described above.
 - b. Standards, procedures, and equipment (e.g., GPS equipment, LiDAR, total stations) used must be such that horizontal locations relative to the control are reported within the following limits:
 - (1) Bridges and other roadway structures: less than 0.1 of one foot.
 - (2) Utilities and improvements: less than 0.2 of one foot.
 - (3) Cross-sections and profiles: less than 1 foot.
 - (4) Bore holes: less than 3 feet.
 - c. Standards, procedures, and equipment (e.g., GPS equipment, LiDAR, total stations) used must be such that vertical locations relative to the control are reported within the following limits:
 - (1) Bridges and other roadway structures: less than 0.02 of one foot.
 - (2) Utilities and improvements: less than 0.1 of one foot.
 - (3) Cross-sections and profiles: less than 0.2 of one foot.
 - (4) Bore holes: less than 0.5 of one foot.

E. Automation Requirements

- 1. Planimetric design files (DGN) must be fully compatible with the TxDOT's MicroStation graphics program without further modification or conversion.
- 2. Electronically collected and processed field survey data files must be fully compatible with the TxDOT's computer systems without further modification or conversion. All files must incorporate only those feature codes currently being used by TxDOT.

3. DTM must be fully compatible with Bentley's OpenRoads Designer 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.

F. Deliverables

The deliverables for design surveys and construction surveys shall be the following:

1. Digital terrain models (DTM) and the triangular irregular network (TIN) files in a format acceptable by the County.
2. Maps, plans, or sketches prepared by the Engineer showing the results of field surveys.
3. Computer printouts or other tabulations summarizing the results of field surveys.
4. Digital files or media acceptable by the County containing field survey data (ASCII Data files).
5. Maps, plats, plans, sketches, or other documents acquired from utility companies, private corporations, or other public agencies, the contents of which are relevant to the survey.
6. Field survey notes, as electronic and hard copies.
7. An 8.5" x 11" survey control data sheet for each control point, which must include 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. The Engineer shall use a pre-formatted survey control data sheet form provided by the State in Microsoft Word format.
8. A digital and hard copy of all computer printouts of horizontal and vertical conventional traverses, GPS analysis and results, and survey control data sheets.
9. All GEOPAK GPK files.
10. Survey reports in a format requested by the County.

150.2. Aerial Mapping

Aerial Mapping involves (1) collection and reduction of aerial survey data and (2) preparation of site maps and topographic maps.

A. Purpose

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

B. Definitions

In this exhibit, the following definitions apply:

1. Aerial Photograph means a vertical photograph taken from an aircraft at an altitude above mean terrain elevation to produce a photo scale of 1:3,000 or a digital image with a ground pixel size of 5 cm or less.
2. Analytical triangulation means 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.
3. Ground control means 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.
4. Airborne GPS/IMU means 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.

5. DGN – means a two- or three-dimensional graphics file produced by MicroStation using Bentley's OpenRoads Designer tools. These files may contain features and improvements plotted in a horizontal plane along the northing (N) and easting (E) axes which correspond to Texas State Plane Coordinates. These files might contain 2D or 3D elements representing topographic, existing, proposed, schematic, and general layout features.
6. DTM means digital terrain model, which is a three-dimensional digital model of the ground containing those features necessary to define surface relief. The three-dimensional model must contain only those planimetric features that are necessary to define relief.
7. Flight Map means a map depicting the flight line layout over the project area.
8. Horizontal and Vertical Ground Control means survey control points for which the N and E coordinate and elevation have been determined by on-the-ground surveys.
9. Low Altitude Photography means aerial photography with a film photo scale of 1:3000 or a digital image with a ground pixel size of 5 cm or less.
10. Medium Altitude Photography means aerial photography with a film photo scale of 1:12,000 or a digital image with ground pixel size of 20 cm.
11. Planimetric Map means 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.
12. Project Photo Length means the distance over which photographs are required to be taken.

C. Tasks to be Completed

1. Aerial Photography

The Engineer shall provide aerial photography for low altitude aerial mapping appropriate for detailed design for the ultimate schematic alignment area shown in the map at the beginning of this scope of work, assuming a 1200 feet width along the limits of the centerline of the schematic.

a. Ground Control Accuracy Standards

- (1) The Engineer 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 applicable.
- (2) The Engineer 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 applicable.

b. Paneling Placement Specifications

All standards and specifications must be in accordance with established guidelines and recommended or approved by the State.

c. Aerial Photography Standards and Specifications

All standards and specifications shall be in accordance with established guidelines and recommended or approved by the State.

- d. **LiDAR Technology**
The use of LiDAR technology (mobile, terrestrial, or aerial) is acceptable when approved by the State and the accuracies of the specified tasks it will be used for are met or exceeded.
 - e. **Deliverables**
The Engineer shall provide digital orthophotos on CD, DVD, USB flash drive, or by File Transfer Protocol (FTP).
2. **DGN, DTM, and TIN Files**
The Engineer shall prepare DGN, DTM and TIN files covering the specific work location and meeting standards and specifications as required by the State.
- a. **Horizontal Ground Control Accuracy Standards**
The Engineer 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 applicable.
 - b. **Vertical Ground Control Accuracy Standards**
The Engineer 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 applicable.
 - c. **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.

The State may require field verification of adherence to the required accuracy specification.
 - d. **Statement of Map Accuracy**
For maps that are not field checked but have been compiled to meet the State's accuracy standard, the Engineer 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.
 - e. **DGN File Specifications**
 - (1) Files must be fully compatible with TxDOT's MicroStation graphics system without further modification or conversion.
 - (2) File features and level structure must be in compliance with TxDOT's current photogrammetry mapping legend.
 - (3) 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").
 - f. **DTM and TIN Files Specifications**
 - (1) Files must be fully compatible with Bentley's OpenRoads Designer graphics system without further modification or conversion.

- (2) TxDOT's current level library files for photogrammetry mapping will be provided by the State.
- (3)
- (4) File features and level structure must comply with TxDOT's current photogrammetry mapping legend.
- (5) 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").

g. Deliverables

The Engineer shall provide:

- (1) DGN, DTM, and TIN files on a medium and in a format acceptable to the State, delivered on CD, DVD, USB flash drive, hard-drive, or by FTP.
- (2) Orthophotography (created using the DTM) delivered on CD, DVD, USB flash drive, hard-drive, or by FTP in ECW format (3 banded) with world files. If digital, depending on intended use, deliverable formats must include color photography – rectified – 3 Band ECW with associated world file.
- (3) The TxDOT's photogrammetry mapping legend and supplements
- (4) Bare earth LiDAR data in .LAS format.

150.3. 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.

A. Purpose

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

B. Definitions

Aerial photography control survey means 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.

C. Tasks to be Completed

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

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.
2. Establish and determine the coordinates of the offsite and control points, and aerial ground control points.
3. Establish and determine the elevations of the offsite and control points, and aerial control points.
4. Place aerial ground control target material at the established points and maintain until the photographs from the flight are approved.
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.

D. Technical Requirements

1. Aerial photography control surveys must be performed under the direct supervision of a registered professional land surveyor (RPLS) currently registered with the TBPELS.
2. The coordinate location of the aerial control points shall be based on acceptable methods, conducted by the Engineer, and must meet the standards of accuracy as set forth below:
3. Refer to the 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 applicable.
4. The elevation of the aerial control points must be based on acceptable methods, conducted by the Engineer, and meet the standards of accuracy as set forth below:
5. Refer to the 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 applicable.
6. The elevation of aerial control points based on side shots or short traverses must meet the following criteria:
 - a. Side shots or short traverses must begin and end on vertical ground control as described above.
 - b. 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.

E. 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 is acceptable.

F. Deliverables

The Engineer shall:

1. Submit a final aerial control point layout showing the location of the points and labeled with their respective alpha-numeric designations.
2. Submit a plot and computer graphics of an 11" x 17" 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.
3. Submit a plot and computer graphics of an 11" x 17" 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.
4. Submit an 8.5" x 11" data sheet for each aerial ground control point, which must include a location sketch, a physical description of the point, surface coordinates, the elevation, and datums used.
5. Submit a CD, DVD, or USB flash drive containing the graphics files and scanned images of the control data sheets.
6. Submit a written statement describing the datum used along with copies of all relevant NGS and data sheets.
7. 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 160 (163) – ROADWAY DESIGN

MISCELLANEOUS (ROADWAY)

163.1. Utility Engineering Investigation

Utility engineering investigation includes utility investigations subsurface and above ground prepared in accordance with ASCE/CI Standard 38-02

[(<http://www.fhwa.dot.gov/programadmin/asce.cfm>)] and Utility Quality Levels.

A. Utility Quality Levels (QL)

Utility Quality Levels are defined in cumulative order (least to greatest) as follows:

1. Quality Level D - Quality level value assigned to a utility segment or utility feature after a review and compilation of data sources such as existing records, oral recollections, locations marked by DIGTESS, and data repositories.
2. Quality Level C - Quality level value assigned to a utility segment or utility feature after surveying aboveground (i.e., visible) utility features and using professional judgement to correlate the surveyed locations of these features with those from existing utility records.
3. Quality Level B - Designate: Quality level value assigned to a utility segment or subsurface utility feature whose existence and position is based upon appropriate surface geophysical methods combined with professional judgment and whose location is tied to the project survey datum. Horizontal accuracy of Designated Utilities is 18" (including survey tolerances) unless otherwise indicated for a specific segment of the deliverable. Quality Level B incorporates quality levels C and D information. A composite plot is created.
4. Quality Level A – Quality level value assigned to a portion (x, y, and z geometry) of a point of a subsurface utility feature that is directly exposed, measured, and whose location and dimensions are tied to the project survey datum. Other measurable, observable, and judged utility attributes are also recorded (per District Best Practices). The utility location must be tied to the project survey datum with an accuracy of 0.1 feet (30-mm) vertical and to 0.2 feet (60-mm) horizontal. As test holes may be requested up front or during the project, test holes done prior to completion of QL D, C, or B deliverables must be symbolized on the QL B deliverable with a call out indicating test holes number. This is in addition to and not in lieu of the test hole.

B. Utility Investigations Methodology

1. Utility Investigation Quality Level D

The Engineer shall:

- a. Perform records research from all available resources. Sources include: Texas811, Railroad Commission of Texas (Texas RRC), verbal recollection, as-built information from plans, plats, permits and any other applicable information provided by the utility owners or other stakeholders.
- b. Document utility owners and contact information.
- c. Create a utility drawing of information gathered.

2. Utility Investigation Quality Level C

The Engineer shall:

- a. In combination with existing Quality Level D information, utilize surveyed above-ground utility features and professional judgement to upgrade

Quality Level D information to Quality Level C. For those utilities unable to be upgraded, retain as Quality Level D.

- b. Overhead utilities information must be gathered and depicted. Sag elevations of lowest utility must be documented at road crossings, per best practices document.
 - c. Storm and sanitary sewer information must be gathered from Level D and upgraded to Level C as possible, unless otherwise directed by the County.
 - d. Mapping of underground vaults may be requested by the County.
 - e. Create composite utility drawing of information gathered.
3. Designate (Quality Level B)

Designate means to indicate the horizontal location of underground utilities by the application and interpretation of appropriate non-destructive surface geophysical techniques and reference to established survey control. Designating (Quality Level B) services are inclusive of Quality Levels C and D.

The Engineer must:

- a. As requested by the County, compile "as-built" information from plans, plats and other location data as provided by the utility owners.
- b. Coordinate with utility owner when utility owner's policy is to designate their own facilities at no cost for preliminary survey purposes. The Engineer shall examine utility owner's work to ensure accuracy and completeness.
- c. Designate, record, and mark the horizontal location of the existing utility facilities using non-destructive surface geophysical techniques.
- d. Using both active and passive scans to attempt to locate any additional utilities, including unrecorded and abandoned storm and sanitary sewer facilities, at the direction of the County, may be investigated using additional methods such as rodding that would then classify them as Quality Level B. A non-water based pink paint or pink pin flags must be used on all surface markings of underground utilities.
- e. Correlate utility owner records with designating data and resolve discrepancies using professional judgment. The Engineer must prepare and deliver to County a color-coded composite utility facility plan with utility owner names, quality levels, line sizes and subsurface utility locate (test hole) locations. The Engineer and County acknowledge that the line sizes of designated utility facilities detailed on the deliverable will be from the best available records and that an actual line size is normally determined from a test hole vacuum excavation. A note must be placed on the designate deliverable that states "lines sizes are from best available records". All above-ground utility feature locations must be included in the deliverable to the County. This information must be provided in the latest version of OpenRoads Designer civil design system used by the State. The Engineer shall deliver the electronic file on CD, DVD, or USB flash drive, as requested by the County. A hard copy is required and must be signed, sealed, and dated by the registered engineer overseeing the utility engineering investigation. When requested by the County, the designated utility information must be over laid on the County's design plans.
- f. Determine and inform the County of the approximate electronic utility depths at critical locations as determined by the County. The limits of this additional information should be determined prior to the commencement of

work. This depth indication is understood by both the Engineer and the County to be approximate only and is not intended to be used preparing the ROW and construction plans.

- g. Provide a monthly summary, with weekly updates, of work completed and in process with adequate detail to verify compliance with agreed work schedule.
- h. Close-out permits as required.
- i. Clearly identify all utilities that were discovered from Quality Levels C and D investigation but cannot be depicted in Quality Level B standards. These utilities must have a unique line style and symbology in the designate (Quality Level B) deliverable.
- j. Comply with all applicable TxDOT policy and procedural manuals.

4. Subsurface Utility Locate (Test Hole) Service (Quality Level A)

Locate is the process used to obtain precise horizontal and vertical position, material type, condition, size, and other data that may be obtainable about the utility facility and its surrounding environment through exposure by non-destructive excavation techniques that ensures the integrity of the utility facility. Subsurface Utility Locate (Test Hole) Services (Quality Level A) are inclusive of Quality Levels B, C, and D.

The Engineer must:

- a. Review requested test hole locations and advise the County in the development of an appropriate locate (test hole) work plan relative to the existing utility infrastructure and proposed highway design elements.
- b. Coordinate with utility owner inspectors as may be required by law or utility owner policy.
- c. Place Texas 811 ticket 48 hours prior to excavation.
- d. Neatly cut and remove existing pavement material, such that the cut does not exceed 0.10 square meters (1.076 square feet) unless unusual circumstances exist.
- e. Measure and record the following data on an appropriately formatted test hole data sheet that has been sealed and dated by the Engineer:
 - (1) Elevation of top of utility tied to the datum of the furnished plan.
 - (2) Minimum of two benchmarks utilized. Elevations must be within an accuracy of 15mm (.591 inches) of utilized benchmarks.
 - (3) Elevation of existing grade over utility at test hole location.
 - (4) Horizontal location referenced to project coordinate datum.
 - (5) Outside diameter of pipe or width of duct banks and configuration of non-encased multi-conduit systems.
 - (6) Utility facility materials.
 - (7) Utility facility condition.
 - (8) Pavement thickness and type.
 - (9) Coating/wrapping information and condition.
 - (10) Unusual circumstances or field conditions.
- f. Excavate test holes in such a manner as to prevent any damage to wrappings, coatings, cathodic protection, and other protective coverings and features. Water excavation can only be utilized with written approval from the appropriate TxDOT district office.
- g. Be responsible for any damage to the utility during the locating process. In the event of damage, the Engineer must stop work, notify the appropriate utility facility owner, the County, and appropriate regulatory agencies. The

regulatory agencies include: the Railroad Commission of Texas and the Texas Commission on Environmental Quality. The Engineer shall not resume work until the utility facility owner has determined the corrective action to be taken. The Engineer is liable for all costs involved in the repair or replacement of the utility facility.

- h. Back fill all excavations with appropriate material, compact backfill by appropriate mechanical means, and restore pavement and surface material. The Engineer is responsible for the integrity of the backfill and surface restoration for a period of three years.
- i. Furnish and install a permanent above-ground marker (as specified by the County, directly above center line of the utility facility).
- j. Provide complete restoration of work site and landscape to equal or better condition than before excavation. If a work site and landscape is not appropriately restored, the Engineer shall return to correct the condition at no extra charge to the County.
- k. Plot utility location position information to scale and provide a comprehensive utility plan signed and sealed by the responsible professional engineer. This information must be provided in the latest version of MicroStation and be fully compatible with the OpenRoads Designer civil design system used by the State. The electronic file will be delivered on CD, DVD or USB flash drive as requested. When requested by the County, the locate information must be over laid on the County's design plans.
- l. Return plans, profiles, and test hole data sheets to the County. If requested, conduct a review of the findings with the County.
- m. Close-out permits as required.

163.2. Utility Coordination

A. 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. The Engineer shall create and maintain a utility conflict matrix along with a utility conflict exhibit through the duration of the contract identifying potential known conflicts.

Utility Coordination

The Engineer shall assist the County in conducting utility coordination meetings with utility companies, as required, to facilitate utility conflict identification and resolution.

1. The Engineer shall establish contact with all existing utilities within and adjacent to the project limits and set up utility coordination meetings to discuss concepts and options for design and construction. This process must also be extended to utilities that approach the County, regarding plans to install facilities within the project limits after the project has been initiated.
2. The Engineer shall establish and conduct workshop meetings, both individually with each utility and with all utilities that incorporate the County's project team to review and resolve conflicts.
3. The Engineer shall create agenda and exhibits for all coordination meetings as directed by the County.

4. The Engineer shall establish and promote the desired agenda and methodologies for utility construction within the project limits. This shall consist primarily of promoting the construction of utilities as a part of the highway contract.
5. The Engineer shall schedule and conduct a utility kick-off meeting to obtain more information on existing facilities within the project limits. Major utility facilities must be discussed and analyzed to avoid relocation, if possible.
6. The Engineer shall schedule and conduct milestone meetings (or as-needed meetings) with the County to coordinate the work effort and resolve problems. The Engineer shall prepare a written report of these meetings. The meetings must include review of the following:
 - a. Existing facilities including major facilities to be avoided with the project, if possible
 - b. Utility Conflict Matrix
 - c. Utility Conflict Exhibit
 - d. Long lead items that could potentially impact the schedule during PS&E

B. Deliverables

1. Utility Conflict Matrix along with Utility Conflict Exhibit. The Utility Conflict Exhibit must be on 11" x 17" sheets and include callouts to indicate the conflict ID#, utility owner, type of line (water, sewer, high pressure gas, etc.), material (if it is an AC pipeline), and size (if known).
2. Utility Contacts list in excel and pdf format
3. Utility Summary to indicate major utility facilities or time sensitive items pertaining to utilities that need to be addressed in PS&E.

163.3. Geotechnical Borings and Investigations

- A. The Engineer shall determine the location of proposed soil borings for information only along the project alignment in accordance with the latest edition of TxDOT's Geotechnical Manual. The County will review and provide comments for a boring layout submitted by the Engineer showing the general location and depths of the proposed borings. Once the Engineer receives the County's review comments, the Engineer shall perform soil borings (field work), soil testing, and prepare the boring logs in accordance with the latest edition of TxDOT's Geotechnical Manual and the local TxDOT district's procedures and design guidelines.
- B. All geotechnical work must be performed in accordance with the latest version of TxDOT's Geotechnical Manual. The schematic level geotechnical work will be for information only and not cover full PS&E design. All testing must be performed in accordance with TxDOT's Manual of Test Procedures. American Society for Testing Materials (ASTM) test procedures may be used only in the absence of the TxDOT procedures. All soil classification must be done in accordance with the Unified Soil Classification System.
- C. The Engineer shall coordinate with the County to determine the select locations of soil borings to be drilled along the proposed alignment. The scope of this work includes drilling two (2) borings to a maximum depth of 80 feet below existing grade within the project limits. All the borings will be drilled during daytime hours. The Engineer shall provide a boring layout for the County's review and comment. If

applicable, the Engineer will coordinate coring of existing pavement and traffic control required for geotechnical field drilling.

- D. The Engineer shall incorporate soil boring data sheets prepared, signed, sealed, and dated by the Geotechnical Engineer.
- E. The Engineer shall evaluate geotechnical field and lab data from the borings, as well as literature review of existing geotechnical data in the vicinity of the proposed alignment, to present a high-level summary report of major geotechnical risks related to the design and construction of the following elements: roadway pavement, retaining walls, and bridge foundations. The Engineer shall compile all geotechnical data and recommendations in a Geotechnical Desktop Study Report submit to the County for review.
- F. If applicable, geotechnical study related to Uptake Parcel Permit with U.S. Army Corps of Engineers (USACE) will be performed via a supplementary scope.
- G. Deliverables
 - 1. Geotechnical Engineering Report
 - 2. DGN files containing drilling log data from Geotechnical analysis

163.4. Illumination Schematic Design

The Engineer shall perform field work and analysis necessary to design high mast illumination schematic plans for designated locations and /or sections of roadways.

The Engineer shall:

- A. Perform illumination study to be sure illumination warrants are met for any proposed lighting.
- B. Perform field work that may include, but not be limited to, taking measurements, locating utilities, locating existing illumination equipment, identifying existing conditions, and taking digital photos of the locations.
- C. Prepare schematic layouts for safety and/or continuous illumination design according to current State specifications, district format, and approved city preferences.
- D. For high mast lighting, prepare photometric data layout and submit for review and approval before performing detail design.
- E. For high mast lighting, submit Federal Aviation Administration (FAA) study request and obtain FAA determination for each pole.
- F. Prepare schematic package in accordance with the applicable requirements of the TxDOT Specifications and Manuals (latest revision) as provided by the State and available on the State's website.
- G. Provide copies of the illumination design schematic layouts.

- H. Contact the local utility company to confirm electrical power for illumination equipment and identify conflicts with overhead and underground utility lines. Identify utility company, contact person, and phone number on plans.
- I. Perform revisions to the schematic plans as necessary to address any comments received from the State and the City.
- J. Verify that proposed illumination work meets the requirements of the NEC and the TxDOT Highway Illumination Manual.
- K. Provide copies of the schematic package.

Provide electronic files of the design and schematic package.

Deliverables

- A. Illumination warrant studies
- B. Preliminary illumination schematic layout

163.5. Railroad and Airport Coordination

- A. Engineer Shall coordinate meetings between Railroad companies, County, State, and other local agencies related to the interaction of Rail and Roadway Operations within the corridor and potential future uses as applicable to accomplish the following:
 - 1. The Engineer shall conduct Field Diagnostic Investigations
 - 2. The Engineer shall assemble and submit a preliminary Railroad crossing exhibit for all rail and Roadway at-grade and grade separated crossings
 - 3. The Engineer shall develop preliminary Railroad agreement and track, monitor, and report on status of agreement
- B. Engineer Shall coordinate meetings with Airport owners:
 - 1. The Engineer shall prepare preliminary air/highway clearance exhibits and layouts to assist the State in preparing necessary agreements.

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Fee Summary by Task and Firm

Task	LJA Engineering, Inc		American Structurepoint, Inc.		Beyond Engineering and Testing LLC		The Rios Group, Inc. (HUB)		VRX, Inc. (HUB)		Schnabel Engineering Consultants, Inc.		Dallas Aerial (HUB)		Totals	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Labor Costs																
FC 110 - Feasibility & Route Studies & Schematics	4,404.00	\$836,185.19	1,582.00	\$319,631.48	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	64.00	\$14,947.60	0.00	\$0.00	6,050.00	\$ 1,170,764.27
FC 120 - Social, Economic & Env Studies and Public Inv	4,013.00	\$825,095.95	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	611.00	\$83,712.22	0.00	\$0.00	0.00	\$0.00	4,624.00	\$ 908,808.17
FC 130 - Right-of-way (ROW) Data - To be provided in PS&E	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$ -
FC 145 - Project Management	1,012.00	\$304,316.47	236.00	\$53,269.68	0.00	\$0.00	360.00	\$42,356.88	82.00	\$16,405.72	63.00	\$15,769.88	0.00	\$0.00	1,753.00	\$ 432,118.63
FC 160 (150) - Roadway Design (Survey)	1,108.00	\$129,793.81	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	0.00	380.00	\$59,949.52	1,488.00	\$ 189,743.33
FC 160 (163) - Miscellaneous Roadway	542.00	\$151,659.14	0.00	\$0.00	252.00	\$52,057.66	229.00	\$36,583.54	0.00	\$0.00	24.00	\$5,357.42	0.00	0.00	1,047.00	\$ 245,657.76
Total Labor	11,079.00	\$2,247,050.56	1,818.00	\$372,901.16	252.00	\$52,057.66	589.00	\$78,940.42	693.00	\$100,117.94	151.00	\$36,074.90	380.00	\$59,949.52	14,962.00	\$ 2,947,092.16
Total Unit Costs		\$83,756.00		\$0.00		\$14,547.00		\$93,500.00		\$0.00		\$0.00		\$1,000.00		\$ 192,803.00
Total ODE Costs		\$161,967.65		\$2,327.50		\$6,770.00		\$12,200.00		\$3,875.00		\$0.00		\$34,129.00		\$ 221,269.15
Total Estimated Project Costs	11,079.00	\$2,492,774.21	1,818.00	\$375,228.66	252.00	\$73,374.66	589.00	\$184,640.42	693.00	\$103,992.94	151.00	\$36,074.90	380.00	\$95,078.52	14,962.00	\$ 3,361,164.31
Percentage per Firm		74.16%		11.16%		2.18%		5.49%		3.09%		1.07%		2.83%		100.00%
Percent HUB						2.18%		5.49%		3.09%				2.83%		13.60%

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION				Project Manager (Senior)	Deputy Project Manager	Quality Manager	Engineer (Senior)	Engineer (Project) - Senior	Engineer (Project)	Engineer (Design)	Engineer-In-Training II	Engineer Technician	GIS Manager	GIS Analyst	CADD Operator (Senior)	Admin/ Clerical	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:				\$375.26	\$310.16	\$287.06	\$310.16	\$247.47	\$211.17	\$155.11	\$134.29	\$140.23	\$220.88	\$148.78	\$141.22	\$112.19		
FC110 (102) - Route and Design Studies																		\$0.00
DEVELOP PRELIMINARY CONCEPTS																		\$0.00
110.	1.			SCHEMATIC DESIGN WORK OUTLINE														\$0.00
110.	1.	A		DEVELOP BASE MAPS				6	20	40	80						154	\$25,774.12
110.	1.	B		PLANIMETRICS AND AERIAL MAPPING					8		24		4	12			60	\$11,563.64
110.	1.	C		ANALYZE EXISTING CONDITIONS				4	8	8	24						52	\$10,135.67
110.	1.	D	4.	SCHEMATIC ALTERNATIVES													0	\$0.00
110.	1.	D	4.	ALTERNATIVE 1				8	30	48	80						180	\$31,469.47
110.	1.	D	4.	ALTERNATIVE 2				8	30	48	80						180	\$31,469.47
110.	1.	D	4.	ALTERNATIVE 3				8	30	48	80						180	\$31,469.47
110.	1.	D	8.	ALTERNATIVE ANALYSIS MEMO				4	4								18	\$5,401.16
110.	1.	F		DATA COLLECTION				4	8	12		24	4	12			72	\$13,567.54
110.	1.	G		ROADWAY DESIGN CRITERIA				4	12		24						52	\$10,980.10
110.	1.	H		PRELIMINARY DESIGN CONFERENCE				4	12		24						52	\$10,980.10
110.	2.			SCHEMATIC DESIGN - GENERAL TASK													0	\$0.00
110.	2.	A		ROW PROPERTY BASE MAP					8		12	16					48	\$9,434.57
110.	2.	B		TYPICAL SECTIONS				6	12		24						54	\$11,600.42
110.	2.	C		ENVIRONMENTAL CONSTRAINTS					4		6						18	\$4,392.14
110.	2.	D		DRAINAGE													0	\$0.00
110.	2.	D	1.	HYDROLOGIC ANALYSIS (5 CROSSINGS & 2 DAM SHEETS)				14	60		92				6		197	\$36,599.67
110.	2.	D	2.	HYDRAULIC ANALYSIS (1 FEMA & 4 NON-FEMA)				8	24	32	96						320	\$59,418.94
110.	2.	D	3.	PRELIMINARY HYDRAULIC DATA SHEETS (1 FEMA SHT & 2 NONE-FEMA SHTS)				6	20	8	28				8		72	\$13,528.30
110.	2.	D	4.	DRAINAGE STRUCTURE CROSS SECTION SHEETS, 11X7 (2 SHEETS)				4	12	4	16				4		41	\$7,765.25
110.	2.	D	5.	LONGITUDINAL STORM DRAINS AND DITCHES				12	45	15	75						150	\$27,869.95
110.	2.	D	6.	PRELIMINARY HYDRAULIC REPORT (DRAFT AND FINAL)				10	36	12	60						120	\$22,305.20
110.	2.	E		ROW REQUIREMENTS					4		24						52	\$10,887.71
110.	2.	F		DESIGN EXCEPTIONS AND WAIVERS					12		20	24					72	\$13,716.12
110.	2.	G		TRAFFIC DATA AND PROJECTIONS					12		20	12					58	\$11,459.20
110.	2.	H		FINANCIAL PLAN AND PROJECT MANAGEMENT PLAN				80	120	24	80					8	368	\$83,743.23
110.	2.	I		TRAFFIC AND OPERATIONAL ANALYSIS					12		24	12					66	\$13,237.02
110.	2.	J		SAFETY ANALYSIS				4	12		24	12					66	\$13,237.02
110.	2.	K		BICYCLE AND PEDESTRIAN ACCOMMODATIONS					12		24	12					62	\$11,996.37
110.	3.			CONCEPTUAL DESIGN SCHEMATICS (30%)					60		80	40					200	\$35,302.01
110.	4.			GEOMETRIC DESIGN SCHEMATICS													0	\$0.00
110.	4.	A	1.	60%				16	80		120	40					276	\$49,859.78
110.	4.	A	2.	90%				8	40		40	20					124	\$24,235.20
110.	4.	A	3.	100%				4	20		20	20					78	\$15,511.09
110.	5.			CROSS-SECTIONS					40		80						138	\$24,895.11
110.	6.			RETAINING WALLS					20		40						76	\$14,725.79
110.	7.			RENDERING AND TRAFFIC SIMULATION					40		60	140					260	\$42,415.91
110.	8.			PRELIMINARY CONSTRUCTION SEQUENCE					40		80						136	\$24,320.98
110.	9.			PRELIMINARY COST ESTIMATE						40	60						116	\$19,392.72
110.	10.			ENGINEERING SUMMARY REPORT					16	12	40						84	\$15,742.46
110.	11.			SUPPORT OR ATTENDANCE AT VALUE ENGINEERING STUDY							80						152	\$35,782.29
TOTAL HOURS				148.00	260.00	121.00	266.00	91.00	1,003.00	360.00	1,725.00	372.00	8.00	24.00	18.00	8.00	4,404.00	
TOTAL LABOR COSTS				\$55,538.76	\$80,641.88	\$34,734.74	\$82,502.85	\$22,519.67	\$211,807.02	\$55,840.87	\$231,655.68	\$52,166.45	\$1,767.04	\$3,570.72	\$2,542.00	\$897.49		\$836,185.19

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION					Project Manager (Senior)	Deputy Project Manager	Quality Manager	Engineer (Senior)	Engineer (Project)	Engineer-In-Training II	Engineer Technician	GIS Manager	GIS Analyst	Support Manager (ENV)	GIS Analyst (Senior ENV)	GIS Analyst (ENV)	Environmental Specialist - Senior	Environmental Specialist	Field Technician - Env, Bio, Arch - Senior	Field Technician - Env, Bio, Arch	Architectural Historian - Senior	Architectural Historian	Public Involvement Specialist	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:					\$375.26	\$310.16	\$287.06	\$310.16	\$211.17	\$134.29	\$140.23	\$220.88	\$148.78	\$269.22	\$117.18	\$90.75	\$197.92	\$146.53	\$160.00	\$112.00	\$119.65	\$104.50	\$117.48		
FC120 ENVIRONMENTAL CONSTRAINTS & PUBLIC INVOLVEMENT																									
	120.	1.		ENVIRONMENTAL DOCUMENTATION STANDARDS	4	8	4																	16	\$5,130.59
	120.	2.		ENVIRONMENTAL ASSESSMENT (EA) CONTENT AND FORMAT	4	8	4							90	16		280	12			8		6	428	\$90,073.31
	120.	3.		ENVIRONMENTAL TECHNICAL ANALYSIS DOCUMENTATION (REVIEW)	32	64	8																	104	\$34,155.20
	120.	3.	A	ENVIRONMENTAL CONSTRAINTS MAP								10	30	6		36	2	6			2			92	\$13,068.84
	120.	3.	B	ENVIRONMENTAL INFORMATION FORM, SCOPING MATERIALS, EPIC FORM										6			8							14	\$2,787.56
	120.	3.	C 1.	PROTECTED LANDS (e.g., 4(f))										4		6		2			40			52	\$6,700.44
	120.	3.	C 2.	COMMUNITY IMPACTS ANALYSIS								5	10	6	12		2	24						59	\$9,526.24
	120.	3.	C 3.	INDUCED GROWTH AND CUMULATIVE IMPANCT ANALYSIS										12	16		60	12						100	\$18,739.08
	120.	3.	C 4.	AIR QUALITY STUDIES										2		2	20	2						26	\$4,971.40
	120.	3.	C 5.	NOISE ANALYSIS TECHNICAL REPORTING										12	16		140	16						184	\$35,158.80
	120.	3.	C 6.	WATER RESOURCES (Delineation)										6				4						10	\$2,201.44
	120.	3.	C 6.	WATER RESOURCES (USACE Permit)										6				4						10	\$2,201.44
	120.	3.	C 7.	BIOLOGICAL RESOURCES										6				6						12	\$2,494.50
	120.	3.	C 8.	INITIAL SITE ASSESSMENT (ISA)										6				6						12	\$2,494.50
	120.	3.	C 9.	ARCHEOLOGICAL BACKGROUND STUDY										2		12	12	2						28	\$4,295.54
	120.	3.	C 9.	ARCHEOLOGICAL SURVEY, REPORT AND RECORDS CURATION										4	5		12	4	56	10				91	\$14,703.94
	120.	3.	C 10.	HISTORIC RESOURCE IDENTIFICATION, EVALUATION, AND DOCUMENTATION										16		16		8			108	16		164	\$21,525.96
	120.	3.	C 11.	FLOODPLAIN IMPACTS										6				4						10	\$2,201.44
	120.	3.	C 12.	STORMWATER PERMITS (SECTION 402 OF THE CLEAN WATER ACT)										2			2							4	\$934.28
	120.	4.		PUBLIC INVOLVEMENT																				0	\$0.00
	120.	4.	A 1.	MEETINGS WITH PROPERTY OWNERS / DEVELOPERS (12)	96	96		96						12				6						306	\$99,685.89
	120.	4.	A 2.	PUBLIC INVOLVEMENT PLAN	4	4	2							18				32				6		66	\$13,555.62
	120.	4.	A 3.	PUBLIC INVOLVEMENT DIGITAL DATABASE	4	4	2							8				4						22	\$6,055.70
	120.	4.	A 4.	PROJECT FACT SHEET AND LOCATION MAP	2	4	2							6	6			12						32	\$6,642.06
	120.	4.	A 5.	WEBSITE INFORMATION AND UPDATES	2	4	2		4	12				8	4			12						48	\$9,402.35
	120.	4.	A 6.	STAKEHOLDER MEETING (3)	12	12	12		16	28				12	12			8					12	124	\$26,027.63
	120.	4.	A 7.	TECHNICAL WORK GROUP MEETING (3)	18	18	8	24	36	40	40			36	24			36	12				12	292	\$59,850.34
	120.	4.	A 8.	PUBLIC MEETINGS (2)	24	24	4	8	80	80		20	20	80	100			260					20	720	\$128,813.23
	120.	4.	A 8.	PUBLIC HEARING (1)	8	8	4	4	40	40		10	10	40	50			100					6	320	\$57,373.23
	120.	4.	A 10.	PREPARING NOTICES	2	2								2				6						12	\$2,788.47
	120.	4.	A 11.	COORDINATING PROJECT MARKETING	4	8			12	24				8				8					2	66	\$13,300.41
	120.	4.	A 15.	PUBLIC MEETING AND SUMMARY DOCUMENTATION (2)	24	24	8	12	32	32				60				120					12	324	\$68,670.09
	120.	4.	A 15.	PUBLIC HEARING AND SUMMARY DOCUMENTATION	12	12	4	8	16	16				26				60					8	162	\$34,113.45
	120.	4.	A 16.	EMAIL UPDATES (4)	4	8	2							4										18	\$5,633.34
	120.	5.		RIGHT OF ENTRY	4	8	1	12	12			10	20	12				6						85	\$19,819.64
TOTAL HOURS					260.00	316.00	67.00	164.00	248.00	272.00	40.00	55.00	90.00	524.00	261.00	72.00	530.00	790.00	56.00	10.00	158.00	16.00	84.00	4,013.00	
TOTAL LABOR COSTS					\$97,568.10	\$98,010.90	\$19,233.29	\$50,866.42	\$52,371.03	\$36,527.74	\$5,609.30	\$12,148.40	\$13,390.20	\$141,071.28	\$30,583.98	\$6,534.00	\$104,897.60	\$115,758.70	\$8,960.00	\$1,120.00	\$18,904.70	\$1,672.00	\$9,868.32		\$825,095.95

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION						Project Manager (Senior)	Deputy Project Manager	Engineer (Senior)	Engineer (Project) - Senior	Admin/ Clerical	Support Manager (ENV)	Environmental Specialist - Senior	Environmental Specialist	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:						\$375.26	\$310.16	\$310.16	\$247.47	\$112.19	\$269.22	\$197.92	\$146.53		
FC145 SCHEMATIC - PROJECT COORDINATION AND MANAGEMENT															
	145	1.			COORDINATION / COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (36 MEETINGS)	72	72	72			36		16	268	\$83,718.45
	145	2.	A		INTERNAL COORDINATION OF PROJECT TASKS (4 HR/MO @ 18 MONTHS)	72	72	72			72	12	48	348	\$100,474.37
	145	2.	B		PROJECT WORK SCHEDULE	60	60	40			6	4		170	\$55,938.82
	145	2.	C		PROVIDE MONTHLY PROGRESS REPORTS (2 HR/MO @ 18 MONTHS)	36	36			36	18	4		130	\$34,351.56
	145	2.	E		SITE VISITS AND REPORT	24	24	24	24					96	\$29,833.27
TOTAL HOURS						264.00	264.00	208.00	24.00	36.00	132.00	20.00	64.00	1,012.00	
TOTAL LABOR COSTS						\$99,069.15	\$81,882.53	\$64,513.51	\$5,939.25	\$4,038.69	\$35,537.04	\$3,958.40	\$9,377.92		\$304,316.47

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION					Survey - RPLS (Junior)	Surveyor - Senior (RPLS)	Survey - RPLS	Survey Technician	Survey Technician Senior	Admin/ Clerical	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:					\$156.33	\$248.41	\$209.21	\$104.64	\$110.75	\$112.19		
FC160 (150) - SURVEY												
	150.	1.			Survey, ROW & Aerial Mapping							
	150.	1.	C		Design Survey							
	150.	1.	C	1.	Prepare Base DTM and Contours from Nearmap							
	150.	1.	C	1.	Establish and Maintain Primary Horizontal and Vertical Control Monuments (Set 10 Primary)							
	150.	1.	C	1.	Prepare Primary Horizontal and Vertical Control Data Sheets (index and H&V total 4 sheets)							
	150.	1.	C	1.	Topographic Surveys to Supplemental Aerial Data. (map check for missing features and, obscured areas estimated at 2 acres)							
	150.	1.	C	1.	Provide Details of Existing Utilities and Drainage Features, (e.g., culverts, manholes, of all types etc.)							
	150.	1.	C	1.	Provide Details of Existing Railroad Track Crossings (up to 3) and 4400' Top of Rail Surveys							
	150.	1.	C	1.	Merge Supplemental Survey Data.							
	150.	1.	C	1.	Provide Creek Cross-Sections and merge DTM's (Up to 12)							
	150.	1.	C	1.	Prepare Final Design/Topographic Files, ASCII Coordinate File, Field Notes & Sketches							
	150.	1.	C	1.	Locate Subsurface Utilities (Quality level "A") Test Holes (Up to 10)							
	150.	1.			ROW Mapping							
	150.	1.	C	1.	Locate Existing ROW (HWY 287, Bonds Ranch Rd and 2 adjacent Railroad ROW's)							
	150.	1.	C	1.	Obtain and Review Abstracts							
	150.	1.	C	1.	Place Existing Easements on Parcel Boundaries							
	150.	1.	C	1.	Locate Additional Utilities Aiding Placement of Existing Easements							
	150.	2.			Aerial Mapping							
	150.	2.	B	3.	Establish Horizontal and Vertical Control for Aerial mapping (20 targets, 20 truthing shots)							
TOTAL HOURS					24.00	20.00	62.00	470.00	530.00	2.00	1,108.00	
TOTAL LABOR COSTS					\$3,751.92	\$4,968.20	\$12,971.02	\$49,180.80	\$58,697.50	\$224.37		\$129,793.81

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION					Project Manager (Senior)	Deputy Project Manager	Engineer (Senior)	Engineer (Project) - Senior	Utilities Coordinator - Senior	Utilities Coordinator	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:					\$375.26	\$310.16	\$310.16	\$247.47	\$235.92	\$151.78		
FC160 (163) - MISCELLANEOUS DESIGN SERVICES												
	163.	1.		UTILITY ENGINEERING INVESTIGATION								
	163.	2.		UTILITY COORDINATION							0	\$0.00
	163.	2.	A	BASE MAP / EXHIBIT REVIEWS					30	32	62	\$11,934.60
	163.	2.	A	UCM REVIEW					12	24	36	\$6,473.79
	163.	2.	A	WORKSHOP MEETINGS					12	24	36	\$6,473.79
	163.	3.		GEOTECHNICAL BORINGS AND INVESTIGATIONS							0	\$0.00
	163.	4.		ILLUMINATION SCHEMATIC DESIGN							0	\$0.00
	163.	5.		RAILROAD AND AIRPORT COORDINATION (10)	96	120	96	96			408	\$126,776.96
TOTAL HOURS					96.00	120.00	96.00	96.00	54.00	80.00	542.00	
TOTAL LABOR COSTS					\$36,025.14	\$37,219.33	\$29,775.46	\$23,757.02	\$12,739.70	\$12,142.48		\$151,659.14

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

UNIT COSTS	# OF UNITS	UNIT	COST/UNIT	
DESIGN SURVEY				
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	310	hour	\$175.00	\$54,250.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	54	hour	\$209.00	\$11,286.00
LIDAR Terrestrial Laser Scanning	1	day	\$2,500.00	\$2,500.00
				\$0.00
Turning Movement Counts				\$0.00
24-Hour Video System Classification Counts - Major Intersection	2	per intersection	\$1,700.00	\$3,400.00
24-Hour Video System Classification Counts - Minor Intersection	8	per intersection	\$1,380.00	\$11,040.00
24-Hour Automated Tube Counts - Speed or Class	4	per direction/per counter/day	\$320.00	\$1,280.00
				\$0.00
SUE				\$0.00
SUE (Quality Level C and D) Includes labor and equipment for records research, CADD, and mapping.		LF	\$0.65	\$0.00
SUE (Quality Level B - Utility Designation) Includes labor and equipment for records research, designating, engineering, surveying, CADD, mapping and limited traffic control.		LF	\$1.65	\$0.00
SUE (Quality Level A - Utility Locate, Test Holes) Includes labor and equipment for vacuum excavation, engineering, surveying, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.				
Level A: 0 to 4 ft.		EA	\$1,050.00	\$0.00
Level A: > 4 to 8 ft.		EA	\$1,250.00	\$0.00
Level A: > 8 to 12 ft.		EA	\$1,550.00	\$0.00
Level A: > 12 to 20 ft.		EA	\$2,800.00	\$0.00
GEOTECH				
Testing and Materials (8 Bridge Bore Logs)		EA	\$9,000.00	\$0.00
Testing and Materials (24 Retaining wall DrillBore Logs)		EA	\$7,000.00	\$0.00
Testing and Materials (10 Railroad Bore Logs)		EA	\$1,500.00	\$0.00
Testing and Materials (2 Pavement Bore Logs)		EA	\$1,500.00	\$0.00
ROW SURVEY				
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$175.00	\$0.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$210.00	\$0.00
SUBTOTAL UNIT COSTS				\$83,756.00

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.

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)	3,500	mile	\$0.700	\$2,450.00
Lodging/Hotel (Just taxes and fees)	5	day/person	\$45.00	\$225.00
Lodging/Hotel (Taxes and fees not included)	5	day/person	\$125.00	\$625.00
Meals (Excluding alcohol and tips; overnight stay required)	5	day/person	\$60.00	\$300.00
Air Travel - In State - 2+ Wks Notice (Coach)		rd trip/person	\$530.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$950.00	\$0.00
Air Travel - Out of State - 2+ Wks Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,500.00	\$0.00
Oversize, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes Rideshare)		each/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$350.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SUV or ATV Rental (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs	2	each	\$2.00	\$4.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)	5	letter	\$0.73	\$3.65
Cardstock Color (8 1/2" x 11")	200	each	\$1.00	\$200.00
Photocopies B/W (11" X 17")	400	each	\$0.25	\$100.00
Photocopies B/W (8 1/2" X 11")	1,650	each	\$0.15	\$247.50
Photocopies Color (11" X 17")	400	each	\$1.25	\$500.00
Photocopies Color (8 1/2" X 11")	700	each	\$1.00	\$700.00
Plots (B/W on Bond)	250	per sq. ft.	\$1.00	\$250.00
Plots (Color on Bond)	250	per sq. ft.	\$1.75	\$437.50
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and tabbing		each	\$10.00	\$0.00
Certified Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$26.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing	1	each	\$80.00	\$80.00
Notebooks		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 40" Color Mounted	10	each	\$100.00	\$1,000.00
Presentation Boards 48" X 60" Color Mounted	5	each	\$175.00	\$875.00
Construction				
Cylinder Molds		each	\$3.00	\$0.00
DMI - Digital Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4X4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and lanyards		each	\$400.00	\$0.00
Monthly housing and food allowance - This rate shall be used when an Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use this monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspection the construction projects.		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scales, (1 ea) 8" shaker, (1 set) 8" sieves, (1 ea) splitter, (1 ea) hot ovens, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyratory Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAC Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAC Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV Surcharge (for rig installed on ATV)		LF	\$5.00	\$0.00
Stand By of Drilling Equipment		hour	\$350.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (Trips within 100 miles from office to site)		trip	\$600.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(less 100 miles)		trip	\$600.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(over 100 miles)		mile	\$6.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,160.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregates Laboratory		each	\$6,500.00	\$0.00
Cement and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shelby Tubes Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator	1	per project	\$500.00	\$500.00
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multimode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" = 500' scale)		each	\$125.00	\$0.00
Curator (Drawer and TX Archaeological Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
TARL Curation Fee	1	site	\$500.00	\$500.00
Environmental Field Supplies (lathes, stakes, flagging, spray paint, etc.)		day	\$35.00	\$0.00
FEMA FIS (Manual)		each	\$50.00	\$0.00
FEMA FIS Backup Data Request		each	\$500.00	\$0.00
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Model/Floodplain Hardcopy		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plat Records		sheet	\$7.50	\$0.00
Title Report		each	\$800.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
Public Involvement				
Court Reporter		page	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Transcription)		day	\$1,000.00	\$0.00
Custodian for Public Involvement	1	hour	\$60.00	\$60.00
Newspaper Advertisement - Community Newspaper	3	per publication	\$3,000.00	\$9,000.00
Newspaper Advertisement - Urban Newspaper	3	per publication	\$11,500.00	\$34,500.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third-party, location-based service data provider (Mobility)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental	3	8 hours	\$3,500.00	\$10,500.00
Public Involvement Facility Rental	3	4 hours	\$3,500.00	\$10,500.00
Public Involvement Facility Rental	3	hour	\$3,500.00	\$10,500.00
Public Involvement Meeting Supplies	3	per meeting	\$200.00	\$600.00
Public Notices - Mass Mailing (500 pieces)	3	per mailing	\$800.00	\$2,400.00
Public Notices - Mass Mailing/with Self Addressed Return Envelope (500 pieces)	3	per mailing	\$1,100.00	\$3,300.00
Postcards (Every Door Direct) (zipcodes of project area)	3	event	\$3,000.00	\$9,000.00
Signage/Displays	3	each	\$5,000.00	\$15,000.00
Audio - Equipment Rental	3	each	\$500.00	\$1,500.00
Audio - Visual Equipment Rental	3	event	\$600.00	\$1,800.00
Sound Technician for Public Involvement	3	event	\$450.00	\$1,350.00
Professional Narrator	3	event	\$750.00	\$2,250.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)	3	event	\$600.00	\$1,800.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		hour	\$600.00	\$0.00
Interpretative Services - Includes International coordination with entities outside of the U.S. (prior TxDOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LiDAR Mobile mapping System (travel to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Airborne Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$35.00	\$0.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$65.00	\$0.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW/Control Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW/Control Monument - Poured 2-3 Feet (includes equipment, materials, and rentals). Marker supplied by TxDOT	30	each	\$300.00	\$9,000.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GPS/IMU Data collection/Processing		per project	\$2,500.00	\$0.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Fathometer		day	\$90.00	\$0.00
Ground Target (includes paint and panel material)	20	each	\$30.00	\$600.00
Hydrographic Sonar Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$28.00	\$0.00
Photo Lab Service - Color Processing (film, development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$28.00	\$0.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$8.00	\$0.00
Portable LiDAR System (Back Pack Mounted)		day	\$1,750.00	\$0.00
Certified Deed Copies		sheet	\$2.65	\$0.00
Deed Copies	80	sheet	\$2.00	\$160.00
Reprographics		per sq. ft.	\$5.00	\$0.00
T-Posts (Materials only)		each	\$5.00	\$0.00
Delineator Posts (Materials only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LiDAR Fixed Wing Aircraft (Includes aircraft, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LiDAR (Includes helicopter, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering				
Ground Penetrating Radar (equipment only)(GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment)(owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydro-vacuum Excavation (equipment, materials, and labor)		hour	\$450.00	\$0.00
Traffic Control				
Portable Message Board	42	day	\$500.00	\$21,000.00
Flashing Arrow Board		day	\$600.00	\$0.00
Law Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator trucks - (Includes labor, equipment and fuel)		day	\$5,150.00	\$0.00
Miscellaneous				
Backfill (off-site purchase)		CY	\$200.00	\$0.00
Dashboard Mounted Video Camera System		per system	\$250.00	\$0.00
Light Tower		day	\$350.00	\$0.00
Steel Plate Rental		per day	\$50.00	\$0.00
Air Card / Hot Spot		each/month	\$35.00	\$0.00
Boat with Motor		day	\$400.00	\$0.00
Backhoe Rental		day	\$1,500.00	\$0.00
Bulldozer Rental		day	\$3,000.00	\$0.00
Site Clearance		day	\$2,500.00	\$0.00
Railroad - Insurance in addition to STD Minimum Required (Minimum Coverage of \$1 Million required by RR)		each	\$2,500.00	\$0.00
Railroad - Permit		each	\$4,500.00	\$0.00
Railroad - Safety Training (If required - Heavy Rail Safety Training Certificate, includes Classroom training and employee certification card.)		per person	\$525.00	\$0.00
Railroad - Value Maps	10	per sheet	\$75.00	\$750.00
Railroad Flagger (Service provided by RR)	4	per day	\$1,600.00	\$6,400.00
Railroad Research (Provided by the Railroad)		per page	\$15.00	\$0.00
Rental Equipment - Gasoline Powered Auger		day	\$100.00	\$0.00
Origin & Destination cell-phone trip data collection (Mobility)		per project	\$60,750.00	\$0.00
Value Engineering		per project	\$40,000.00	\$0.00
Nearmap	1	per project	\$1,000.00	\$1,000.00
Total				\$161,967.65

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: American Structurepoint

TASK DESCRIPTION					Support Manager	Technical Advisor (Senior)	Quality Manager	Engineer (Senior)	Engineer Traffic (Senior)	Engineer (Project)	Engineer-In- Training	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:					\$319.56	\$329.14	\$297.19	\$252.45	\$239.67	\$188.54	\$138.53		
FC 102 (110) - Route and Design Studies													
	110.	1.			SCHEMATIC DESIGN WORK OUTLINE								
	110.	1.	A		DEVELOP BASE MAPS								
	110.	1.	B		PLANIMETRICS AND AERIAL MAPPING								
	110.	1.	C		ANALYZE EXISTING CONDITIONS								
	110.	1.	D	4.	SCHEMATIC ALTERNATIVES								
			D	4.	ALTERNATIVE 1								
			D	4.	ALTERNATIVE 2								
			D	4.	ALTERNATIVE 3								
			D	8.	ALTERNATIVE ANALYSIS MEMO								
	110.	1.	F		DATA COLLECTION								
	110.	1.	G		ROADWAY DESIGN CRITERIA								
	110.	1.	H		PRELIMINARY DESIGN CONFERENCE								
	110.	2.			SCHEMATIC DESIGN - GENERAL TASK								
	110.	2.	A		ROW PROPERTY BASE MAP								
	110.	2.	B		8		24			40	72	\$14,156.48	
	110.	2.	C		ENVIRONMENTAL CONSTRAINTS								
	110.	2.	D		DRAINAGE								
	110.	2.	D	1.	4		8	16		16	44	\$10,711.60	
	110.	2.	D	2.	4		8	16		16	44	\$10,711.60	
	110.	2.	D	3.	PRELIMINARY HYDRAULIC DATA SHEETS								
	110.	2.	D	4.	PRELIMINARY CULVERT DESIGN AND LAYOUTS								
	110.	2.	D	5.	LONGITUDINAL STORM DRAINS AND DITCHES								
	110.	2.	D	6.	BUS 287 CONTRIBUTIONS TO DRAINAGE STUDY								
	110.	2.	E		4		8	16		24	52	\$12,219.92	
	110.	2.	F		DESIGN EXCEPTIONS AND WAIVERS								
	110.	2.	G		TRAFFIC DATA AND PROJECTIONS								
	110.	2.	H		FINANCIAL PLAN AND PROJECT MANAGEMENT PLAN								
	110.	2.	I		TRAFFIC AND OPERATIONAL ANALYSIS								
	110.	2.	J		SAFETY ANALYSIS								
	110.	2.	K		4		12		12	12	40	\$8,232.48	
	110.	2.	L		PROJECT IMPLEMENTATION PLAN								
	110.	3.			8		4	24	16	80	80	212	\$39,804.36
	110.	4.			GEOMETRIC DESIGN SCHEMATICS								
	110.	4.	A	1.	8		8	50	50	100	80	296	\$59,476.40
	110.	4.	A	2.	6		8	30	30	48	40	162	\$33,649.60
	110.	4.	A	3.	4		8	20	20	24	24	100	\$21,347.84
	110.	5.			4		8	16		120	120	268	\$46,943.36
	110.	6.			4		8	20		80	80	192	\$34,870.36
	110.	7.			RENDERING AND TRAFFIC SIMULATION								
	110.	8.			PRELIMINARY CONSTRUCTION SEQUENCE								
	110.	9.			12	12	12	64			100	\$27,507.48	
	110.	10.			ENGINEERING SUMMARY REPORT								
	110.	11.			SUPPORT OR ATTENDANCE AT VALUE ENGINEERING STUDY								
TOTAL HOURS					70.00	12.00	80.00	308.00	116.00	520.00	476.00	1582	
TOTAL LABOR COSTS					\$22,369.20	\$3,949.68	\$23,775.20	\$77,754.60	\$27,801.72	\$98,040.80	\$65,940.28		\$319,631.48

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: American Structurepoint

TASK DESCRIPTION					Support Manager	Engineer (Project)	Engineer (Design)	Admin/ Clerical	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:					\$319.56	\$188.54	\$176.76	\$97.28		
FC145 SCHEMATIC - PROJECT COORDINATION AND MANAGEMENT										
	145	1.			COORDINATION / COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (8 MEETINGS)					
	145	2.	A		8	8	8		24	\$5,478.88
	145	2.	A		INTERNAL COORDINATION OF PROJECT TASKS (2 HR/MO @ 18 MONTHS)					
	145	2.	A		36	36	36		108	\$24,654.96
	145	2.	A		PROJECT WORK SCHEDULE					
	145	2.	C		PROVIDE MONTHLY PROGRESS REPORTS (2 HR/MO @ 18 MONTHS)					
	145	2.	C		36			36	72	\$15,006.24
	145	2.	E		SITE VISITS AND REPORT					
	145	2.	E		16	16			32	\$8,129.60
TOTAL HOURS					96.00	60.00	44.00	36.00	236	
TOTAL LABOR COSTS					\$30,677.76	\$11,312.40	\$7,777.44	\$3,502.08		\$53,269.68

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American Structurepoint

Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)	1,575	mile	\$0.700	\$1,102.50
Lodging/Hotel (Just taxes and fees)		day/person	\$45.00	\$0.00
Lodging/Hotel (Taxes and fees not included) (4 in-person meetings and 1 site visits)	5	day/person	\$125.00	\$625.00
Meals (Excluding alcohol and tips; overnight stay required)	10	day/person	\$60.00	\$600.00
Air Travel - In State - 2+ Wks Notice (Coach)		rd trip/person	\$530.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$950.00	\$0.00
Air Travel - Out of State - 2+ Wks Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,500.00	\$0.00
Oversize, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes Rideshare)		each/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$350.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SUV or ATV Rental (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs		each	\$2.00	\$0.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.73	\$0.00
Cardstock Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopies B/W (11" X 17")		each	\$0.25	\$0.00
Photocopies B/W (8 1/2" X 11")		each	\$0.15	\$0.00
Photocopies Color (11" X 17")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" X 11")		each	\$1.00	\$0.00
Plots (B/W on Bond)		per sq. ft.	\$1.00	\$0.00
Plots (Color on Bond)		per sq. ft.	\$1.75	\$0.00
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and tabbing		each	\$10.00	\$0.00
Certified Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$26.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing		each	\$80.00	\$0.00
Notebooks		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 40" Color Mounted		each	\$100.00	\$0.00
Presentation Boards 48" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Molds		each	\$3.00	\$0.00
DMI - Digital Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4X4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and lanyards		each	\$400.00	\$0.00
Monthly housing and food allowance - I his rate shall be used when an Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use this monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspecting the construction projects		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scales, (1 ea) 8" shaker, (1 set) 8" sieves, (1 ea) splitter, (1 ea) hot ovens, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyrotory Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAC Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAC Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV Surcharge (for rig installed on ATV)		LF	\$5.00	\$0.00
Stand By of Drilling Equipment		hour	\$350.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips within 100 miles from office to site)		trip	\$600.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(less 100 miles)		trip	\$600.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(over 100 miles)		mile	\$6.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,160.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregates Laboratory		each	\$6,500.00	\$0.00
Cement and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shelby Tubes Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multimode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" = 500' scale)		each	\$125.00	\$0.00
Curator (Drawer and TX Archaeological Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
TARL Curation Fee		site	\$5,000.00	\$0.00
Environmental Field Supplies (lathes, stakes, flagging, spray paint, etc.)		day	\$35.00	\$0.00
FEMA FIS (Manual)		each	\$50.00	\$0.00
FEMA FIS Backup Data Request		each	\$500.00	\$0.00
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Model/Floodplain Hardcopy		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plat Records		sheet	\$7.50	\$0.00
Title Report		each	\$800.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
Public Involvement				
Court Reporter		page	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Transcription)		day	\$1,000.00	\$0.00
Custodian for Public Involvement		hour	\$60.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third-party, location-based service data provider (Mobility)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		hour	\$3,500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailing (500 pieces)		per mailing	\$800.00	\$0.00
Public Notices - Mass Mailing/with Self Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Displays		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$600.00	\$0.00

Schematic and Environmental
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Exhibit B - Fee Schedule

American Structurepoint				
Other Direct Expenses	Quantity	Unit	Rate	Total
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		event	\$600.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		hour	\$600.00	\$0.00
Interpretative Services - Includes International coordination with entities outside of the U.S. (prior TxDOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LiDAR Mobile mapping System (travel to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Airborne Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$35.00	\$0.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$65.00	\$0.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW/Control Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW/Control Monument - Poured 2-3 Feet (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GPS/IMU Data collection/Processing		per project	\$2,500.00	\$0.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Fathometer		day	\$90.00	\$0.00
Ground Target (includes paint and panel material)		each	\$30.00	\$0.00
Hydrographic Sonar Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$28.00	\$0.00
Photo Lab Service - Color Processing (film, development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$28.00	\$0.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$8.00	\$0.00
Portable LiDAR System (Back Pack Mounted)		day	\$1,750.00	\$0.00
Certified Deed Copies		sheet	\$2.65	\$0.00
Deed Copies		sheet	\$2.00	\$0.00
Reprographics		per sq. ft.	\$5.00	\$0.00
T-Posts (Materials only)		each	\$5.00	\$0.00
Delineator Posts (Materials only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LiDAR Fixed Wing Aircraft (Includes aircraft, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LiDAR (Includes helicopter, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering				
Ground Penetrating Radar (equipment only)(GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment)(owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydro-vacuum Excavation (equipment, materials, and labor)		hour	\$450.00	\$0.00
Traffic Control				
Portable Message Board		day	\$500.00	\$0.00
Flashing Arrow Board		day	\$600.00	\$0.00
Law Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator trucks - (Includes labor, equipment and fuel)		day	\$5,150.00	\$0.00
Miscellaneous				
Origin & Destination cell-phone trip data collection (Mobility)		per project	\$60,750.00	\$0.00
Value Engineering (CVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$2,327.50

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: Beyond Engineering and Testing

TASK DESCRIPTION					Project Manager (Senior)	Engineer (Senior)	Engineer (Project)	Engineer (Design)	Engineer-In- Training I	Geologist	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:					\$339.22	\$316.61	\$240.75	\$197.07	\$150.23	\$145.38		
FC160 (163) - MISCELLANEOUS (ROADWAY)												
	163.	1.		UTILITY ENGINEERING INVESTIGATION								
	163.	2.		UTILITY COORDINATION								
	163.	3.		GEOTECHNICAL BORINGS AND INVESTIGATIONS								
			A	Kickoff Meeting, Boring Location Plan, Field Coordination	2	2	4		8		16	\$3,476.50
			B	Boring Staking, Traffic control coordination and Utility 811 Locates	2	2	1	1		4	10	\$2,331.00
			C	Logging Borings and Coordination	1		2			48	51	\$7,798.96
			D	Laboratory Assignments and Result Review			3		6		9	\$1,623.63
			E	Boring Log and Pavement Core Preparation			3	8	6		17	\$3,200.19
			F	Review Existing Geologic and Geotechnical Data	3		4	14	10		31	\$6,241.94
			G	Preliminary Foundation Recommendations	4		10	20			34	\$7,705.78
			H	Draft Desktop Study Report Preparation	10		20	36			66	\$15,301.72
			I	Final Desktop Study Report Preparation	4		6	8			18	\$4,377.94
	163.	4.		ILLUMINATION SCHEMATIC DESIGN								
	163.	5.		RAILROAD AND AIRPORT COORDINATION								
TOTAL HOURS					26.00	4.00	53.00	87.00	30.00	52.00	252.00	
TOTAL LABOR COSTS					\$8,819.72	\$1,266.44	\$12,759.75	\$17,145.09	\$4,506.90	\$7,559.76		\$52,057.66

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Beyond Engineering and Testing, LLC

UNIT COSTS	# OF UNITS	UNIT	COST/UNIT	COST
GEOTECHNICAL ENGINEERING SERVICES				
Volumetric Shrinkage		each	\$130.00	\$0.00
Laboratory Compaction Characteristics of Soil Using Standard Effort		each	\$315.00	\$0.00
Modified Proctor Test		each	\$370.00	\$0.00
Soil/Rock Boring with Standard Penetration Test (SPT) Drilling and Geotech Manual Sampling/Coring (< 60 ft.)	120	LF	\$54.00	\$6,480.00
Soil/Rock Boring with Standard Penetration Test (SPT) Drilling and Geotech Manual Sampling/Coring (> 60 ft.)	40	LF	\$63.00	\$2,520.00
Soil/Rock Boring with Continuous Sampling/Coring (< 60 ft.)		LF	\$52.00	\$0.00
Soil/Rock Boring with Continuous Sampling/Coring (> 60 ft.)		LF	\$57.00	\$0.00
Soil/Rock Boring without Sampling (Augering or Roller Cone) (< 60 ft.)		LF	\$37.00	\$0.00
(a) Additional Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils		each	\$42.00	\$0.00
(b) Additional Shelby Push Tube Sampling Extruded in Field		each	\$42.00	\$0.00
(c) Additional Rock Coring		LF	\$56.50	\$0.00
(d) Additional Texas Cone Penetration (TCP) Sampling		each	\$40.00	\$0.00
Soil/Rock Boring without Sampling (Augering or Roller Cone) (> 60 ft.)		LF	\$42.00	\$0.00
(a) Additional Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils		each	\$50.00	\$0.00
(b) Additional Shelby Push Tube Sampling Extruded in Field		each	\$46.00	\$0.00
(c) Additional Rock Coring		LF	\$65.00	\$0.00
(d) Additional Texas Cone Penetration (TCP) Sampling		each	\$46.00	\$0.00
Soil/Rock Boring with Texas Cone Penetration (TCP) Drilling and Geotech Manual Sampling/Coring (< 60 ft.) (evaluation of existing structures)		LF	\$51.50	\$0.00
Soil/Rock Boring with Texas Cone Penetration (TCP) Drilling and Geotech Manual Sampling/Coring (> 60 ft.) (evaluation of existing structures)		LF	\$61.00	\$0.00
California Bearing Ratio (CBR) of Laboratory-Compacted Soils (Single Sample without MD Curve)		test	\$440.00	\$0.00
Unconfined Compressive Strength (Soil)		each	\$87.00	\$0.00
Permeability of Granular Soils (Constant Head)		each	\$500.00	\$0.00
One-Dimensional Consolidation Properties of Soils Using Incremental Loading		each	\$700.00	\$0.00
Field Vane Shear Test		each	\$232.00	\$0.00
Unconfined Compressive Strength (Rock)	2	each	\$150.00	\$300.00
Standard Test Method for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils		each	\$97.00	\$0.00
Direct Shear Test of Soils Under Consolidated Drained Conditions		set of 3	\$1,100.00	\$0.00
Splitting Tensile Strength of Intact Rock Core Specimens		each	\$190.00	\$0.00
Aquifer Test Method in Determining Hydraulic Properties by Well Techniques		LF	\$375.00	\$0.00
Standard Test Method for Dispersive Characteristics of Clay Soil by Double Hydrometer		each	\$335.00	\$0.00
Standard Test Method for Rapid Determination of Carbonate Content in Soils		each	\$100.00	\$0.00
Hydraulic Conductivity of Essentially Saturated Peat		each	\$650.00	\$0.00
One Dimensional Swell or Collapse of Soils, Methods A & B		each	\$310.00	\$0.00
One Dimensional Swell or Collapse of Soils, Method C		each	\$375.00	\$0.00
Standard Test Methods for Identification and Classification of Dispersive Clay Soils by the Pinhole Test		each	\$420.00	\$0.00
Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter		each	\$690.00	\$0.00
Standard Guide for Comparison of Field Methods for Determining Hydraulic Conductivity in Vadose Zone		each	\$850.00	\$0.00
Measurement of Soil Potential (Suction) Using Filter Paper		each	\$105.00	\$0.00
Ground Penetrating Radar (GPR) Testing		day	\$4,100.00	\$0.00
Standard Test Methods for Determining Dispersive Characteristics of Clayey Soils by the Crumb Test		each	\$65.00	\$0.00
Dynamic Cone Penetrometer in Shallow Pavement Applications		each	\$315.00	\$0.00
Soil Organic Content Using UV-Vis Method		each	\$450.00	\$0.00
Borehole Grouting - Bentonite Chips	160	LF	\$15.00	\$2,400.00
Casagrande Type Piezometers		each	\$525.00	\$0.00
Casagrande Type Piezometers Installation		each	\$683.00	\$0.00
Concrete/AC Patch	3	per patch	\$101.00	\$303.00
Core Drill Asphalt		each	\$165.00	\$0.00
Core Drill Concrete		each	\$225.00	\$0.00
Core/drill operator/technician and coring equipment used to drill flexible and rigid pavement (2-man crew):				\$0.00
(a) 4-in. diameter cores		Inch	\$26.00	\$0.00
(b) 6-in. diameter cores	36	Inch	\$44.00	\$1,584.00
Core/drill operator/technician and coring equipment used to drill flexible and rigid pavement (2-man crew):				\$0.00
(a) Hot Mix Asphalt (min. of 3)		each	\$250.00	\$0.00
(b) Concrete (min. of 3) (up to 15 inches)(up to 4-inches diameter)		each	\$390.00	\$0.00
(c) Concrete (more than 15 inches)		inch	\$90.00	\$0.00
Core Repair/Patch Asphalt Cold Mix		each	\$98.00	\$0.00
Core Repair/Patch Concrete-Utilibond		each	\$155.00	\$0.00
Electronic Water Level Device		day	\$140.00	\$0.00
Manhole Cover for Piezometer		each	\$325.00	\$0.00
Night Drilling Surcharge (prior agreement & approval by TxDOT PM required)		each	\$850.00	\$0.00
Nighttime Testing (additional fee per hour, all pavement testing equipment) (prior agreement & approval by TxDOT PM required)		each	\$250.00	\$0.00
Non Destructive Deflection Testing				\$0.00
Falling Weight Deflection (FWD)		day	\$4,150.00	\$0.00
Heavy Weight Deflection (HWD)		day	\$4,400.00	\$0.00
Piezometer-2"		LF	\$45.00	\$0.00
Piezometer-2" (including well completion and installation)		LF	\$58.00	\$0.00
Piezometer Abandonment		each	\$980.00	\$0.00
Piezometer Completion/Abandonment		each	\$1,185.00	\$0.00
Piezometer Completion				\$0.00
Piezometer Finish: (a) Flush Mount w/ 2' x 2' pad		each	\$600.00	\$0.00
Piezometer Finish: (b) Stick-up w/ 4 Bollards on a 4' x 4' pad		each	\$1,710.00	\$0.00
Stand By of Crew (prior agreement & approval by TxDOT PM required)		hour	\$350.00	\$0.00
Vertical Inclinometer		each	\$1,020.00	\$0.00
Vertical Inclinometer Installation		each	\$1,187.00	\$0.00
Vibrating Wire Piezometer		each	\$1,300.00	\$0.00
Vibrating Wire Piezometer Installation		each	\$1,418.00	\$0.00
MATERIALS ENGINEERING SERVICES				
				\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Determining Slaking Time		each	\$134.00	\$0.00
Determining Moisture Content in Soil Materials	4	each	\$32.00	\$128.00
Determining Liquid Limits of Soils	2	each	\$58.00	\$116.00
Determining Plastic Soil Limits	2	each	\$56.00	\$112.00
Calculating the Plasticity Index of Soils	2	each	\$60.00	\$120.00
Determining the Bar Linear Shrinkage of Soils		each	\$75.00	\$0.00
Determining the Specific Gravity of Soils		each	\$90.00	\$0.00
Particle Size Analysis of Soils Part 1		each	\$130.00	\$0.00
Particle Size Analysis of Soils Part 2		each	\$220.00	\$0.00
Determining the Amount of Material in Soils Finer than the 75 micrometer (No. 200) Sieve	2	each	\$84.00	\$168.00
Admixing Lime to Reduce Plasticity Index of Soils		each	\$308.00	\$0.00
Laboratory Compaction Characteristics and Moisture-Density Relationship of Base Materials		each	\$380.00	\$0.00
Laboratory Compaction Characteristics and Moisture-Density Relationship of Subgrade, Embankment Soils, and Backfill Material		each	\$350.00	\$0.00
Ball Mill Method for Determining the Disintegration of Flexible Base Material		each	\$300.00	\$0.00
Triaxial Compression for Disturbed Soils and Base Materials		each	\$2,500.00	\$0.00
Triaxial Compression Test for Undisturbed Soils		each	\$400.00	\$0.00
Soil-Cement Testing- Part 1		each	\$593.00	\$0.00
Soil-Cement Testing- Part 2		each	\$475.00	\$0.00
Soil-Lime Testing- Part 1		each	\$575.00	\$0.00
Soil-Lime Testing- Part 2		each	\$485.00	\$0.00
Soil-Lime Testing - Part 3		each	\$441.00	\$0.00
Determining the Drainage Factor of Soil Materials		each	\$475.00	\$0.00
Potential Vertical Rise of Natural Subgrade Soils	2	each	\$158.00	\$316.00
Determining Modulus of Sub-grade Reaction (K Value)		each	\$490.00	\$0.00
Molding, Testing, and Evaluating Asphalt Black Base Materials		each	\$2,650.00	\$0.00
Lime Fly-Ash Compressive Strength Test Methods- Part 1		each	\$920.00	\$0.00
Lime Fly-Ash Compressive Strength Test Methods- Part 2		each	\$1,120.00	\$0.00
Determining Soil pH		each	\$70.00	\$0.00
Measuring the Resistivity of Soil Materials		each	\$163.00	\$0.00
Consolidated Undrained (CU) Triaxial Compression Test for Undisturbed Soils- Single Stage		set of 3	\$2,235.00	\$0.00
Consolidated Undrained (CU) Triaxial Compression Test for Undisturbed Soils- Multiple Change		set of 3	\$2,100.00	\$0.00
Freezing and Thawing Tests of Compacted Soil-Cement Mixture		each	\$600.00	\$0.00
Manual Procedure for Description and Identification of Soils		each	\$66.00	\$0.00
Laboratory Classification of Soils for Engineering Purposes		each	\$85.00	\$0.00
Determining Sulfate Content in Soils - Colorimetric Method		each	\$150.00	\$0.00
Conductivity Test for Field Detection of Sulfates in Soil		each	\$136.00	\$0.00
Determining Chloride and Sulfate Contents in Soils		each	\$250.00	\$0.00
ROW SURVEY				
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$175.00	\$0.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$210.00	\$0.00
SUBTOTAL UNIT COSTS				\$14,547.00

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.

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Beyond Engineering and Testing, LLC				
Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)	600	mile	\$0.700	\$420.00
Lodging/Hotel (Just taxes and fees)		day/person	\$45.00	\$0.00
Lodging/Hotel (Taxes and fees not included)		day/person	\$125.00	\$0.00
Meals (Excluding alcohol and tips; overnight stay required)		day/person	\$60.00	\$0.00
Air Travel - In State - 2+ Wks Notice (Coach)		rd trip/person	\$530.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$950.00	\$0.00
Air Travel - Out of State - 2+ Wks Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,500.00	\$0.00
Oversize, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes Rideshare)		each/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$350.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SUV or ATV Rental (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs		each	\$2.00	\$0.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.73	\$0.00
Cardstock Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopies B/W (11" X 17")		each	\$0.25	\$0.00
Photocopies B/W (8 1/2" X 11")		each	\$0.15	\$0.00
Photocopies Color (11" X 17")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" X 11")		each	\$1.00	\$0.00
Plots (B/W on Bond)		per sq. ft.	\$1.00	\$0.00
Plots (Color on Bond)		per sq. ft.	\$1.75	\$0.00
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and tabbing		each	\$10.00	\$0.00
Certified Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$26.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing		each	\$80.00	\$0.00
Notebooks		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 40" Color Mounted		each	\$100.00	\$0.00
Presentation Boards 48" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Molds		each	\$3.00	\$0.00
DMI - Digital Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4X4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and lanyards		each	\$400.00	\$0.00
Monthly housing and food allowance - This rate shall be used when an Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use this monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspecting the construction projects.		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scales, (1 ea) 8" shaker, (1 set) 8" sieves, (1 ea) splitter, (1 ea) hot ovens, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyratory Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAC Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAC Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV Surcharge (for rig installed on ATV)		LF	\$5.00	\$0.00
Stand By of Drilling Equipment		hour	\$350.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Beyond Engineering and Testing, LLC

Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (Trips within 100 miles from office to site)	1	trip	\$600.00	\$600.00
Mobilization and Demobilization of Drilling Rig (Trips over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(less 100 miles)	1	trip	\$600.00	\$600.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(over 100 miles)		mile	\$6.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,160.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregates Laboratory		each	\$6,500.00	\$0.00
Cement and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shelby Tubes Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multimode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" = 500' scale)		each	\$125.00	\$0.00
Curator (Drawer and TX Archaeological Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
TARL Curation Fee		site	\$5,000.00	\$0.00
Environmental Field Supplies (lathes, stakes, flagging, spray paint, etc.)		day	\$35.00	\$0.00
FEMA FIS (Manual)		each	\$50.00	\$0.00
FEMA FIS Backup Data Request		each	\$500.00	\$0.00
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Model/Floodplain Hardcopy		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plat Records		sheet	\$7.50	\$0.00
Title Report		each	\$800.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
Public Involvement				
Court Reporter		page	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Transcription)		day	\$1,000.00	\$0.00
Custodian for Public Involvement		hour	\$60.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third-party, location-based service data provider (Mobility)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		hour	\$3,500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailing (500 pieces)		per mailing	\$800.00	\$0.00
Public Notices - Mass Mailing/with Self Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Displays		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$600.00	\$0.00
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		event	\$600.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		hour	\$600.00	\$0.00
Interpretative Services - Includes International coordination with entities outside of the U.S. (prior TxDOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LiDAR Mobile mapping System (travel to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Airborne Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$35.00	\$0.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$65.00	\$0.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW/Control Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW/Control Monument - Poured 2-3 Feet (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GPS/IMU Data collection/Processing		per project	\$2,500.00	\$0.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Fathometer		day	\$90.00	\$0.00
Ground Target (includes paint and panel material)		each	\$30.00	\$0.00
Hydrographic Sonar Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$28.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Beyond Engineering and Testing, LLC

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Processing (film, development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$28.00	\$0.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$8.00	\$0.00
Portable LiDAR System (Back Pack Mounted)		day	\$1,750.00	\$0.00
Certified Deed Copies		sheet	\$2.65	\$0.00
Deed Copies		sheet	\$2.00	\$0.00
Reprographics		per sq. ft.	\$5.00	\$0.00
T-Posts (Materials only)		each	\$5.00	\$0.00
Delineator Posts (Materials only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LiDAR Fixed Wing Aircraft (Includes aircraft, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LiDAR (Includes helicopter, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering				
Ground Penetrating Radar (equipment only)(GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment)(owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydro-vacuum Excavation (equipment, materials, and labor)		hour	\$450.00	\$0.00
Traffic Control				
Portable Message Board		day	\$500.00	\$0.00
Flashing Arrow Board		day	\$600.00	\$0.00
Law Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator trucks - (Includes labor, equipment and fuel)	1	day	\$5,150.00	\$5,150.00
Miscellaneous				
Origin & Destination cell-phone trip data collection (Mobility)		per project	\$60,750.00	\$0.00
Value Engineering (CVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$6,770.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: The Rios Group

TASK DESCRIPTION						Project Manager (Senior)	Deputy Project Manager	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:						\$258.42	\$200.66		
FC145 - CONTRACT MANAGEMENT AND ADMINISTRATION									
	145	1.			COORDINATION / COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (36 MEETINGS)	36	36	72	\$16,526.88
	145	2.	A		INTERNAL COORDINATION OF PROJECT TASKS(4 HR/MO @ 18 MONTHS)	36	36	72	\$16,526.88
	145	2.	A		PROJECT WORK SCHEDULE				\$0.00
	145	2.	C		PROVIDE MONTHLY PROGRESS REPORTS (2 HR/MO @ 18 MONTHS)	36		36	\$9,303.12
	145	2.	E		SITE VISITS AND REPORT				\$0.00
						108.00	72.00	180	\$42,356.88
TOTAL HOURS						\$27,909.36	\$14,447.52	360.00	
TOTAL LABOR COSTS									\$42,356.88

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: The Rios Group

TASK DESCRIPTION					Project Manager (Senior)	Deputy Project Manager	CADD Operator (Senior)	Utilities Coordinator - Senior	Utilities Coordinator	Admin/ Clerical	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:					\$258.42	\$200.66	\$112.49	\$197.62	\$139.85	\$100.33		
FC160 - MISCELLANEOUS (ROADWAY)												
	163.	1.			UTILITY ENGINEERING INVESTIGATION (See unit rate)							\$0.00
	163.	2.			UTILITY COORDINATION							\$0.00
	163.	2.	A		Utility Base Map	2	16	24	8	24	74	\$11,364.52
	163.	2.	B	1,2,3,4	Coordination with Utility Companies;Individual & Group Utility Mtgs. Coordination with the Project Team.	1		4	12	24	4	\$6,837.54
	163.	2.	B	5.	Utility Kick Off Meeting and site visit N/A							\$0.00
	163.	2.	B	6.	Create and Maintain Utility Contact List, Matrix and Exhibit			12	12	20	4	\$6,919.64
	163.	2.	C		Deliverables and Quality Control	2	8		8	12	30	\$5,381.28
	163.	3.			N/A							\$0.00
	163.	4.			N/A							\$0.00
	163.	5.			RAILROAD COORDINATION (UPRR and BNSF RR)	8	16			8	32	\$6,080.56
					Includes Preparing and coordinating the following:							\$0.00
					ROE documents (intrusive and non-intrusive)							\$0.00
					Test Hole Exhibits							\$0.00
					Construction Work Plans							\$0.00
					RR Flagging services (Rail Pros)							\$0.00
					RR Construction Observer Services							\$0.00
TOTAL HOURS					13.00	40.00	40.00	40.00	80.00	16.00	229.00	
TOTAL LABOR COSTS					\$3,359.46	\$8,026.40	\$4,499.60	\$7,904.80	\$11,188.00	\$1,605.28		\$36,583.54

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

The Rios Group

UNIT COSTS	# OF UNITS	UNIT	COST/UNIT	COST
SUE				
SUE (Quality Level D) Includes labor and equipment for records research and CADD (Including overhead utilities).	50,000	LF	\$0.57	\$28,500.00
SUE (Quality Level C) Includes labor and equipment for records research, CADD, and surveying (including overhead utilities) per utility owner. For overhead utilities, measurement for payment will be LF per utility owner. (Apurtenances must be surveyed)	16,000	LF	\$0.75	\$12,000.00
SUE (Quality Level B - Utility Designation) Includes labor and equipment for records research, designating, engineering, surveying, CADD, mapping and limited traffic control.	10,000	LF	\$1.75	\$17,500.00
SUE (Quality Level A - Utility Locate, Test Holes) Includes labor and equipment for vacuum excavation, engineering, surveying, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.				\$0.00
Level A: 0 to 4 ft.		EA	\$1,350.00	\$0.00
Level A: > 4 to 8 ft.		EA	\$1,600.00	\$0.00
Level A: > 8 to 12 ft.	10	EA	\$2,000.00	\$20,000.00
Level A: > 12 to 20 ft.		EA	\$2,900.00	\$0.00
Quality Level A SUE (Daily Rate)		DAY	\$3,300.00	\$0.00
				\$0.00
One (1) Designating Person with equipment	80	HR	\$145.00	\$11,600.00
Two (2) Designating Person with equipment	20	HR	\$195.00	\$3,900.00
Coring and repairing the pavement includes labor, equipment, and materials		EA	\$400.00	\$0.00
				\$0.00
SUBTOTAL UNIT COSTS				\$93,500.00

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.

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

The Rios Group

Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)		mile	\$0.700	\$0.00
Lodging/Hotel (Just taxes and fees)		day/person	\$45.00	\$0.00
Lodging/Hotel (Taxes and fees not included)		day/person	\$125.00	\$0.00
Meals (Excluding alcohol and tips; overnight stay required)		day/person	\$60.00	\$0.00
Air Travel - In State - 2+ Wks Notice (Coach)		rd trip/person	\$530.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$950.00	\$0.00
Air Travel - Out of State - 2+ Wks Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,500.00	\$0.00
Oversize, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes Rideshare)		each/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$350.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SUV or ATV Rental (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs		each	\$2.00	\$0.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.73	\$0.00
Cardstock Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopies B/W (11" X 17")		each	\$0.25	\$0.00
Photocopies B/W (8 1/2" X 11")		each	\$0.15	\$0.00
Photocopies Color (11" X 17")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" X 11")		each	\$1.00	\$0.00
Plots (B/W on Bond)		per sq. ft.	\$1.00	\$0.00
Plots (Color on Bond)		per sq. ft.	\$1.75	\$0.00
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and tabbing		each	\$10.00	\$0.00
Certified Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$26.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing		each	\$80.00	\$0.00
Notebooks		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 40" Color Mounted		each	\$100.00	\$0.00
Presentation Boards 48" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Molds		each	\$3.00	\$0.00
DMI - Digital Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4X4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and lanyards		each	\$400.00	\$0.00
Monthly housing and food allowance - This rate shall be used when an Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use this monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspection the construction projects.		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scales, (1 ea) 8" shaker, (1 set) 8" sieves, (1 ea) splitter, (1 ea) hot ovens, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyratory Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAC Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAC Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV Surcharge (for rig installed on ATV)		LF	\$5.00	\$0.00
Stand By of Drilling Equipment		hour	\$350.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

The Rios Group

Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (Trips within 100 miles from office to site)		trip	\$600.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(less 100 miles)		trip	\$600.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(over 100 miles)		mile	\$6.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,160.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregates Laboratory		each	\$6,500.00	\$0.00
Cement and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shelby Tubes Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multimode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" = 500' scale)		each	\$125.00	\$0.00
Curator (Drawer and TX Archaeological Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
TARL Curation Fee		site	\$5,000.00	\$0.00
Environmental Field Supplies (lathes, stakes, flagging, spray paint, etc.)		day	\$35.00	\$0.00
FEMA FIS (Manual)		each	\$50.00	\$0.00
FEMA FIS Backup Data Request		each	\$500.00	\$0.00
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Model/Floodplain Hardcopy		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plat Records		sheet	\$7.50	\$0.00
Title Report		each	\$800.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
Public Involvement				
Court Reporter		page	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Transcription)		day	\$1,000.00	\$0.00
Custodian for Public Involvement		hour	\$60.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third-party, location-based service data provider (Mobility)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		hour	\$3,500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailing (500 pieces)		per mailing	\$800.00	\$0.00
Public Notices - Mass Mailing/with Self Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Displays		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$600.00	\$0.00
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		event	\$600.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		hour	\$600.00	\$0.00
Interpretative Services - Includes International coordination with entities outside of the U.S. (prior TxDOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LiDAR Mobile mapping System (travel to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Airborne Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$35.00	\$0.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$65.00	\$0.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW/Control Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW/Control Monument - Poured 2-3 Feet (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GPS/IMU Data collection/Processing		per project	\$2,500.00	\$0.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Fathometer		day	\$90.00	\$0.00
Ground Target (includes paint and panel material)		each	\$30.00	\$0.00
Hydrographic Sonar Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$28.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

The Rios Group

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Processing (film, development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$28.00	\$0.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$8.00	\$0.00
Portable LiDAR System (Back Pack Mounted)		day	\$1,750.00	\$0.00
Certified Deed Copies		sheet	\$2.65	\$0.00
Deed Copies		sheet	\$2.00	\$0.00
Reprographics		per sq. ft.	\$5.00	\$0.00
T-Posts (Materials only)		each	\$5.00	\$0.00
Delineator Posts (Materials only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LiDAR Fixed Wing Aircraft (Includes aircraft, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LiDAR (Includes helicopter, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering				
Ground Penetrating Radar (equipment only)(GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment)(owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydro-vacuum Excavation (equipment, materials, and labor)		hour	\$450.00	\$0.00
Traffic Control				
Portable Message Board		day	\$500.00	\$0.00
Flashing Arrow Board		day	\$600.00	\$0.00
Law Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator trucks - (Includes labor, equipment and fuel)	1	day	\$5,150.00	\$5,150.00
Railroad (UPRR and BNSF)				
Railroad - Insurance in addition to STD Minimum Required (Minimum Coverage of \$1 Million required by RR) -		each	\$2,500.00	\$0.00
Railroad ROE (non-intrusive)	2	each	\$1,500.00	\$3,000.00
Railroad ROE (Intrusive)		each	\$5,000.00	\$0.00
Railroad Safety Training (If required - Heavy Rail Safety Training Certificate, includes Classroom training and employee certification card.)	2	per person/per RR	\$525.00	\$1,050.00
Railroad Flagger	2	day	\$1,500.00	\$3,000.00
Railroad Flagger (Weekday Overtime)		hour	\$135.00	\$0.00
Railroad Flagger - Weekend		day	\$1,700.00	\$0.00
Railroad Flagger (Weekend Overtime)		hour	\$154.00	\$0.00
Railroad Construction Observer - Surcharge		day	\$200.00	\$0.00
Railroad Construction Observer - Mobilization		Lump Sum	\$1,000.00	\$0.00
Railroad Construction Observer - Day Rate (Week Day)		DAY	\$1,400.00	\$0.00
Railroad Construction Observer - Day Rate (Week Day - Overtime)		hour	\$200.00	\$0.00
Flowable Fill for Test Hole Backfill in RR ROW		each	\$800.00	\$0.00
Miscellaneous				
Origin & Destination cell-phone trip data collection (Mobility)		per project	\$60,750.00	\$0.00
Value Engineering (CVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$12,200.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: VRX, Inc.

TASK DESCRIPTION					Technical Advisor (Senior)	Environmen tal Planner (Senior)	Environmen tal Scientist (Senior)	Environmen tal Scientist (IV)	Environmen tal Scientist (III)	Environmen tal Scientist (II/II)	Admin/ Clerical	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:					\$255.67	\$228.34	\$199.42	\$143.00	\$109.94	\$89.49	\$84.37		
FC 120 - Social, Economic & Environmental Studies and Public Involvement													
	120.	1.		ENVIRONMENTAL DOCUMENTATION STANDARDS									\$0.00
	120.	2.		ENVIRONMENTAL ASSESSMENT (EA) CONTENT AND FORMAT	8	48	8	16	4	28	2	114	\$20,003.26
	120.	3.		ENVIRONMENTAL TECHNICAL ANALYSIS DOCUMENTATION									\$0.00
		3.	A	ENVIRONMENTAL CONSTRAINTS MAP									\$0.00
		3.	B	ENVIRONMENTAL INFORMATION FORM, SCOPING MATERIALS, EPIC FORM									\$0.00
	120.	3.	C 1.	PROTECTED LANDS									\$0.00
	120.	3.	C 2.	COMMUNITY IMPACTS ANALYSIS									\$0.00
	120.	3.	C 3.	INDUCED GROWTH AND CUMULATIVE IMPACT ANALYSIS									\$0.00
	120.	3.	C 4.	AIR QUALITY STUDIES									\$0.00
	120.	3.	C 5.	NOISE ANALYSIS TECHNICAL REPORTING									\$0.00
	120.	3.	C 6.	WATER RESOURCES (Delineation)	1	8	8	10	24	64	2	117	\$13,642.41
	120.	3.	C 6.	WATER RESOURCES (USACE Permit)	1	8	10	4	22	88	2	135	\$15,111.13
	120.	3.	C 7.	BIOLOGICAL RESOURCES (T&E, Farmland)	2	12	12	12	16	68	4	126	\$15,542.30
	120.	3.	C 8.	INITIAL SITE ASSESSMENT (ISA)	2	10	32	32		24	2	102	\$16,068.68
	120.	3.	C 9.	ARCHEOLOGICAL BACKGROUND STUDY									\$0.00
	120.	3.	C 9.	ARCHEOLOGICAL SURVEY AND DOCUMENTATION									\$0.00
	120.	3.	C 10.	HISTORIC RESOURCE IDENTIFICATION, EVALUATION, AND DOCUMENTATION									\$0.00
	120.	3.	C 11.	FLOODPLAIN IMPACTS	2	10			5			17	\$3,344.44
	120.	3.	C 12.	STORMWATER PERMITS (SECTION 402 OF THE CLEAN WATER ACT)									\$0.00
	120.	4.		PUBLIC INVOLVEMENT									\$0.00
	120.	4.	A 1.	MEETINGS WITH PROPERTY OWNERS / DEVELOPERS (10)									\$0.00
	120.	4.	A 2.	PUBLIC INVOLVEMENT PLAN									\$0.00
	120.	4.	A 3.	PUBLIC INVOLVEMENT DIGITAL DATABASE									\$0.00
	120.	4.	A 4.	PROJECT FACT SHEET AND LOCATION MAP									\$0.00
	120.	4.	A 5.	WEBSITE INFORMATION AND UPDATES									\$0.00
	120.	4.	A 6.	STAKEHOLDER MEETINGS (3)									\$0.00
	120.	4.	A 7.	TECHNICAL WORK GROUP MEETINGS (3)									\$0.00
	120.	4.	A 8.	PUBLIC MEETINGS (2)									\$0.00
	120.	4.	A 9.	PUBLIC HEARING (1)									\$0.00
	120.	4.	A 10.	PUBLIC INVOLVEMENT LETTER									\$0.00
	120.	4.	A 11.	PUBLIC MEETING OUTREACH									\$0.00
	120.	4.	A 12.	PUBLIC MEETING AND SUMMARY DOCUMENTATION (2)									\$0.00
	120.	4.	A 13.	PUBLIC HEARING AND SUMMARY DOCUMENTATION									\$0.00
	120.	4.	A 14.	EMAIL UPDATES (4)									\$0.00
	120.	5.		RIGHT OF ENTRY									\$0.00
TOTAL HOURS					16.00	96.00	70.00	74.00	71.00	272.00	12.00	611.00	
TOTAL LABOR COSTS					\$4,090.72	\$21,920.64	\$13,959.40	\$10,582.00	\$7,805.74	\$24,341.28	\$1,012.44		\$83,712.22

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: VRX, Inc.

TASK DESCRIPTION					Technical Advisor (Senior)	Environmen tal Planner (Senior)	Admin/ Clerical	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:					\$255.67	\$228.34	\$84.37		
FC 120 - Social, Economic & Environmental Studies and Public Involvement									
	145	1.			COORDINATION / COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (6 MEETINGS)				
	145	2.	A		6	12		18	\$4,274.10
	145	2.	A		INTERNAL COORDINATION OF PROJECT TASKS(4 HR/MO @ 6 MONTHS)				
	145	2.	B			24		24	\$5,480.16
	145	2.	B		PROJECT WORK SCHEDULE				
	145	2.	C						\$0.00
	145	2.	C		4	18	18	40	\$6,651.46
	145	2.	E		PROVIDE MONTHLY PROGRESS REPORTS (1 HR/MO @ 18 MONTHS)				
	145	2.	E						\$0.00
	145	2.	E		SITE VISITS AND REPORT				
TOTAL HOURS					10.00	54.00	18.00	82.00	
TOTAL LABOR COSTS					\$2,556.70	\$12,330.36	\$1,518.66		\$16,405.72

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

VRX, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)	1,000	mile	\$0.700	\$700.00
Lodging/Hotel (Just taxes and fees)		day/person	\$45.00	\$0.00
Lodging/Hotel (Taxes and fees not included)		day/person	\$125.00	\$0.00
Meals (Excluding alcohol and tips; overnight stay required)		day/person	\$60.00	\$0.00
Air Travel - In State - 2+ Wks Notice (Coach)		rd trip/person	\$530.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$950.00	\$0.00
Air Travel - Out of State - 2+ Wks Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,500.00	\$0.00
Oversize, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes Rideshare)		each/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$350.00	\$0.00
Toll Charges	10	day	\$50.00	\$500.00
SUV or ATV Rental (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs		each	\$2.00	\$0.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.73	\$0.00
Cardstock Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopies B/W (11" X 17")		each	\$0.25	\$0.00
Photocopies B/W (8 1/2" X 11")		each	\$0.15	\$0.00
Photocopies Color (11" X 17")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" X 11")		each	\$1.00	\$0.00
Plots (B/W on Bond)		per sq. ft.	\$1.00	\$0.00
Plots (Color on Bond)		per sq. ft.	\$1.75	\$0.00
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and tabbing		each	\$10.00	\$0.00
Certified Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$26.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing		each	\$80.00	\$0.00
Notebooks		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 40" Color Mounted		each	\$100.00	\$0.00
Presentation Boards 48" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Molds		each	\$3.00	\$0.00
DMI - Digital Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4X4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and lanyards		each	\$400.00	\$0.00
Monthly housing and food allowance - This rate shall be used when an Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use this monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspecting the construction projects		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scales, (1 ea) 8" shaker, (1 set) 8" sieves, (1 ea) splitter, (1 ea) hot ovens, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyrotory Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAC Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAC Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV Surcharge (for rig installed on ATV)		LF	\$5.00	\$0.00
Stand By of Drilling Equipment		hour	\$350.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

VRX, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (Trips within 100 miles from office to site)		trip	\$600.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(less 100 miles)		trip	\$600.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(over 100 miles)		mile	\$6.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,160.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregates Laboratory		each	\$6,500.00	\$0.00
Cement and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shelby Tubes Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multimode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" = 500' scale)		each	\$125.00	\$0.00
Curator (Drawer and TX Archaeological Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
TARL Curation Fee		site	\$5,000.00	\$0.00
Environmental Field Supplies (lathes, stakes, flagging, spray paint, etc.)	5	day	\$35.00	\$175.00
FEMA FIS (Manual)		each	\$50.00	\$0.00
FEMA FIS Backup Data Request		each	\$500.00	\$0.00
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Model/Floodplain Hardcopy		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plat Records		sheet	\$7.50	\$0.00
Title Report		each	\$800.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search	1	per project	\$2,500.00	\$2,500.00
Public Involvement				
Court Reporter		page	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Transcription)		day	\$1,000.00	\$0.00
Custodian for Public Involvement		hour	\$60.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third-party, location-based service data provider (Mobility)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		hour	\$3,500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailing (500 pieces)		per mailing	\$800.00	\$0.00
Public Notices - Mass Mailing/with Self Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Displays		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$600.00	\$0.00
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		event	\$600.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		hour	\$600.00	\$0.00
Interpretative Services - Includes International coordination with entities outside of the U.S. (prior TxDOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LiDAR Mobile mapping System (travel to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Airborne Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$35.00	\$0.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$65.00	\$0.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW/Control Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW/Control Monument - Poured 2-3 Feet (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GPS/IMU Data collection/Processing		per project	\$2,500.00	\$0.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Fathometer		day	\$90.00	\$0.00
Ground Target (includes paint and panel material)		each	\$30.00	\$0.00
Hydrographic Sonar Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$28.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

VRX, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Processing (film, development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$28.00	\$0.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$8.00	\$0.00
Portable LiDAR System (Back Pack Mounted)		day	\$1,750.00	\$0.00
Certified Deed Copies		sheet	\$2.65	\$0.00
Deed Copies		sheet	\$2.00	\$0.00
Reprographics		per sq. ft.	\$5.00	\$0.00
T-Posts (Materials only)		each	\$5.00	\$0.00
Delineator Posts (Materials only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LiDAR Fixed Wing Aircraft (Includes aircraft, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LiDAR (Includes helicopter, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering				
Ground Penetrating Radar (equipment only)(GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment)(owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydro-vacuum Excavation (equipment, materials, and labor)		hour	\$450.00	\$0.00
Traffic Control				
Portable Message Board		day	\$500.00	\$0.00
Flashing Arrow Board		day	\$600.00	\$0.00
Law Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator trucks - (Includes labor, equipment and fuel)		day	\$5,150.00	\$0.00
Miscellaneous				
Origin & Destination cell-phone trip data collection (Mobility)		per project	\$60,750.00	\$0.00
Value Engineering (CVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$3,875.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER:				Schnabel Engineering Consultants, Inc.						
TASK DESCRIPTION					Support Manager	Engineer (Senior)	Engineer (Project)	Engineer-In-Training II	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:					\$314.28	\$280.49	\$204.15	\$176.59		
FC110 (102) - Route and Design Studies										
DEVELOP PRELIMINARY CONCEPTS										
	110.	1.			SCHEMATIC DESIGN WORK OUTLINE					
	110.	1.	A		DEVELOP BASE MAPS					
	110.	1.	B		PLANIMETRICS AND AERIAL MAPPING					
	110.	1.	C		2	4	8	8	22	\$4,796.44
	110.	1.	D	4.	SCHEMATIC ALTERNATIVES					
			D	4.	ALTERNATIVE 1					
			D	4.	ALTERNATIVE 2					
			D	4.	ALTERNATIVE 3					
			D	8.	ALTERNATIVE ANALYSIS MEMO					
	110.	1.	F		DATA COLLECTION					
	110.	1.	G		ROADWAY DESIGN CRITERIA					
	110.	1.	H		PRELIMINARY DESIGN CONFERENCE					
	110.	2.			SCHEMATIC DESIGN - GENERAL TASK					
	110.	2.	A		ROW PROPERTY BASE MAP					
	110.	2.	B		2	4	12		18	\$4,200.32
	110.	2.	C		ENVIRONMENTAL CONSTRAINTS					
	110.	2.	D		DRAINAGE					
	110.	2.	D	1.	HYDROLOGIC ANALYSIS					
	110.	2.	D	2.	HYDRAULIC ANALYSIS					
	110.	2.	D	3.	PRELIMINARY HYDRAULIC DATA SHEETS					
	110.	2.	D	4.	PRELIMINARY CULVERT DESIGN AND LAYOUTS					
	110.	2.	D	5.	LONGITUDINAL STORM DRAINS AND DITCHES					
	110.	2.	E		ROW REQUIREMENTS					
	110.	2.	F		DESIGN EXCEPTIONS AND WAIVERS					
	110.	2.	G		TRAFFIC DATA AND PROJECTIONS					
	110.	2.	H		FINANCIAL PLAN AND PROJECT MANAGEMENT PLAN					
	110.	2.	I		TRAFFIC AND OPERATIONAL ANALYSIS					
	110.	2.	J		SAFETY ANALYSIS					
	110.	2.	K		BICYCLE AND PEDESTRIAN ACCOMMODATIONS					
	110.	2.	L		PROJECT IMPLEMENTATION PLAN					
	110.	3.			CONCEPTUAL DESIGN SCHEMATICS (30%)					
	110.	4.			GEOMETRIC DESIGN SCHEMATICS					
	110.	4.	A	1.	60%					
	110.	4.	A	2.	90%					
	110.	4.	A	3.	100%					
	110.	5.			CROSS-SECTIONS					
	110.	6.			4	8	12		24	\$5,950.84
	110.	7.			RENDERING AND TRAFFIC SIMULATION					
	110.	8.			PRELIMINARY CONSTRUCTION SEQUENCE					
	110.	9.			PRELIMINARY COST ESTIMATE					
	110.	10.			ENGINEERING SUMMARY REPORT					
	110.	11.			SUPPORT OR ATTENDANCE AT VALUE ENGINEERING STUDY					
TOTAL HOURS					8.00	16.00	32.00	8.00	64.00	
TOTAL LABOR COSTS					\$2,514.24	\$4,487.84	\$6,532.80	\$1,412.72		\$14,947.60

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: Schnabel Engineering Consultants, Inc.

TASK DESCRIPTION						Support Manager	Engineer (Senior)	Engineer (Project)	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:						\$314.28	\$280.49	\$204.15		
FC145 SCHEMATIC - PROJECT COORDINATION AND MANAGEMENT										
	145	1.			COORDINATION / COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (36 MEETINGS)	1	4	4	9	\$2,252.84
	145	2.	A		INTERNAL COORDINATION OF PROJECT TASKS(4 HR/MO @ 18 MONTHS)	6	24	24	54	\$13,517.04
	145	2.	B		PROJECT WORK SCHEDULE					
	145	2.	C		PROVIDE MONTHLY PROGRESS REPORTS (2 HR/MO @ 18 MONTHS)					
	145	2.	E		SITE VISITS AND REPORT					
TOTAL HOURS						7.00	28.00	28.00	63.00	
TOTAL LABOR COSTS						\$2,199.96	\$7,853.72	\$5,716.20		\$15,769.88

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: Schnabel Engineering Consultants, Inc.

TASK DESCRIPTION					Support Manager	Engineer (Senior)	Engineer (Project)	Engineer-In- Training II	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:					\$314.28	\$280.49	\$204.15	\$176.59		
FC160 (163) - MISCELLANEOUS (ROADWAY)										
	163.	1.		UTILITY ENGINEERING INVESTIGATION						
	163.	2.		UTILITY COORDINATION						
	163.	3.		GEOTECHNICAL BORINGS AND INVESTIGATIONS	2	6	8	8	24	\$5,357.42
	163.	4.		ILLUMINATION SCHEMATIC DESIGN						
	163.	5.		RAILROAD AND AIRPORT COORDINATION						
TOTAL HOURS					2.00	6.00	8.00	8.00	24.00	
TOTAL LABOR COSTS					\$628.56	\$1,682.94	\$1,633.20	\$1,412.72		\$5,357.42

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: Dallas Aerial

TASK DESCRIPTION						Project Coordinator- AM	LiDAR Processing Technician	Certified Photogramme- trist	Analtical Triangulation Specialist	Aerial Mapping Technician	Orthophoto Specialist	Mapping Editor	Project Coordinator- FWAL	Admin/ Clerical	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:						\$216.83	\$144.54	\$173.96	\$166.23	\$146.90	\$144.54	\$154.63	\$212.62	\$94.48		
FC160 (150) - ROADWAY DESIGN																
	150	1			DESIGN SURVEYS AND CONSTRUCTION SURVEYS										0	\$0.00
	150	2			AERIAL MAPPING	32	10	24	55	159	55	29	8	8	380	\$59,949.52
	150	3			HORIZONTAL AND VERTICL CONTROL FOR AERIAL MAPPING										0	\$0.00
TOTAL HOURS						32.00	10.00	24.00	55.00	159.00	55.00	29.00	8.00	8.00	380.00	
TOTAL LABOR COSTS						\$6,938.56	\$1,445.40	\$4,175.04	\$9,142.65	\$23,357.10	\$7,949.70	\$4,484.27	\$1,700.96	\$755.84		\$59,949.52

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Dallas Aerial

UNIT COSTS	# OF UNITS	UNIT	COST/UNIT	COST
DESIGN SURVEY				
Fixed Wing Flight Crew (Includes Pilot and Sensor Operator)	4	hour	\$250.00	\$1,000.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$209.00	\$0.00
LIDAR Terrestrial Laser Scanning		day	\$2,500.00	\$0.00
SUE				\$0.00
SUE (Quality Level C and D) Includes labor and equipment for records research, CADD, and mapping.		LF	\$0.65	\$0.00
SUE (Quality Level B - Utility Designation) Includes labor and equipment for records research, designating, engineering, surveying, CADD, mapping and limited traffic control.		LF	\$1.65	\$0.00
SUE (Quality Level A - Utility Locate, Test Holes) Includes labor and equipment for vacuum excavation, engineering, surveying, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.				\$0.00
Level A: 0 to 4 ft.		EA	\$1,050.00	\$0.00
Level A: > 4 to 8 ft.		EA	\$1,250.00	\$0.00
Level A: > 8 to 12 ft.		EA	\$1,550.00	\$0.00
Level A: > 12 to 20 ft.		EA	\$2,800.00	\$0.00
				\$0.00
GEOTECH				\$0.00
Testing and Materials (8 Bridge Bore Logs)		EA	\$9,000.00	\$0.00
Testing and Materials (24 Retaining wall DrillBore Logs)		EA	\$7,000.00	\$0.00
Testing and Materials (10 Railroad Bore Logs)		EA	\$1,500.00	\$0.00
Testing and Materials (2 Pavement Bore Logs)		EA	\$1,500.00	\$0.00
ROW SURVEY				\$0.00
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$175.00	\$0.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$210.00	\$0.00
SUBTOTAL UNIT COSTS				\$1,000.00

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.

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Dallas Aerial				
Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)		mile	\$0.700	\$0.00
Lodging/Hotel (Just taxes and fees)		day/person	\$45.00	\$0.00
Lodging/Hotel (Taxes and fees not included)		day/person	\$125.00	\$0.00
Meals (Excluding alcohol and tips; overnight stay required)		day/person	\$60.00	\$0.00
Air Travel - In State - 2+ Wks Notice (Coach)		rd trip/person	\$530.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$950.00	\$0.00
Air Travel - Out of State - 2+ Wks Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,500.00	\$0.00
Oversize, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes Rideshare)		each/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$350.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SUV or ATV Rental (Includes taxes and fees; insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs		each	\$2.00	\$0.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.73	\$0.00
Cardstock Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopies B/W (11" X 17")		each	\$0.25	\$0.00
Photocopies B/W (8 1/2" X 11")		each	\$0.15	\$0.00
Photocopies Color (11" X 17")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" X 11")		each	\$1.00	\$0.00
Plots (B/W on Bond)		per sq. ft.	\$1.00	\$0.00
Plots (Color on Bond)		per sq. ft.	\$1.75	\$0.00
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and tabbing		each	\$10.00	\$0.00
Certified Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$26.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing		each	\$80.00	\$0.00
Notebooks		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 40" Color Mounted		each	\$100.00	\$0.00
Presentation Boards 48" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Molds		each	\$3.00	\$0.00
DMI - Digital Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4X4 (Includes operation and maintenance costs; Insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and lanyards		each	\$400.00	\$0.00
Monthly housing and food allowance - This rate shall be used when an Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use this monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspection the construction projects.		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scales, (1 ea) 8" shaker, (1 set) 8" sieves, (1 ea) splitter, (1 ea) hot ovens, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyratory Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAC Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAC Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Track Drilling Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV Surcharge (for rig installed on ATV)		LF	\$5.00	\$0.00
Stand By of Drilling Equipment		hour	\$350.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Dallas Aerial

Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (Trips within 100 miles from office to site)		trip	\$600.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(less 100 miles)		trip	\$600.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, Labor paid separately)(over 100 miles)		mile	\$6.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,160.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregates Laboratory		each	\$6,500.00	\$0.00
Cement and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shelby Tubes Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripods, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multimode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" = 500' scale)		each	\$125.00	\$0.00
Curator (Drawer and TX Archaeological Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
TARL Curation Fee		site	\$5,000.00	\$0.00
Environmental Field Supplies (lathes, stakes, flagging, spray paint, etc.)		day	\$35.00	\$0.00
FEMA FIS (Manual)		each	\$50.00	\$0.00
FEMA FIS Backup Data Request		each	\$500.00	\$0.00
FEMA Map Revision Submittal (CLOMR/LOMR) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Model/Floodplain Hardcopy		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plat Records		sheet	\$7.50	\$0.00
Title Report		each	\$800.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
Public Involvement				
Court Reporter		page	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Transcription)		day	\$1,000.00	\$0.00
Custodian for Public Involvement		hour	\$60.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third-party, location-based service data provider (Mobility)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		hour	\$3,500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailing (500 pieces)		per mailing	\$800.00	\$0.00
Public Notices - Mass Mailing/with Self Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Displays		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$600.00	\$0.00
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		event	\$600.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		hour	\$600.00	\$0.00
Interpretative Services - Includes International coordination with entities outside of the U.S. (prior TxDOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LiDAR Mobile mapping System (travel to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Airborne Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)	49	per mile	\$65.00	\$3,185.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment Aerial Imagery/LiDAR - Project Flight Miles (to/from local airport and on-project flight miles)		per mile	\$65.00	\$0.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW/Control Monument - Excavated/Drilled, rocks, rocky soil. 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW/Control Monument - Poured 2-3 Feet (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GPS/IMU Data collection/Processing	1	per project	\$2,500.00	\$2,500.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Fathometer		day	\$90.00	\$0.00
Ground Target (includes paint and panel material)		each	\$30.00	\$0.00
Hydrographic Sonar Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$28.00	\$0.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

Dallas Aerial				
Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Processing (film, development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing	123	per frame	\$28.00	\$3,444.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$8.00	\$0.00
Portable LiDAR System (Back Pack Mounted)		day	\$1,750.00	\$0.00
Certified Deed Copies		sheet	\$2.65	\$0.00
Deed Copies		sheet	\$2.00	\$0.00
Reprographics		per sq. ft.	\$5.00	\$0.00
T-Posts (Materials only)		each	\$5.00	\$0.00
Delineator Posts (Materials only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LiDAR Fixed Wing Aircraft (Includes aircraft, pilot, sensor/LiDAR operator, fuel and transportation cost)	1	per project	\$25,000.00	\$25,000.00
Mobilization for Helicopter Aerial Imagery/LiDAR (Includes helicopter, pilot, sensor/LiDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering				
Ground Penetrating Radar (equipment only)(GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment)(owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydro-vacuum Excavation (equipment, materials, and labor)		hour	\$450.00	\$0.00
Traffic Control				
Portable Message Board		day	\$500.00	\$0.00
Flashing Arrow Board		day	\$600.00	\$0.00
Law Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator trucks - (Lane/Shoulder Closure) (Includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Attenuator trucks - (No Lane Closure) (Includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator trucks - (Includes labor, equipment and fuel)		day	\$5,150.00	\$0.00
Miscellaneous				
Origin & Destination cell-phone trip data collection (Mobility)		per project	\$60,750.00	\$0.00
Value Engineering (CVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$34,129.00

Contract No. XX-XXXX

Page 1

PROFESSIONAL SERVICES AGREEMENT

This Professional Services Agreement ("Agreement") by and between Tarrant County ("County") and LJA Engineering, Inc. ("Consultant"), located at 6060 N Central Expressway, Suite 400, Dallas, TX 75206, becomes effective on the date of approval in Tarrant County Commissioners Court.

SCOPE OF SERVICES

Consultant agrees to perform the services set forth in the Scope of Services attached as Attachment A in a timely and professional manner, consistent with industry and professional standards, and in accordance with all applicable laws and the terms of this Agreement. Consultant warrants that all engineering services to be performed under this contract will be performed by a licensed engineer or licensed engineers with the professional skill and care ordinarily provided by competent engineers practicing in Texas and under the same or similar circumstances and professional license and that such services will be performed as expeditiously as is prudent considering the ordinary professional skill and care of said engineer or engineers. If any services, functions or responsibilities not specifically described in this Attachment A are required for the proper performance and provision of these services, they shall be deemed to be included with the Attachment A.

ACCESSIBILITY OF DOCUMENTS

Consultant agrees that documents prepared by Consultant in the performance of the Scope of Services shown in Attachment A may be made available to the public, including land developers, upon request.

TERM AND RENEWAL OPTIONS

Upon approval of this contract by the Tarrant County Commissioners Court, Consultant is authorized to begin the provision of services as described in the attached Attachment A. Consultant agrees to complete the services requested by the County in accordance with the attached schedule.

PAYMENT AND INVOICING

Compensation to Consultant for the services described in the attached Attachment A shall not exceed \$3,361,164.31 as shown on Attachment B for the services under this Agreement, upon approval by the County. Consultant acknowledges that payment of compensation is contingent upon the allocation of sufficient funds for this Agreement by the Tarrant County Commissioners Court.

Consultant is to advise the County of additional services that may be required to complete any services requested under this Agreement prior to those additional services being performed that are not part of this Agreement, and must obtain prior approval, in writing, by the County before those additional services are performed and invoiced.

- a. If in the execution of services, the County may request Consultant to remove a service, prior to Consultant's performance of that service. Consultant agrees that the County will not be held responsible for costs associated with those services that were removed.

- b. Payments will be made monthly in arrears, on a net 30-day basis. The fee is to be inclusive of all travel costs.
- c. Invoices are to be detailed and reference the fees as shown in Attachment B. A summary of the work performed during the invoiced period should accompany the invoice submittal.
- d. Submit invoices to: Tarrant County Auditor's Office, Attention: Accounts Payable, 100 E. Weatherford St., Suite 506, Fort Worth, Texas 76196, phone: 817-884-1205, or email to: SAP-Invoices@tarrantcountytx.gov and jijackson@tarrantcountytx.gov. Invoices should reference the Purchase Order number.

COMPLIANCE WITH LAWS

1. In providing the services required by this Agreement, Consultant must observe and comply with all applicable federal, state, and local statutes, ordinances, rules, and regulations, including, without limitation, workers' compensation laws, minimum and maximum salary and wage statutes and regulations, and non-discrimination laws and regulations. Consultant shall be responsible for ensuring its compliance with any laws and regulations applicable to its business, including maintaining any necessary licenses and permits.

2. **Chapters 2271, 2252, and 2274 Texas Government Code Verification.**

(a) *Boycott of Israel Prohibited.* In compliance with Section [2271.001](#) et seq. of the Texas Government Code, Consultant verifies that neither it nor any of its affiliates currently boycott Israel and neither it nor any of its affiliates will boycott Israel during the term of this Agreement. "Boycott Israel" is defined in Section [808.001\(1\)](#) of the Texas Government Code.

(b) *Scrutinized Business Operations Prohibited.* In compliance with Section [2252.151](#) et seq. of the Texas Government Code, Consultant warrants and represents that: (1) neither Consultant nor any of its affiliates engages in scrutinized business operations in Sudan; (2) neither Consultant nor any of its affiliates engages in scrutinized business operations in Iran; and (3) neither Consultant nor any of its affiliates engages in scrutinized business operations with designated foreign terrorist organizations. "Scrutinized business operations in Sudan" is defined in Section [2270.0052](#) of the Texas Government Code. "Scrutinized business operations in Iran" is defined in Section [2270.0102](#) of the Texas Government Code. "Scrutinized business operations with designated foreign terrorist organizations" is defined in Section [2270.0152](#) of the Texas Government Code. Consultant further represents and warrants that neither Consultant nor any of its affiliates appears on any of the Texas Comptroller's [Scrutinized Companies Lists](#).

(c) *Boycott of Certain Energy Companies Prohibited.* In compliance with Section [2276.002](#) of the Texas Government Code (added by 87th Legislature, S.B. 13), Consultant verifies that neither it nor any of its affiliates currently boycott energy companies and neither it nor any of its affiliates will boycott energy companies during the term of this Agreement. "Boycott energy company" is defined in Section [809.001\(1\)](#) (added by 87th Legislature, S.B. 13) and means, without an ordinary business purpose, refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with a company because the company: (A) engages in the exploration, production, utilization,

transportation, sale, or manufacturing of fossil fuel-based energy and does not commit or pledge to meet environmental standards beyond applicable federal and state law; or (B) does business with a company described by subsection (A).

(d) *Discrimination against Firearm Entities or Firearm Trade Associations Prohibited.* In compliance with Section [2274.002](#) of the Texas Government Code (added by 87th Legislature, S.B. 19), Consultant verifies that neither it nor any of its affiliates have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; and neither it nor any of its affiliates will discriminate during the term of the Agreement against a firearm entity or firearm trade association. “Discriminate against a firearm entity or firearm trade association” is defined in Section [2274.001\(3\)](#) (added by 87th Legislature, S.B. 19) and means, with respect to the entity or association, to: (i) refuse to engage in the trade of any goods or services with the entity or association based solely on its status as a firearm entity or firearm trade association; (ii) refrain from continuing an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association; or (iii) terminate an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association; the term *does not include*: (i) the established policies of a merchant, retail seller, or platform that restrict or prohibit the listing or selling of ammunition, firearms, or firearm accessories; and (ii) a company’s refusal to engage in the trade of any goods or services, decision to refrain from continuing an existing business relationship, or decision to terminate an existing business relationship: (aa) to comply with federal, state, or local law, policy, or regulations or a directive by a regulatory agency; or (bb) for any traditional business reason that is specific to the customer or potential customer and not based solely on an entity’s or association’s status as a firearm entity or firearm trade association.

3. **Legal Compliance.** Each party shall comply with the provisions of all applicable laws relating to the performance of its obligations under this Agreement. Each party is responsible for obtaining its own legal advice concerning its compliance with applicable laws.

4. **Prohibition of Political Activity.** None of the funds provided under this Agreement shall be used for influencing the outcome of any election, or the passage or defeat of any legislative measure. This prohibition shall not be construed to prevent the Parties’ compliance with the Texas Public Information Act. No funds provided under this Agreement may be used directly or indirectly to hire employees or in any other way fund or support candidates for the legislative, executive, or judicial branches of government, the State of Texas, or the government of the United States. None of the funds provided under this Agreement shall be paid to any official or employee who violates any of the provisions of this Section.

5. **Form 1295 Certificate of Interested Parties.** Consultant acknowledges and agrees that it has fully, accurately, and completely disclosed all interested parties in the Form 1295 electronically filed with the Texas Ethics Commission, at <https://www.ethics.state.tx.us/filinginfo/1295/>, as required by law, and that the attached signed copy attached as **Exhibit G** is a full and true copy of said filed form.

6. **Conflict of Interest.** Consultant assures that it is in compliance with the requirements of [Chapter 176](#) of the Texas Local Government Code and has filed or will

promptly file the Conflict of Interest Questionnaire (CIQ Form) with the Tarrant County Clerk no later than the 7th business day after the date Consultant becomes aware of facts that require the form to be filed. Completed forms are to be sent to:

Tarrant County Transportation Services
Attn: Joseph Jackson, County Engineer
200 Taylor Street, Room 305 Fort Worth,
Texas 76196

INSURANCE REQUIREMENTS

Consultant shall take out, pay for and maintain always during the prosecution of the work under the contract, the following forms of insurance, in carriers acceptable to and approved by Tarrant County:

- a. Worker's Compensation/Employer's Liability
 - 1. Worker's Compensation – statutory
 - 2. Employer's Liability - \$500,000
- b. Commercial General Liability:
 - 1. Bodily injury/Personal injury/Property damage - \$1,000,000 per occurrence/\$2,000,000 aggregate
- c. Auto Liability:
 - 1. Combined Single Limit (CSL) - \$500,000 per occurrence
- d. Contractual Liability – same limits as above
- e. Professional Liability Insurance - \$1,000,000 each claim with minimum \$2,000,000 aggregate

FINANCIAL RESPONSIBILITY

Consultant is responsible for its incurred expenses in performing this contract unless otherwise noted. To the extent permitted by the Constitution and the laws of the State of Texas, Consultant indemnifies and holds harmless the County against any and all claims, lawsuits, settlements, judgments, costs, penalties and expenses, including attorney's fees, for damage caused by or resulting from an act of negligence, intentional tort, intellectual property infringement, or failure to pay a subcontractor or supplier committed by the Consultant, its agent, or another entity over which the Consultant exercises control.

AGENCY-INDEPENDENT CONTRACTOR

Neither Consultant nor any employee thereof is an agent of the County and neither the County nor any employee thereof is an agent of Consultant. This agreement does not and shall not be construed to entitle either party or any of their representative employees, if applicable, to any benefits, privilege, or other amenities of employment of the other part.

ASSIGNMENT

Neither party may assign this contract.

THIRD PARTY BENEFICIARY EXCLUDED

This party does not incur to the benefit of any specific third party. The parties to this contract do not consent to the waiver of sovereign or government immunity under Texas state or federal law to the extent either party may have that immunity under law.

ENTIRE AGREEMENT

The Contract documents consist of the following:

- This Agreement
- Request for Qualifications F2025021 Bid Documents and Consultant Response
- Consultant Proposal
- Any exhibits attached hereto, conditions of the contract (special, supplementary and other conditions), all addenda issued prior to execution of this Agreement and all modifications issued subsequent thereto.

To the extent of an ambiguity among the various documents, the Request for Qualifications F2025021 will prevail. These documents collectively form the Contract, and all are fully a part of the Contract as if attached to this Agreement or repeated herein.

This Agreement may not be modified, altered, changed or amended in any respect, unless in writing and signed by both parties. For avoidance of doubt, this Agreement may not be modified orally.

The law of the State of Texas governs this contract. Venue for any action regarding this contract must be in the district courts of Tarrant County, Texas.

This agreement is effective upon the date of approval in Tarrant County Commissioners Court.

TERMINATION

Either party may terminate this contract by:

- a. Providing written notice to the other party at least thirty (30) days prior to the date of termination;
- b. Providing in the written notice the date of termination; and
- c. Sending the written notice by certified mail return receipt requested to the party at its address.

EXECUTION OF AGREEMENT

This Agreement may be executed in separate or multiple counterparts. All of such counterparts shall be deemed to be one and the same Agreement, but only one copy with evidence of signatures shall be required for proof of this Agreement. The exchange of copies of this agreement and of signature pages by electronic transmission shall constitute effective execution and delivery of this agreement as to the parties and may be used in lieu of the original agreement for all purposes. Signatures of the parties transmitted or executed electronically shall be deemed to be their original signatures for any purpose whatsoever.

Tarrant County

Joseph Jackson, P.E., CFM
Tarrant County Transportation Services
200 Taylor St, Suite 305
Fort Worth, Texas 76196

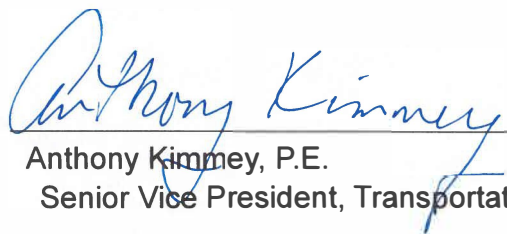
LJA Engineering, Inc.

Anthony Kimmey, P.E.
6060 N Central Expressway
Suite 400
Dallas, Texas 75206

TARRANT COUNTY

LJA Engineering, Inc.

Tim O'Hare
County Judge


Anthony Kimmey, P.E.
Senior Vice President, Transportation

REVIEWED AS TO FORM:

Criminal District Attorney's Office*

*By law, the Criminal District Attorney's Office may only advise or approve contracts or legal documents on behalf of its clients. It may not advise or approve a contract or legal document on behalf of other parties. Our review of this document was conducted solely from the legal perspective of our client. Our approval of this document was offered solely for the benefit of our client. Other parties should not rely on this approval, and should seek review and approval by their own respective attorney(s).

CERTIFICATION OF AVAILABLE FUNDS IN THE AMOUNT OF \$3,361,164.31:

Auditor's Office



**COMMISSIONERS COURT
COMMUNICATION**

COURT ORDER NUMBER

145379

PAGE 1 OF

101

DATE:

6/3/2025

**SUBJECT: CONSIDERATION OF A PROFESSIONAL SERVICES AGREEMENT
WITH LJA ENGINEERING, INC. FOR ENGINEERING SERVICES FOR
THE BONDS RANCH ROAD IMPROVEMENT PROJECT**

***** CONSENT AGENDA *****

COMMISSIONERS COURT ACTION REQUESTED

It is requested that the Commissioners Court consider a professional services agreement with LJA Engineering, Inc. (LJA) for engineering services for the Bonds Ranch Road Improvement Project.

BACKGROUND

On September 5, 2023, the Commissioners Court, through Court Order #141673, approved the programming of 2021 Transportation Bond Program funds from the Countywide Initiatives and Partnerships category for the Bonds Ranch Road corridor improvement project.

The second segment of Bonds Ranch Road, from West of Business 287 to West of Blue Sky Drive, is ready to proceed to the schematic and environmental design phase. Staff reviewed the qualifications from RFQ F2025021, Professional Engineering and Planning Services, and recommends that the Commissioners Court approve a Professional Services Agreement with LJA for design services related to this project.

The Professional Services Agreement has been reviewed as to form by the Criminal District Attorney's Office.

FISCAL IMPACT

The fiscal impact to Tarrant County will be \$3,361,164.31. Funds are available in account 47800- 2025 2021 Transportation Bond Election Fund/6840100000 Transportation/579061 - County Projects (Countywide Initiatives and Partnerships category)

SUBMITTED BY Transportation Services

PREPARED BY: Sarah VanTassel

APPROVED BY: Scott Hall

PROFESSIONAL SERVICES AGREEMENT

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SCOPE OF SERVICES

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ACCESSIBILITY OF DOCUMENTS

Consultant agrees that documents prepared by Consultant in the performance of the Scope of Services shown in Attachment A may be made available to the public, including land developers, upon request.

TERM AND RENEWAL OPTIONS

Upon approval of this contract by the Tarrant County Commissioners Court, Consultant is authorized to begin the provision of services as described in the attached Attachment A. Consultant agrees to complete the services requested by the County in accordance with the attached schedule.

PAYMENT AND INVOICING

Compensation to Consultant for the services described in the attached Attachment A shall not exceed \$3,361,164.31 as shown on Attachment B for the services under this Agreement, upon approval by the County. Consultant acknowledges that payment of compensation is contingent upon the allocation of sufficient funds for this Agreement by the Tarrant County Commissioners Court.

Consultant is to advise the County of additional services that may be required to complete any services requested under this Agreement prior to those additional services being performed that are not part of this Agreement, and must obtain prior approval, in writing, by the County before those additional services are performed and invoiced.

- a. If in the execution of services, the County may request Consultant to remove a service, prior to Consultant's performance of that service. Consultant agrees that the County will not be held responsible for costs associated with those services that were removed.

- b. Payments will be made monthly in arrears, on a net 30-day basis. The fee is to be inclusive of all travel costs.
- c. Invoices are to be detailed and reference the fees as shown in Attachment B. A summary of the work performed during the invoiced period should accompany the invoice submittal.
- d. Submit invoices to: Tarrant County Auditor's Office, Attention: Accounts Payable, 100 E. Weatherford St., Suite 506, Fort Worth, Texas 76196, phone: 817-884-1205, or email to: SAP-Invoices@tarrantcountytx.gov and jjackson@tarrantcountytx.gov. Invoices should reference the Purchase Order number.

COMPLIANCE WITH LAWS

1. In providing the services required by this Agreement, Consultant must observe and comply with all applicable federal, state, and local statutes, ordinances, rules, and regulations, including, without limitation, workers' compensation laws, minimum and maximum salary and wage statutes and regulations, and non-discrimination laws and regulations. Consultant shall be responsible for ensuring its compliance with any laws and regulations applicable to its business, including maintaining any necessary licenses and permits.

2. Chapters 2271, 2252, and 2274 Texas Government Code Verification.

(a) *Boycott of Israel Prohibited.* In compliance with Section [2271.001](#) et seq. of the Texas Government Code, Consultant verifies that neither it nor any of its affiliates currently boycott Israel and neither it nor any of its affiliates will boycott Israel during the term of this Agreement. "Boycott Israel" is defined in Section [808.001\(1\)](#) of the Texas Government Code.

(b) *Scrutinized Business Operations Prohibited.* In compliance with Section [2252.151](#) et seq. of the Texas Government Code, Consultant warrants and represents that: (1) neither Consultant nor any of its affiliates engages in scrutinized business operations in Sudan; (2) neither Consultant nor any of its affiliates engages in scrutinized business operations in Iran; and (3) neither Consultant nor any of its affiliates engages in scrutinized business operations with designated foreign terrorist organizations. "Scrutinized business operations in Sudan" is defined in Section [2270.0052](#) of the Texas Government Code. "Scrutinized business operations in Iran" is defined in Section [2270.0102](#) of the Texas Government Code. "Scrutinized business operations with designated foreign terrorist organizations" is defined in Section [2270.0152](#) of the Texas Government Code. Consultant further represents and warrants that neither Consultant nor any of its affiliates appears on any of the Texas Comptroller's [Scrutinized Companies Lists](#).

(c) *Boycott of Certain Energy Companies Prohibited.* In compliance with Section [2276.002](#) of the Texas Government Code (added by 87th Legislature, S.B. 13), Consultant verifies that neither it nor any of its affiliates currently boycott energy companies and neither it nor any of its affiliates will boycott energy companies during the term of this Agreement. "Boycott energy company" is defined in Section [809.001\(1\)](#) (added by 87th Legislature, S.B. 13) and means, without an ordinary business purpose, refusing to deal with, terminating business activities with, or otherwise taking any action that is intended to penalize, inflict economic harm on, or limit commercial relations with a company because the company: (A) engages in the exploration, production, utilization,

transportation, sale, or manufacturing of fossil fuel-based energy and does not commit or pledge to meet environmental standards beyond applicable federal and state law; or (B) does business with a company described by subsection (A).

(d) *Discrimination against Firearm Entities or Firearm Trade Associations Prohibited.* In compliance with Section [2274.002](#) of the Texas Government Code (added by 87th Legislature, S.B. 19), Consultant verifies that neither it nor any of its affiliates have a practice, policy, guidance, or directive that discriminates against a firearm entity or firearm trade association; and neither it nor any of its affiliates will discriminate during the term of the Agreement against a firearm entity or firearm trade association. "Discriminate against a firearm entity or firearm trade association" is defined in Section [2274.001\(3\)](#) (added by 87th Legislature, S.B. 19) and means, with respect to the entity or association, to: (i) refuse to engage in the trade of any goods or services with the entity or association based solely on its status as a firearm entity or firearm trade association; (ii) refrain from continuing an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association; or (iii) terminate an existing business relationship with the entity or association based solely on its status as a firearm entity or firearm trade association; the term *does not include*: (i) the established policies of a merchant, retail seller, or platform that restrict or prohibit the listing or selling of ammunition, firearms, or firearm accessories; and (ii) a company's refusal to engage in the trade of any goods or services, decision to refrain from continuing an existing business relationship, or decision to terminate an existing business relationship: (aa) to comply with federal, state, or local law, policy, or regulations or a directive by a regulatory agency; or (bb) for any traditional business reason that is specific to the customer or potential customer and not based solely on an entity's or association's status as a firearm entity or firearm trade association.

3. **Legal Compliance.** Each party shall comply with the provisions of all applicable laws relating to the performance of its obligations under this Agreement. Each party is responsible for obtaining its own legal advice concerning its compliance with applicable laws.

4. **Prohibition of Political Activity.** None of the funds provided under this Agreement shall be used for influencing the outcome of any election, or the passage or defeat of any legislative measure. This prohibition shall not be construed to prevent the Parties' compliance with the Texas Public Information Act. No funds provided under this Agreement may be used directly or indirectly to hire employees or in any other way fund or support candidates for the legislative, executive, or judicial branches of government, the State of Texas, or the government of the United States. None of the funds provided under this Agreement shall be paid to any official or employee who violates any of the provisions of this Section.

5. **Form 1295 Certificate of Interested Parties.** Consultant acknowledges and agrees that it has fully, accurately, and completely disclosed all interested parties in the Form 1295 electronically filed with the Texas Ethics Commission, at <https://www.ethics.state.tx.us/filinginfo/1295/>, as required by law, and that the attached signed copy attached as **Exhibit G** is a full and true copy of said filed form.

6. **Conflict of Interest.** Consultant assures that it is in compliance with the requirements of [Chapter 176](#) of the Texas Local Government Code and has filed or will

promptly file the Conflict of Interest Questionnaire (CIQ Form) with the Tarrant County Clerk no later than the 7th business day after the date Consultant becomes aware of facts that require the form to be filed. Completed forms are to be sent to:

Tarrant County Transportation Services
Attn: Joseph Jackson, County Engineer
200 Taylor Street, Room 305 Fort Worth,
Texas 76196

INSURANCE REQUIREMENTS

Consultant shall take out, pay for and maintain always during the prosecution of the work under the contract, the following forms of insurance, in carriers acceptable to and approved by Tarrant County:

- a. Worker's Compensation/Employer's Liability
 - 1. Worker's Compensation – statutory
 - 2. Employer's Liability - \$500,000
- b. Commercial General Liability:
 - 1. Bodily injury/Personal injury/Property damage - \$1,000,000 per occurrence/\$2,000,000 aggregate
- c. Auto Liability:
 - 1. Combined Single Limit (CSL) - \$500,000 per occurrence
- d. Contractual Liability – same limits as above
- e. Professional Liability Insurance - \$1,000,000 each claim with minimum \$2,000,000 aggregate

FINANCIAL RESPONSIBILITY

Consultant is responsible for its incurred expenses in performing this contract unless otherwise noted. To the extent permitted by the Constitution and the laws of the State of Texas, Consultant indemnifies and holds harmless the County against any and all claims, lawsuits, settlements, judgments, costs, penalties and expenses, including attorney's fees, for damage caused by or resulting from an act of negligence, intentional tort, intellectual property infringement, or failure to pay a subcontractor or supplier committed by the Consultant, its agent, or another entity over which the Consultant exercises control.

AGENCY-INDEPENDENT CONTRACTOR

Neither Consultant nor any employee thereof is an agent of the County and neither the County nor any employee thereof is an agent of Consultant. This agreement does not and shall not be construed to entitle either party or any of their representative employees, if applicable, to any benefits, privilege, or other amenities of employment of the other part.

ASSIGNMENT

Neither party may assign this contract.

THIRD PARTY BENEFICIARY EXCLUDED

This party does not incur to the benefit of any specific third party. The parties to this contract do not consent to the waiver of sovereign or government immunity under Texas state or federal law to the extent either party may have that immunity under law.

ENTIRE AGREEMENT

The Contract documents consist of the following:

- This Agreement
- Request for Qualifications F2025021 Bid Documents and Consultant Response
- Consultant Proposal
- Any exhibits attached hereto, conditions of the contract (special, supplementary and other conditions), all addenda issued prior to execution of this Agreement and all modifications issued subsequent thereto.

To the extent of an ambiguity among the various documents, the Request for Qualifications F2025021 will prevail. These documents collectively form the Contract, and all are fully a part of the Contract as if attached to this Agreement or repeated herein.

This Agreement may not be modified, altered, changed or amended in any respect, unless in writing and signed by both parties. For avoidance of doubt, this Agreement may not be modified orally.

The law of the State of Texas governs this contract. Venue for any action regarding this contract must be in the district courts of Tarrant County, Texas.

This agreement is effective upon the date of approval in Tarrant County Commissioners Court.

TERMINATION

Either party may terminate this contract by:

- a. Providing written notice to the other party at least thirty (30) days prior to the date of termination;
- b. Providing in the written notice the date of termination; and
- c. Sending the written notice by certified mail return receipt requested to the party at its address.

EXECUTION OF AGREEMENT

This Agreement may be executed in separate or multiple counterparts. All of such counterparts shall be deemed to be one and the same Agreement, but only one copy with evidence of signatures shall be required for proof of this Agreement. The exchange of copies of this agreement and of signature pages by electronic transmission shall constitute effective execution and delivery of this agreement as to the parties and may be used in lieu of the original agreement for all purposes. Signatures of the parties transmitted or executed electronically shall be deemed to be their original signatures for any purpose whatsoever.

Tarrant County

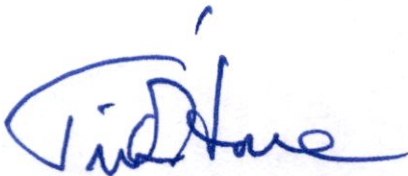
Joseph Jackson, P.E., CFM
Tarrant County Transportation Services
200 Taylor St, Suite 305
Fort Worth, Texas 76196

LJA Engineering, Inc.

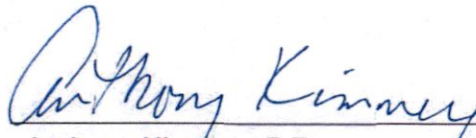
Anthony Kimmey, P.E.
6060 N Central Expressway
Suite 400
Dallas, Texas 75206

TARRANT COUNTY

LJA Engineering, Inc.



Tim O'Hare
County Judge



Anthony Kimmey, P.E.
Senior Vice President, Transportation

REVIEWED AS TO FORM:

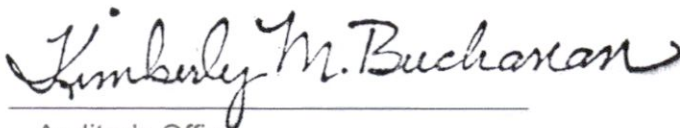


Criminal District Attorney's Office*

*By law, the Criminal District Attorney's Office may only advise or approve contracts or legal documents on behalf of its clients. It may not advise or approve a contract or legal document on behalf of other parties. Our review of this document was conducted solely from the legal perspective of our client. Our approval of this document was offered solely for the benefit of our client. Other parties should not rely on this approval, and should seek review and approval by their own respective attorney(s).

CERTIFICATION OF AVAILABLE FUNDS IN THE AMOUNT OF \$3,361,164.31:

M. Buchanan 5/30/25



Auditor's Office

EXHIBIT A

SCOPE OF BASIC SERVICES TO BE PROVIDED BY THE ENGINEER TO TARRANT COUNTY

The Engineer shall provide preliminary engineering services for development of a design schematic, environmental documents and studies in support of the schematic work, public involvement, permit procurement, data collection and analysis, drainage studies, conceptual traffic control, traffic projections, traffic engineering and operations including capacity analysis, traffic simulations, safety analysis, 3-D modeling, surveying and mapping, subsurface utility engineering (SUE), utility coordination, and geotechnical investigation for the Bonds Ranch Road Segment 2 project. The study area extends along Bonds Ranch Road from just west of BUS 287 to just west of Blue Sky Drive including the interchange areas extending along BUS 287, the UPRR and BNSF rail lines from Hicks Field Road to Peden Road. This project will connect with Bonds Ranch Road Segment 1 to the west and Bonds Ranch Road Segment 3 to the east which are both being developed by Tarrant County.

The scope, rates, and fee for potential additional services related to PS&E design, and construction related services of the Bonds Ranch Road Segment 2 will be developed and approved after the schematic has been approved and construction limits have been identified by Tarrant County ("the County") and/or the Texas Department of Transportation (TxDOT or the "State").

GENERAL REQUIREMENTS

1.1. Coordination.

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

The Engineer shall notify the County and coordinate with adjacent engineers on all controls at project interfaces. The Engineer shall document the coordination effort, and each engineer must provide written concurrence regarding the agreed project controls and interfaces. In the event the Engineer and the other adjacent engineers are unable to agree, the Engineer shall meet jointly with the County, State and each adjacent engineer to resolve disagreements. If the engineers are unable to resolve an issue with the County as mediator, the County may decide the issue and the decision will be final.

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

1.2. Progress Reporting and Invoicing.

The Engineer shall invoice according to function code breakdowns shown in *Exhibit "B" - Fee Schedule*. The Engineer shall submit each invoice in a format acceptable to the County.

The Engineer shall complete the services according to the milestone work schedule. The Engineer shall submit a monthly written progress report to the County indicating

the actual work accomplished during the month, scheduled work to be accomplished for the month, the estimated work to be accomplished for the coming month, problems encountered, and actions taken to remedy them, list of meetings attended, and overall status. The progress report must use a bar chart diagram to indicate the percentage complete of each task shown on the previous report and the percentage complete of each task. The Engineer is required to meet with the designated County project manager or environmental coordinator on a monthly basis for progress tracking purposes unless prior written agreement is made with County 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 (7) calendar days after each meeting.

The Engineer shall prepare a project work schedule, using the latest version of Microsoft software or another scheduling program approved by the County in writing. The schedules shall indicate tasks, subtasks, critical dates, milestones, deliverables and review requirements in a format that depicts the interdependence of the various items. The work schedule must incorporate an allocation of time for stage reviews of the design schematic and the environmental documents by County personnel. The Engineer shall present the work schedule to the County for review/acceptance and provide assistance in interpreting the proposed work schedule. The Engineer shall provide advance written notice to the County if the Engineer is not able to meet the scheduled milestone review date.

Once the project has been completed and accepted by the County and State, the Engineer shall deliver all electronic files to the County within 30 calendar days of County's written request.

Condition precedents to final payment by the County are the County's receipt of all electronic files and confirmation by the County's Project Manager that (1) the electronic files can be opened and are usable by the County utilizing the County-owned version of the intended software, (2) all files are formatted Computer Graphics Files for Document and Information Exchange, and (3) all the County and State's review comments have been addressed.

The Engineer shall prepare a letter of transmittal to accompany each document submittal to the County and State. At a minimum, the letter of transmittal must include the County contract number, State control-section-job (CSJ) number, the highway number, county, project limits.

1.3. Quality Assurance (QA) and Quality Control (QC).

The Engineer shall provide peer review at all levels. For each deliverable, the Engineer shall retain evidence of their internal review and mark-up of that deliverable as preparation for submittal. A milestone submittal is not considered complete unless the required milestone documents and associated internal mark-ups are submitted. If requested by the County's Project Manager, the Engineer shall submit the Engineer's internal mark-up (e.g., red-lines, comments) developed as part the Engineer's quality control step. When internal mark-ups are requested by the County in advance, the County may reject the actual deliverable if the Engineer fails to provide sufficient evidence of quality control. The Engineer shall clearly label each document submitted for quality assurance as an internal mark-up document.

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

1.4. Personal Protective Equipment (PPE).

The Engineer shall, and shall require its subcontractors to, (1) provide personal protective equipment (PPE) to their personnel, (2) provide business vehicles for their personnel, and (3) require their personnel to use PPE and drive only business vehicles while performing work on or near roadways. The PPE must meet all (1) current standards set by Occupation Safety and Health Administration (OSHA) and (2) TxDOT requirements (e.g., safety glasses, Type 3 (TY 3) pants for night work). Each business vehicle must be clearly marked with the Engineer's business name, or the name of the appropriate subcontractor, such that the name can be identified from a distance.

1.5. Training Requirements.

A. The Engineer shall ensure that each member of the Engineer's project team performing design or plan review tasks completes the following Environmental Management System (EMS) e-Learning courses prior to working on the project:

1. Storm Water Compliance Requirements in Construction (ENV433)
2. EMS Awareness Training (ENV414)
3. AP&D Stage Gate Checklist (DES435)
4. Design Erosion & Sediment Control (EL4030)
5. EPIC Sheet (DES908)
6. PS&E Stage Gate Checklist (DES907)
7. How to Comply with Section 404 Permits (ENV457)
8. CGP Compliance and Enforcement (ENV432)

Information about these online courses may be accessed at:

<https://www.txdot.gov/inside-txdot/division/environmental/ems-courses.html>.

The Engineer shall ensure that the required training is repeated by each member of the project team based on the repeat requirements stated in the EMS training matrix that may be accessed at: <https://www.txdot.gov/inside-txdot/division/environmental/ems-courses.html>.

B. Deliverable:

The Engineer shall provide a list, signed by the Engineer's Project Manager that includes the following:

1. The names and titles of all personnel performing design or plan review tasks
2. The names of the training courses completed by each person on the list
3. The completion dates for the training courses completed by each person on the list

The Engineer shall update and resubmit this list when new personnel are assigned to the project team.

TASK DESCRIPTIONS AND FUNCTION CODES

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

FUNCTION CODE 102(110) – FEASIBILITY STUDIES

ROUTE AND DESIGN STUDIES

The Engineer shall prepare alternative analyses to determine the preferred alternative and proposed roadway schematic layout that includes projected traffic volumes and existing and proposed typical sections. The Engineer shall furnish Microsoft Office and Bentley OpenRoads Designer computer generated media containing the roadway schematic layout to the County. All supporting attachments and exhibits must accompany the schematic layout. All Bentley OpenRoads Designer computer generated files containing the roadway design schematic must be fully compatible with the software used by the County and State without further modification or conversion.

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 must be utilized in accordance with the requirements for schematic development and consistent with the policies of the County and State.

The Engineer shall prepare preliminary drawings to identify any potential impacts and constraints within the project corridor, including impacts to the nature, cultural, and human environment. The potential impacts and constraints identified must include all existing and proposed utilities (both public and private), structures, burial grounds, neighborhood communities, historical landmarks, and undeveloped areas. Any potential utility conflicts and structural impediments must be identified as such. The Engineer shall propose alternative alignments that avoid or minimize displacements and damages and prepare any additional attachments or exhibits required to illustrate a preferred alternative alignment. The Engineer shall assist the County with agency meetings during the development of the schematic design as requested by the County or State. If requested by the County, the Engineer shall prepare a Notice and Opportunity to Comment and assist the County with property owners, stakeholders and technical working group meetings, public meetings, and a public hearing.

An itemization of the schematic design and engineering work activity to be performed under this contract is detailed below. The Engineer shall prepare all designs in accordance with the latest version of:

- A. *Roadway Design Manual*, published by TxDOT;
- B. *TxDOT Project Development Process Manual*, published by TxDOT;
- C. *Policy on Geometric Design of Highways and Streets*, published by the American Association of State Highway and Transportation Officials' (AASHTO);
- D. *Standard Specifications for Construction of Highways, Streets, and Bridges*, published by TxDOT;
- E. *Texas Manual on Uniform Traffic Control Devices (TMUTCD)*, published by TxDOT;
- F. *Highway Capacity Manual (HCM)*, published by the Transportation Research Board (TRB);
- G. *Highway Safety Manual (HSM)*, published by AASHTO;
- H. *Hydraulic Design Manual*, published by TxDOT;
- I. *Access Management Manual*, published by TxDOT; and

- J. other State approved manuals and guides.

When design criteria are not identified in these manuals, the Engineer shall notify the County and request direction.

The design schematic horizontal layout must adhere to a design scale of 1 inch = 100 foot (or 1 inch = 200 foot, when directed by the County.) The Engineer shall develop the schematic layout, exhibits, and attachments in English units. All Microsoft Office, MicroStation, Keyhole Markup Language (KML), Keyhole Markup Language Zipped (KMZ), and Bentley OpenRoads Designer computer graphic files furnished to the County must be submitted on CD, DVD, or USB flash drive to the County in their native format, which must be fully compatible with the programs currently used by the County. Schematics must follow TxDOT and Federal Highway Administration (FHWA) standards. The schematic must follow TxDOT's computer-aided design and drafting (CADD) standards. The Engineer shall submit the schematic as an original document, accompanied with an original MicroStation formatted graphics file. Final copies of the schematic design must be signed and sealed by a professional engineer licensed in the state of Texas.

110.1. Schematic Design Work Outline:

A. Develop Base Maps

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

B. Planimetrics and Aerial Mapping

The Engineer shall utilize TNRIS and/or NCTCOG 0.5-meter LiDAR data or Nearmap data until the Engineer can obtain aerial LiDAR survey data.

C. Analyze Existing Conditions

Using collected data and base maps, the Engineer shall develop an overall analysis of the existing conditions to develop the schematic design. The analysis shall include, where readily available, the following:

1. ROW and easement determination
2. Horizontal alignment
3. Vertical alignment
4. Pavement cross slopes and pavement type
5. Soil exploration
6. Geotechnical testing
7. Roadway-rail grade crossing studies
8. Intersection design and analysis
9. Sight distance
10. Level of service
11. Safety (i.e., crash data)
12. Locations of critical constraints
13. Drainage
14. Traffic control and construction phasing sequence

D. Schematic Alternatives

1. The Engineer shall identify and analyze schematic alternatives to avoid/minimize potential adverse impacts, safety impacts, ROW impacts, environmental impacts, major utility conflicts, structural impediments, or exceptions to the State or FHWA design criteria.
2. The Engineer shall consider alternative evaluation input via project staff meetings and from community and agency input.
3. Public and agency coordination shall be considered to eliminate non-viable alternatives. Based on the Engineer's analysis (including identification of a Technically Preferred Alternative (TPA)) and public/agency feedback, a Locally Preferred Alternative (LPA) will be identified by the County and carried forward to detailed geometric schematic design.
4. Feasible Alternatives - The Engineer will prepare plan views on 11' x 17" sheets and analyze at a limited level of detail up to three (3) feasible alternatives. For the feasible alternatives, the Engineer shall develop a rational screening process and alternative evaluation matrix based on meeting project objectives, community and environmental impacts, and costs. The Engineer shall include comparison to the No-Build Alternative.
5. Conceptual Design Schematics (30% complete schematics) - After these three (3) feasible alternatives are screened, they will be reduced to a preferred alternative for analysis at a greater level of detail. Design of the conceptual schematic for the preferred alternative shall be developed to the detail indicated in Section 110.3.
6. Geometric Design Schematics (60% complete schematics) – The preferred alternative will be developed into 60% complete schematics . Design of 60% complete schematics shall be developed to the detail indicated in Section 110.4.
7. Geometric Design Schematics (90% and 100% complete schematics) - After final evaluation and public involvement, the geometric-design schematic shall be developed to the 90% and 100% complete levels. Design of 90% and 100% complete schematics shall be developed to the detail indicated in Section 110.4.
8. The Engineer shall develop a technical memorandum including general criteria, exhibits, and summarizing the alternatives analysis.

E. Deliverable Schematic

The Engineer shall evaluate and document the following in the analysis to optimize the design:

1. Efficient use of the allocated ROW
2. Control of access (COA) and driveway locations
3. Roadway and intersection geometry
4. Cross sections
5. Bicycle and pedestrian layout
6. Drainage and hydraulic design to a preliminary level
7. Stopping sight distance
8. Level of service
9. Safety
10. Traffic and signal operations
11. Construction, ROW, easement, and utility costs
12. Construction sequencing
13. Traffic control during construction
14. Roadside safety appurtenances

15. Environmental mitigation (e.g., noise walls)
16. Bridge layouts and clearance to a preliminary level
17. Railroads
18. Accommodation of ultimate corridor configuration.
19. Accommodation of future cross street expansion as described in local thoroughfare plan (if applicable)
20. Avoidance of utility lines (if feasible)
21. Identification in the implementation plan of when major utilities need to be relocated to avoid delaying construction activities
22. Lane balance diagram for each alternative alignment and the preferred alignment.

F. Data Collection

1. The Engineer shall conduct field reconnaissance and collect data as necessary to complete the schematic design. Design data from record drawings of existing and proposed facilities
2. Existing and future design year traffic data
3. Historical crash data
4. Roadway inventory information, including the number of lanes, speed limits, pavement widths and rating, bridge widths and ratings, and ROW widths
5. Aerial photos, planimetric mapping, and DTM
6. Environmental data
7. Previously prepared drainage studies
8. Adopted land use maps and plans (if available)
9. Federal Emergency Management Agency (FEMA) flood boundary maps and flood insurance studies and models
10. Public and private utility information
11. Plat research for adjacent properties (if available)
12. Local major thoroughfare plan

G. Roadway Design Criteria

The Engineer shall develop the roadway design criteria based on the TxDOT *Roadway Design Manual* and AASHTO *Policy on Geometric Design of Highways and Streets* guidelines. The design criteria must include the following roadway design elements: design speed, lane and shoulder widths, pavement structure and slopes, horizontal curvatures, horizontal and vertical clearances, range of vertical profile grades, and side slopes. If there is a discrepancy between the two sources, the *Roadway Design Manual* will govern unless otherwise directed by the County.

H. Preliminary Design Conference

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

110.2. Schematic Design – General Tasks

A. ROW Property Base Map

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

B. 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.

C. Environmental Constraints

The Engineer shall evaluate and document impacts to environmentally sensitive sites (as identified by the Engineer and verified by the County) 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.

D. Drainage

The Engineer shall use data from as-built plans and FEMA maps to locate drainage out falls 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 must (1) identify the impacts to abutting properties and the 100-year floodplain due to proposed highway improvements; (2) identify the water surface elevations for the 2, 5, 10, 25, 50; and 100-year storm events; (3) identify and locate outfalls; (4) provide drainage outfall descriptions; (5) provide overall drainage area map, sub-drainage area map (as necessary), and storm water detention facilities (if applicable); and provide a preliminary drainage study report identifying the results of the study. The preliminary drainage study report, which must be signed and sealed by a professional engineer licensed in Texas, must include applicable hydrologic and hydraulic models (e.g., HEC-1 and HEC-2, HEC-RAS, HEC-HMS, XP-SWMM). Although Scour Analysis is done as part of PS&E design and omitted from the schematic scope, mitigation strategies to protect drainage, bridge and roadway structures (e.g., gabions, riprap, etc.) from anticipated erosion and scour shall be incorporated into required ROW and easements for the schematic plans.

Drainage Study/Report: The Engineer shall prepare a comprehensive drainage study/report for the drainage design elements for the project. The report shall consist of a summary of the hydrological and hydraulic design considerations and analyses with recommendations for the drainage design for the project limits. Include the 11" x 17" preliminary sheets for the: Drainage Area Maps, Hydraulic Computations, Bridge Hydraulic Data Sheets, and culvert cross-section sheets as an attachment to the report. Cross drainage design shall be performed using HEC-RAS, unless another method is approved by the County.

The Engineer shall perform the following:

1. Hydrologic Analysis

a. Drainage Area Map:

As needed, the Engineer shall delineate the drainage area boundaries within the project area using U.S. Geological Survey (USGS) or suitable topographic maps, available LiDAR elevation data, and other appropriate information. Drainage Area Map shall be included on the Preliminary Hydraulic Data Sheets for inclusion in Drainage Report for the project.

b. Runoff Computations:

The Engineer shall follow Atlas 14 criteria and the methodology outlined in the State Hydraulic Design Manual. The Engineer shall also use a hydrologic check method (such as Regional Regression Equations) for areas greater than 200-Acres to compute peak runoff rates at the studied areas. The report must include the full range of frequencies (50%, 20%, 10%, 4%, 2%, and 1% AEP). The Engineer shall select the methodology depending on the size of watershed and site conditions. Information used in the analysis shall include: the project Drainage Area Maps, aerial photographs, field observations, and channel cross section survey data. The existing FEMA effective hydrologic data will be verified and compared before it is utilized for FEMA coordination and modeling (if available). Runoff Computations shall be included on the Preliminary Hydraulic Data Sheets for inclusion in the Drainage Report for the project.

2. Hydraulic Analysis

The Engineer shall use information collected via field survey, field observations, review of as-built construction plans, and the effective FEMA Models (if available) to develop hydraulic modeling data for existing bridges and FEMA Zoned drainage structures. Software acceptable to the State such as HEC-RAS shall be utilized. Based on the results of the existing conditions hydraulic modeling and analysis, the Engineer shall propose and evaluate a design with the objective of reducing flooding potential, protecting structures from erosion and scour, and mitigating potential impacts on flood levels and flow rates. The hydraulic models for the FEMA Zone A/AE locations consist of:

a. Existing Model

b. Updated Model, Zone AE only (if applicable)

c. Corrected Existing Model, Zone AE only (if applicable)

d. Proposed Model

e. Floodway Models, Zone AE with defined floodways only (if applicable)

3. Preliminary Hydraulic Data Sheets

a. FEMA Zone Structures:

The Engineer shall develop (11" x 17") Preliminary Hydraulic Data Sheets for each bridge or FEMA Zone A/AE drainage structure for inclusion in Drainage Report for the project.

b. Non-FEMA Zone Structures: The Engineer shall develop (11" x 17") Hydraulic Computation Sheets that summarize the input parameters and hydraulic results in table format for the comparison of the existing and proposed structures for the project.

4. Preliminary Culvert cross-section Sheets: Culverts shall be designed as part of the hydraulic analysis and in coordination with the roadway design (geometry and preliminary pavement design), major utility crossings, and anticipated longitudinal drainage systems (storm drains and ditches). The Engineer shall develop (11" x 17") cross-section sheets FEMA Zone A/AE, Bridge-Class

culverts, and non-bridge-class culverts along the project at a scale approved by the County and to determine if additional ROW and easements will be required at the structure.

5. Longitudinal Storm Drains and Ditches

The Engineer shall provide the following services:

- a. Coordination of preliminary parallel ditch designs that convey the approved storm design capacity and incorporate them into the roadway cross-sections.
- b. Develop preliminary estimated size of trunklines and approximate number of inlets for the construction estimate based on the site conditions in the urban design areas along the project.
- c. Determine if area drains are needed due to site conditions and determine additional ROW/easements required as a result.
- d. Determine if there are any underground utility crossings that may conflict with the proposed storm drain design.
- e. Verify storm drains and longitudinal ditches can be developed for gravity flow to outfalls based on the proposed roadway profile designed.

E. ROW Requirements

The Engineer shall determine the ROW requirements based on the proposed alignment, typical sections, design cross sections, access management, terrain, construction requirements, drainage, clear zone, maintenance, intelligent transportation system (ITS), and environmental constraints and mitigation requirements.

F. Design Exceptions

The Engineer shall identify design exceptions and waivers. The Engineer shall determine the necessity for each design exception or waiver for approval. If the County agrees that design exception or waiver is necessary, the Engineer shall prepare the State's required design exception or design waiver documentation. The Engineer shall document the operational and safety analysis for comparison of the no-build, build with standard design, and build with proposed design alternatives. For interstate facilities, the safety analysis must include the following:

1. Expected change in crashes from existing conditions to standard design conditions
2. Expected change in crashes from existing conditions to the proposed design

G. Traffic Data and Projections

The Engineer shall obtain the base year traffic data from TxDOT, County, and the North Central Texas Council of Governments (NCTCOG). 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 the TxDOT Transportation and Programming Division (TPP). The developed traffic projections must be utilized for design and environmental analysis.

The Engineer shall hold a methodology meeting with Tarrant County, TxDOT, and NCTCOG to discuss the traffic projections methodology and assumptions to evaluate traffic demand and future demographics for the conceptual corridor.

The Engineer shall develop traffic forecasts for the roadway and intersections, for

no-build and up to three (3) build alternatives. These projections must 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 traffic analysis package and TxDOT-TPP Standard Operating Procedures. The Engineer shall review the proposed methodology with the County and refine it based on these discussions. The Engineer shall submit the AM and PM peak hour and 24-hour traffic volumes developed by the Engineer to TxDOT for review and approval. The Engineer shall revise the traffic volumes based on TxDOT's comments.

H. Financial Plan and Project Management Plan

The Engineer shall prepare a financial plan (FP) and project management plan (PMP), in accordance with the most recent FHWA Financial Plan Guidance, for submission by the State to the FHWA Division Office for review and approval. The purpose of the FP is to document the project schedule, total project cost, and revenue structure and provide reasonable assurance that sufficient financial resources will be available to implement and complete the project as planned. The FP must 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.

1. The initial FP shall consist of at least six (6) main sections including:
 - a. Schedule
 - b. Cost estimate
 - c. Implementation plan
 - d. Financing and revenues
 - e. Cash flow
 - f. Risk identification and mitigation factors
2. The Engineer, in coordination with County, shall identify and document significant project risks, ownership of each risk, and response strategies as they relate to the financial management of the project's delivery. Risks shall show impacts to costs and schedule, as applicable, and will be either threats or opportunities to cost, schedule and/or funding. The Engineer shall develop a risk matrix to track identified risks and add additional risks as they are identified. The risk register shall be maintained through project development by the Engineer. For scoping purposes, the Engineer shall review and update the risk matrix a minimum of every 6 months or as directed by the County. The risk matrix will be used during the CSRA workshop and for the development of the initial FP and subsequent annual updates.
3. The Engineer shall prepare for and attend a cost and schedule risk assessment (CSRA) 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 CSRA, the Engineer shall conduct a risk analysis assessment and attend, with TxDOT, a risk workshop to quantify schedule and cost impacts for each of the identified risks. The Engineer shall also provide cost spreadsheets and models for input into the FHWA's probability modeling software, review and provide comments on the CSRA summary report, and update cost information in the initial FP to reflect confidence limits established during the CSRA.

4. The Engineer shall provide one (1) annual update (AU) to the initial FP reflecting changes in project finances and funding resources. The update must include revisions to the five (5) 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.
 5. The Engineer shall submit the PMP, FP, and FP AU to the County for review and comment. For scoping purposes, it is assumed that the initial drafts of the FP and FP AU will be reviewed concurrently by the TxDOT Fort Worth District, the TxDOT Design Division, and TxDOT Finance Division. The Engineer shall address the County'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 (3) 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 number of lanes, offset to obstructions, lane widths, and intersection operation and geometry), traffic flow patterns, and transit and traffic operations. The Engineer shall conduct capacity analysis studies for designated locations and sections of roadway and make recommendations for improving traffic flow. Intersection turning movement counts will be obtained for up to 72 hours at Bond Ranch Rd and BUS 287 intersection and 72-hour segment counts at a maximum of two roadway segments. Intersection analyses will be performed using Synchro software. The analysis must be done for existing/base year, opening year, design year (opening+20 year), and interim year (if needed) for existing and up to three (3) build alternatives. HCS will be used as needed to document segment operations. Results of this analysis must be incorporated into the schematic design and used to support quantitative air quality analyses. The Engineer shall develop and submit to TxDOT a traffic and operational analysis report summarizing all analysis performed. The Engineer shall develop and calibrate an existing condition traffic model using microsimulation. The calibration memo must be included in the traffic analysis report. The analysis must be performed using the latest versions of TxDOT-approved software (e.g., HCS, Synchro, VISSIM).
- J. Safety Analysis
- The Engineer shall review and analyze historical crash data for latest 5 full calendar years (i.e., January 1 to December 31, inclusive) with respect to crash characteristics such as severity, crash types, frequency, rates, patterns, clusters, and their relationship to crash contributing factors. The purpose of the historical crash analyses is to determine safety performance of the existing conditions to understand any safety issues within the study area.

Predictive, or quantitative safety analysis, involves using HSM-based methods that use safety performance functions (SPFs) or crash modification factors (CMFs) to estimate anticipated change in crashes from existing condition to the proposed design. The predictive safety analysis must be done for no-build and build

conditions for design year. The purpose of the predictive safety analysis is to compare the safety performance of the no-build and build alternatives to help determine the preferred alternative and to determine the countermeasures, if necessary, to improve safety. Predictive safety analysis must be performed using HSM based tools including Interactive Highway Safety Design Model (IHSDM), Enhanced Interchange Safety Analysis Tools (ISATe), HSS, or other tools acceptable to the County. The Engineer shall develop and submit to the County a safety analysis report summarizing all analysis performed.

K. Bicycle and Pedestrian Accommodations

The Engineer shall comply with the United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations and TxDOT's Bicycle Accommodation Design Guidance. The inclusion of bicycle and pedestrian facilities must be evaluated when the project is scoped. Public input when applicable, as well as local city and metropolitan planning organization for bicycle and pedestrian plans must be considered in this evaluation. These accommodations will be shown conceptually, without full geometric design.

110.3. 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. The Engineer shall develop a single recommended design alternative that optimizes traffic flow and access. The conceptual schematics are to be plan view only. Profile work must be done only to the extent necessary to lay out the proper horizontal geometry.

The schematics must contain the following design elements:

- A. Roadway alignment
- B. Pavement edges, face of curbs, and shoulder lines of roadways, intersections, interchanges, and connecting highways or streets
- C. Typical sections of existing and proposed roadways
- D. Anticipated structure locations (including wildlife crossings and fencing structures)
- E. Anticipated retaining wall and sound wall locations
- F. Anticipated conveyance of major drainage elements
- G. Preliminary ROW and easement requirements and control-of-access locations
- H. Direction of traffic flow and the number of lanes on all roadways
- I. Existing and projected traffic volumes
- J. Existing utilities
- K. Waters of the United States (WOTUS)

110.4. Geometric Design Schematics

The Engineer shall develop geometric design schematics based on the conceptual schematics after the basic layout, lane arrangement, and anticipated ROW and easement impacts depicted on the conceptual schematics are approved. The Engineer shall use Bentley OpenRoads Designer tools in performing this task. The geometric design schematics must include both a plan view and profile view.

- A. The geometric schematic plan view must contain the following design elements:
 - 1. Bentley OpenRoads Designer calculated roadway alignments for mainlanes and cross streets at major intersections and grade separations
 - 2. Horizontal curve data shown in tabular format

3. Pavement edges, curb lines, sidewalks for all roadway improvements
4. Typical sections of existing and proposed roadways
5. Proposed bridge structures, including bridge deck, abutment, bent, and rail locations
6. Proposed retaining walls and sound/noise barrier walls
7. Proposed cross-drainage structures with outfall flow arrows and significant drainage features or waterways identified
8. Existing utilities and proposed utilities
9. Existing property lines and respective property ownership information
10. Existing ROW and easements
11. Proposed ROW and easements adequate for preparation of ROW maps
12. Waters of the US (WOTUS)
13. Existing and projected traffic volumes
14. Lane lines, shoulder lines, and direction of traffic flow arrows indicating the number of lanes on all roadways

B. The geometric schematic profile view must contain the following design elements:

1. Calculated profile grade and vertical curve data including "K" values for all curves and sight distance values for crest vertical curves on the roadways
2. Existing ground line profiles along the roadways
3. Grade separations and overpasses including preliminary abutment and bent locations, girder type, and span lengths
4. Calculated vertical clearances at grade separations and overpasses
5. Anticipated cross-drainage structures with approximate inlet and outfall elevations
6. Approximate locations of existing and proposed major utility crossings

110.5. Cross-Sections

The Engineer shall use a Bentley 3D OpenRoads Designer model to generate preliminary cross-sections at 50 feet intervals (unless otherwise directed by the County) and at culvert locations in conjunction with the geometric schematic. The Engineer shall determine earthwork volumes for use in the cost estimate. The Engineer shall prepare 11" x 17" or roll plots of the cross-sections.

110.6. Retaining Walls

The Engineer shall prepare preliminary retaining wall concepts to be shown on schematics, typical sections, and cross sections.

- A. The Engineer shall determine if any additional walls are required and verify the need for and length of the retaining wall as shown on the ultimate schematic.
- B. The Engineer shall compute and tabulate retaining wall quantities for preliminary design milestone plans submittal.

110.7. 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, the Engineer shall create one rendering for each of the three (3) feasible alternatives. The Engineer shall create a 3D model to support development of a rendering and traffic animation for the preferred alternative from: horizontal and vertical alignments, existing

and proposed DTMs, proposed typical sections, traffic counts, and ground photography. When requested by the County, the Engineer shall use aerial video footage captured by unmanned aircraft systems (UAS).

The use of UAS is regulated by the Federal Aviation Administration (FAA). The Remote Pilot in Command (RPIC) must possess a current FAA Remote Pilot Certificate (14 CFR Part 107) and be sufficiently trained, capable, and competent to operate the type of system in the environment in which it is to be operated. The RPIC must be responsible for the safe conduct of the UAS flight. Visual Observers as required must be familiar with UAS operations and in positive two-way communication with the RPIC. Additionally, operators must comply with the general safety protocols established in TxDOT's *Flight Operations Manual*.

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

110.8. Preliminary Construction Sequence

The Engineer shall prepare preliminary construction sequence layouts in conjunction with the geometric design schematic depicting the major phasing and traffic detours anticipated to safely convey traffic. The layouts must demonstrate that adequate horizontal and vertical alignments are maintained, sufficient lane widths and shoulder widths or barrier offsets are feasible, and construction zones are adequate for constructability of all proposed features. Proposed construction detours must ensure that adequate superelevation is provided. The layouts must indicate how existing pedestrian and bicycle facilities are accommodated for each phase.

110.9. 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 must be used in preparation of the estimate. The cost estimate will be for each milestone submittal (30%, 60%, 90% and Final schematic).

110.10. Engineering Summary Report

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

110.11. Support or Attendance at Value Engineering Study

The Engineer shall provide staff to participate in a (5) day Value Engineering (VE) study for the Ultimate Project. The project manager must attend the first day for the project overview and last day for summary of the VE study.

110.12. Schematic Design Project Deliverables

In conjunction with the performance of the services included under Function Code 110 of this exhibit, the Engineer shall provide the following draft and final documents and associated electronic files as applicable

A. Draft and final copies of the engineering summary report

- B. Draft and final copies of the traffic and operational analysis report and safety analysis report
- C. Draft copies of the preliminary drainage study
- D. Draft and final copies of the feasible alternatives on 11" x 17" cut sheets or rolls, as requested by the County
- E. Draft and final copies of the conceptual design schematics roll plots
- F. Draft and final copies of the geometric schematic layouts (1 inch = 100 feet)
- G. Draft and final copies of the design schematic cross-sections on 11" x 17" cut sheets or roll plot format, as requested by the County
- H. Electronic 3D model copy of the preliminary cross-sections created using Bentley OpenRoads Designer software
- I. Six final copies of the preliminary drainage study
- J. Electronic submittal of the hydrologic and hydraulic model digital files from the drainage study
- K. Copies of the preliminary construction sequence layouts in a roll plot or 11" x 17" format, as requested by the County
- L. Copies of the preliminary construction sequence typical sections in 11" x 17" format
- M. Electronic copy of the renderings for the feasible alternatives and 3D rendering and traffic simulation for the preferred alternative
- N. Electronic files shall be furnished to the County on a USB flash drive
- O. Traffic data schematics
- P. Traffic projections methodology memo
- Q. Average daily corridor traffic projections report
- R. Risk management plan
- S. Participation in CER
- T. Draft project management plan
- U. Draft financial plan
- V. Final project management plan
- W. Final financial plan
- X. Line schematics with traffic data shown
- Y. Utility plan – electronic file in latest version of MicroStation fully compatible with Bentley OpenRoads Designer civil design system
- Z. Design exception and design waiver documents
- AA. Hard copy of a draft hydraulic report for review and comment
- BB. For major culvert crossings (FEMA Zone A/AE and Bridge-Class), hydraulic data sheets and preliminary layouts
- CC. Drainage report – one (1) hard copy of final drainage report, one (1) electronic copy of the entire drainage report in PDF format, and computer files of hydrologic and hydraulic modeling with appropriate labeling of location, CSJ, and submittal date
- DD. Retaining wall concept layouts
- EE. Geotechnical report
- FF. Cost estimates for each milestone submittal
- GG. KMZ or KML file of conceptual design schematic created from applicable DGN files for reviewing in Google Earth
- HH. Final schematic 3D model created using Bentley OpenRoads Designer software
- II. Draft and final copies of traffic analysis report

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

SOCIAL, ECONOMIC AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT

120.1. Environmental Documentation Standards

Each environmental service provided by the Engineer must have a deliverable. Deliverables must summarize the methods used for the environmental services and the results achieved. The summary of results must be sufficiently detailed to provide satisfactory basis for thorough review by the State and (where applicable) other agencies with regulatory oversight. All deliverables must meet regulatory requirements for legal sufficiency and adhere to the requirements for reports enumerated in the State's National Environmental Policy Act of 1969 (NEPA) Memorandum of Understanding (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 all supporting environmental documentation to determine whether documents conform with:

1. Current Environmental Compliance Toolkit guidance, documentation requirements, and templates published by TxDOT's Environmental Affairs Division (ENV) 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. Guidelines contained in *Improving the Quality of Environmental Documents, A Report of the Joint AASHTO/ACEC Committee in Cooperation with the Federal Highway Administration* (May 2006) and the AASHTO Practitioner's Handbook 15 – *Preparing High-Quality NEPA Document for Transportation Projects* (July 2014) for:
 - a. Readability, and
 - b. Use of evidence and data in documents to support conclusions.

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

B. The Engineer shall provide materials to support maintenance of the project environmental record in TxDOT's Environmental Compliance Oversight System (ECOS), including project review, completing the work development plan screens, uploading documents, and completing activities as assigned by the TxDOT Fort Worth District. All required materials will be uploaded to ECOS by the Fort Worth District Environmental Manager or as instructed by TxDOT Fort Worth District Environmental staff.

C. Deliverables must contain all data acquired during the environmental service and be written to be understood by the public in accordance with the TxDOT's Environmental Toolkit guidance, documentation standards, and current guidelines, policies, and procedures.

D. Electronic versions of each deliverable must be written in software that is fully compatible with the software currently used by the County and State and provided in the native format of the document for future use by the County and 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 must be a single, searchable .pdf file. The Engineer shall deliver the electronic files in both the document's native format and the PDF format.

- E. When the environmental service is to apply for a permit (e.g., USCG permit or USACE permit), the Engineer shall provide the permit application and all supporting documentation to the State and County as the deliverable.
- F. Submission of Deliverables
 - 1. Deliverables must consist of the preparation of Environmental Assessment (EA). Technical reports and documentation must be prepared to support the EA.
 - 2. All deliverables must comply with all applicable state and federal environmental laws, regulations, procedures, and TxDOT's ENV Compliance Toolkits, documentation requirements, and templates.
 - 3. All deliverables will consist of draft and final documents.
 - 4. On the cover page of any environmental documentation, the Engineer shall insert the following language in a way that is conspicuous to the reader:
"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 9, 2019, and executed by FHWA and TxDOT."
- G. The County will 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 and County 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. To include with the revised document a comment response form (matrix) in the format provided by the State.
 - 5. If after the second round of review and comment by the State and County are not satisfactory the Engineer will schedule a meeting to resolve the comments to minimize the number of revisions required for technical as well as the environmental document.
- H. The Engineer shall provide photographs and graphics that clearly depict details relevant to an evaluation of the project area.

120.2. Environmental Assessment (EA) Content and Format

- A. The Engineer shall provide an EA and ensure that:
 - 1. The EA meets the requirements of 23 CFR §771.119 and TAC, Title 43, Part 1, Chapter 2 and the EA content is sufficiently detailed to meet regulatory requirements for legal sufficiency and current (at the time of creation) TxDOT ENV guidance and Environmental Compliance Toolkits.
 - 2. Exhibits to be included in reports or EAs must not exceed 11 inches x 17 inches and must be in color. Text pages must be 8.5 inch x 11 inch. Exhibits and text in

reports or EAs must be reproducible via photocopying without loss of legibility. The EA documents must be reproduced on plain white paper unless otherwise approved in advance in writing by the State.

3. The EA must use quality maps and exhibits, and must incorporate by reference and summarized background data and technical analyses to support the concise discussions of the alternatives and their impacts.

B. Minimum Deliverables: (Additional deliverables to be identified in a work authorization based on work assigned.)

- i. Preliminary Draft EA for District review
- ii. Revised Draft EA (per District comments)
- iii. Draft EA for State review
- iv. Revised Draft EA (per State comments)
- v. Draft EA for Public Hearing
- vi. Final EA with FONSI

120.3. Environmental Technical Analyses and Documentation

A. Definition of technical analyses and documentation for environmental services

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

The State may determine what technical reports and documentation are necessary for any given project. The Engineer shall prepare all technical reports and documentation for the State with sufficient detail and clarity to support environmental determinations. All technical reports must be compliant with TxDOT's Environmental Compliance Toolkits, documentation requirements, and templates. The environmental document must reference the technical reports.

Environmental technical reports and documentation must include appropriate NEPA or federal regulatory language in addition to the purpose and methodology used in delivering the service. Technical reports and forms must use templates and documentation standards as applicable and include sufficient information to determine the significance of impacts.

The Engineer shall prepare and maintain an environmental constraints map. The Engineer shall provide the traditional electronic and hard copy of the constraints map.

B. Minimum Deliverables:

1. TxDOT Fort Worth District Environmental Information Form
2. Environmental Constraints Map
3. Project Scoping Materials
4. Draft technical analyses and documentation and requested revisions thereof
5. Final technical analyses documentation (approved by TxDOT)
6. EPIC Sheets

C. The environmental technical analyses and documentation anticipated include:

1. Protected Lands

The Engineer shall identify and evaluate the potential for impacts to occur to the following types of protected lands:

- a. Section 4(f) Evaluations
Identify the protected 4(f) properties including public lands and historic sites. The Engineer shall provide Section 4(f) Evaluations appropriate to the level of anticipated unavoidable impact. The Section 4(f) Evaluation must conform to the appropriate TxDOT Section 4(f) checklist for exceptions, *de minimus*, and programmatic evaluations. For individual Section 4(f) Evaluations, the format and outline must be approved by the State beforehand. All Section 4(f) Evaluations must meet the requirements set forth in TxDOT's ENV Compliance Toolkits. The 4(f) Section of the environmental document states the reason a Section 4(f) evaluation is being completed. The 4(f) Section of the environmental document discusses the presence of all Section 4(f) properties located in the project area.
- b. Section 6(f) Evaluation
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 and document. – NOT APPLICABLE
- c. Chapter 26 Properties
Identify and address potential impacts to properties protected by Chapter 26 of the Texas Parks and Wildlife Code. – NOT APPLICABLE
2. Community Impacts Analysis
The Engineer shall provide community impact analyses. Community impacts includes environmental justice, limited English proficiency, and other issues as addressed in TxDOT environmental guidance. The community impact analyses may include a Community Impact Narrative Report. The report must follow guidance provided in TxDOT's Community Impacts Assessment Toolkit. The assessment may include:
 - a. A community profile;
 - b. A displacement analysis;
 - c. An access and travel pattern analysis;
 - d. A community cohesion analysis;
 - e. Summary of public involvement process including methods used to accommodate persons with limited English proficiency; and
3. Induced Growth Impact Analysis and Cumulative Impacts Analysis
The Engineer shall perform analysis to fulfill the requirements of NEPA and the most current version of TxDOT's Guidance on Preparing Impact Analyses and Cumulative Impacts Analysis Guidelines in TxDOT's ENV Compliance Toolkits.
4. Air Quality Studies
The Engineer shall prepare all required technical reports and the air quality section of all environmental documents in accordance with the current version of the TxDOT's *Environmental Handbook for Air Quality* and Air Quality Toolkit. The State may determine what technical reports and documentation are required for any given project. The required technical reports and documentation may include:
 - a. Transportation Conformity Report Form and applicable coordination
 - b. Carbon Monoxide Traffic Air Quality Analysis (CO TAQA) technical report,
 - c. Quantitative MSAT technical report and conference call,

- d. Congestion management process analysis,
 - e. Applicable disclosure statements in the environmental document as prescribed in the Guidance for Preparing Air Quality Statements,
 - f. Air quality cumulative and induced growth impacts analysis as specified above in paragraph 120.5, C, 5-Induced Growth Impact Analysis and Cumulative Impacts Analysis and included in the environmental document, and
 - g. Response to public comments received on air quality issues.
5. Noise Analysis Technical Reporting
 The Engineer shall prepare all necessary noise analyses and technical reporting.
- a. Noise Analysis Technical Reporting Requirements:
 - (1) Computer modeling of existing and predicted noise levels using existing and predicted design year traffic data (k-factor, annual average daily traffic (AADT), fleet mix and turning movements);
 - (2) Field measurements of existing noise levels and validation of existing model;
 - (3) Determining predicted noise impact contours for undeveloped property;
 - (4) Barrier analysis for impacted receptors.
 - b. Noise Analysis General Requirements.
 - (1) The Engineer shall use TxDOT's .DGN file coordinate system for all traffic noise modeling, so that all design files and traffic noise modeling software coordinate systems are the same.
 - (2) The Engineer shall provide TxDOT with all .DXF files used for the traffic noise model.
 - (3) The Engineer shall review all proposed noise barrier locations as part of the traffic noise modeling process.
 - (4) The Engineer shall not begin identification of noise sensitive land uses unless TxDOT's Environmental Affairs Division's Historical Studies Branch (ENV-Historical Studies) has approved a Project Coordination Request (PCR).
6. Water Resources
 The Engineer shall provide environmental documentation, conduct field surveys, and provide analysis of water resources for compliance with state and federal regulations as described in the Environmental Guide: Volume 2 Activity Instructions, <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/060-06-gui.pdf>, and the associated forms, templates, and guidance found in the Water Resources section of the Natural Resources Toolkit, <https://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/natural-resources.html>.
- The Engineer shall provide the following water analysis:
- a. Surface Water Analysis Form, including analysis of:
 - (1) Section 404 of the Clean Water Act
 - (2) Section 303(d) of the Clean Water Act
 - (3) General Bridge Act/Section 9 of the Rivers and Harbors Act
 - (4) Section 10 of the Rivers and Harbors Act
 - (5) Section 401 of the Clean Water Act
 - (6) Executive Order 11990, Protection of Wetlands
 - b. TCEQ Edwards Aquifer Rules Analysis – NOT APPLICABLE–

- c. International Boundary Water Commission (IBWC) approval – NOT APPLICABLE
 - d. Coastal Barrier Resources Act (CBRA) analysis – NOT APPLICABLE
 - e. National Wild and Scenic Rivers Act (NWSRA) analysis – NOT APPLICABLE
 - f. Texas Coastal Management Program (TCMP) analysis – NOT APPLICABLE
 - g. WOTUS Delineation report prepared in accordance with the most recent Water Features Delineation Report including all supporting forms and exhibits
 - h. Section 404/10 Impacts Table prepared in accordance with TxDOT ENV's Section 404/10 Impacts Table and Instructions.
 - i. Section 404/10/9 Permitting Package – TO BE INCLUDED DURING PS&E
 - j. For all WOTUS surveys, the Engineer shall:
 - (1) Provide the results of the land survey in electronic DGN file format to be incorporated into the schematic and plans. GIS and KMZ files of the land survey must also be provided.
 - (2) Determine the acres of permanent and temporary impacts and linear feet of impacts at each WOTUS, and provide figures of the WOTUS and associated impacts overlaying the schematic and plan sheets.
7. Biological Resources
 The Engineer shall provide environmental documentation, conduct field surveys, and provide analysis of biological natural resources for compliance with state and federal regulations as described in the Environmental Guide: Volume 2 Activity Instructions, <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/060-06-gui.pdf>, and the associated forms, templates, and guidance found in the Natural Resources Toolkit, <https://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/natural-resources.html>. The Engineer shall provide the following biological/natural resource analysis:
- a. Species Analysis Form, including:
 - (1) Species Analysis Spreadsheet, including a habitat analysis for the project area and field surveys for protected species or suitable habitat
 - (2) EMST Mapping and Field Verification for coordination with TPWD Bald and Golden Eagle Protection Act (BGEPA) analysis and coordination assistance.
 - b. Farmland Protection Policy Act (FPPA) analysis and completion of the Farmland Conversion Impact Rating for Corridor Type Projects NRCS-CPA-106 form.
 - c. Marine Mammal Protection Act (MPPA) analysis – NOT APPLICABLE
 - d. Essential fish habitat (EFH) analysis – NOT APPLICABLE
 - e. Preparation of USFWS/National Marine Fisheries Service (NMFS) species consultation – NOT APPLICABLE
 - f. For all projects within a USFWS Designated Karst Zone or Critical Habitat: - NOT APPLICABLE
8. Initial Site Assessment (ISA) with Hazardous Materials Project Impact Evaluation Report
 The Engineer shall provide an ISA for the limits of the proposed project in accordance with Statement of Work for Hazardous Materials Processes related to NEPA in the TxDOT Hazardous Materials Management Toolkit

<http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/haz-mat.html>).

9. Archeological Survey and Documentation

The Engineer shall provide archeological resource identification, evaluation, and documentation services. In compliance with TxDOT's ENV Compliance Toolkits, the Engineer shall provide the following archeological services/deliverables using report templates provided by the State:

- a. Archeological Background Study (ABS) – prepared prior to initiating any field work and following TxDOT's ENV Compliance Toolkits
- b. Antiquities Permit – if results of the ABS indicate field survey is warranted, the Engineer shall prepare a Scope of Work and Antiquities Permit application to be submitted to TxDOT ENV's Archeological Studies Branch (ENV-ARCH) for review and processing. The ENV-approved Scope of Work and permit application will be submitted by the Engineer to the Texas Historical Commission (THC) for approval prior to conducting any field surveys.
- c. Archeological Survey – The Engineer shall conduct an archeological survey for the reasonable alternatives sufficient to satisfy state and federal regulations where ROEs have been obtained. The archeological field survey shall include pedestrian reconnaissance and shovel testing within the Area of Potential Effects (APE). The Engineer shall follow the THC-approved Archeological Survey Standards for Texas outlined by the Council of Texas Archeologists (Survey Standards). All excavated soil will be screened through ¼-inch mesh and artifacts will be analyzed in the field and reburied; no artifacts will be collected. All sites found within the APE shall be recorded on State of Texas TexSite Archeological Site Data forms and documented in accordance with the Survey Standards. The Engineer also assumes that backhoe trenching may be required within the APE. All backhoe trenching excavations shall conform to the Survey Standards. The Engineer shall prepare an archeological resources survey report that conforms to the ENV-ARCH Review Standards for Archeological Survey Reports. The report shall summarize the results of the fieldwork and provide recommendations for any additional archeological work, if required, with appropriate justification. The report will evaluate the National Register of Historic Places (NRHP)/State Antiquities Landmark (SAL) eligibility for all sites documented during the survey. The draft report will be presented in electronic format to the County and the State for review and comment. Upon receipt of review comments, the Engineer shall prepare the final report and distribute in compliance with the terms of the permit. All notes and records must be curated at a federally approved curatorial facility

10. Historic Resource Identification, Evaluation, and Documentation

The Engineer shall provide historic resource identification, evaluation, and documentation services. In compliance with TxDOT's ENV Compliance Toolkits, the Engineer shall provide the following historic resource services/deliverables:

- a. Project Coordination Request of Historic Resources (PCR),
- b. Historic Resources Research Design, and
- c. Historic Resource Survey Report including coordination with potential consulting parties

All services, except the historic resource PCR, must have prior approval by TxDOT's Environmental Affairs Division's Historical Studies Branch (ENV-HIST)

to be performed. The historic resource PCR must be accepted by ENV-HIST prior to survey field work. Any resources determined NRHP-eligible where impacts are possibly unavoidable may require an Intensive Survey at the discretion of ENV-HIST. The Intensive Survey would be contracted separately by ENV-HIST and the results shared with the project team for inclusion in the HRSR and NCTCOG's Environmental Document.

11. Floodplain Impacts

The Engineer shall determine whether the transportation activity has the potential to affect floodplains. Studies for floodplain impacts must fulfill the requirements of Executive Order 11988 and 23 CFR 650, Subpart A.

Documentation must:

- 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 FEMA mapped floodplains, including 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 might encroach on the base (100-year) floodplain (encroachments), where an alternative might support incompatible floodplain development, and the potential impacts of encroachments and floodplain development. This identification must 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, 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 must include an evaluation and discussion of practicable alternatives to the structure or to the significant encroachment. The report must 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, provide a preliminary indication of whether the encroachment is consistent with or requires a revision to the regulatory floodplain. If the preferred alternative encroaches on a regulatory floodplain, the report must discuss the consistency of the action with the regulatory floodplain. In addition, the report must document coordination with FEMA and local or state agencies with jurisdiction indicating that a revision is acceptable or that a revision is not required.
- i. If the preferred alternative includes a floodplain encroachment having significant impacts, the report must include a finding that it is the only practicable alternative as required by 23 CFR 650, Subpart A. The finding must refer to Executive Order 11988 and 23 CFR 650, Subpart A. In such cases the report must document compliance with the Executive Order 11988 requirements and must 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

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

The Engineer shall:

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

120.4. Public Involvement

A. The Engineer shall provide public involvement activities, which might include:

1. Conducting up to twelve (12) meetings with property owners, airport owners, developers, stakeholders, local governments and various agencies to discuss and review the schematic design and the NEPA process. The Engineer shall document all meetings.
2. Developing a public involvement plan that specifies all activities to be performed. Public involvement activities must be carried out in compliance with the contract. The plan must also discuss outreach strategies for both the public and targeted strategies for limited English proficiency populations.
3. Compiling and updating a mailing list of people, agencies, and organizations interested in the transportation activity.
4. Prepare Fact Sheet and Project Location Map.
5. Prepare project updates for TxDOT and County websites.
6. Conducting up to three (3) stakeholder workshops and three (3) technical working group meetings including making arrangements for the meetings, preparing invites and PowerPoint presentations and meeting minutes.
7. Attend pre-meetings with the State, preparing the Roles and Responsibilities Spreadsheet and conducting up to three (3) public meetings including the following:
 - two (2) public meetings at one location; and
 - one (1) public hearing at one location during the project development process.

All meetings will be held virtually with an in-person option. The Engineer shall prepare schematic exhibits, constraints maps, and other necessary exhibits, and assist the State with all presentations. The Engineer shall not hold public meetings or hearings in the absence of State personnel.

8. Coordinating, reserving, and paying for all meeting locations and facilities.
9. Preparing the adjacent property owner and resident list; mailing out and paying for notices; preparing, publishing and paying for notices to major and local newspapers.
10. Hiring law enforcement for public meetings and court reporter for hearing.
11. Coordinating and paying for audio and visual rental equipment and changeable message boards.
12. Arranging a pre-meeting with the County to review all exhibits and other materials to be used at public meetings or hearings.

13. Coordinating project marketing with project stakeholders including the Tarrant County Community Relations and other local agencies and governments. This includes developing press releases, FAQs, and social media content for others to post on existing websites and social media accounts.
14. Providing personnel to staff meetings and hearings; including, people to perform registration, make presentations, and answer questions.
15. Developing and submitting to the County up to three (3) documentation packages for public meetings and public hearing documentation. The Engineer shall include in the packets all public comments received and responses to comments. Packets will be posted to the project website and the Engineer shall send an email to interested parties notifying them of the posting as a response to comments. The Engineer shall comply with the State's environmental compliance toolkits related to public involvement.
16. Providing up to four (4) email updates to project stakeholders and interested persons about the project.

120.5. Right of Entry.

Prior to performing any work outside of the City, County or State's right of way, the Engineer shall request right of entry from public and private landowners to allow services (e.g., environmental services, surveying services, geotechnical services) to be performed and shall request concurrence from the County. The Engineer shall prepare right of entry permissions, which must be signed by the landowner. Letters or other materials seeking right of entry must 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 these services. Rights of Entry for environmental studies shall be requested following the TxDOT ENV process and using TxDOT's Right of Entry Agreement Forms for Environmental Investigations. The Engineer shall not commit acts which will result in permanent damages to private property and shall make every effort to comply with the wishes and address the concerns of private property owners.

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

A. General Requirements Underground Excavation

If necessary, the Engineer shall contact Texas Excavation Safety System, Inc. (DIGTESS) or call telephone number 811 to have underground utilities marked prior to digging the holes for monuments. The Engineer shall maintain documentation of all notification calls. The Engineer shall comply with Texas' excavation laws.

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

The Engineer shall take the following preventive measures while cutting, pruning, or removing oak trees in counties which have confirmed cases of Oak Wilt or when directed by the State:

1. When possible, employ alternative methods instead of pruning or cutting oak trees.
2. When possible, perform necessary pruning and cutting of healthy trees during the winter months of January and February, when Sap Beetles are least active, and avoid pruning or cutting during Spring months when Sap Beetles are most active.
3. Treat wounds with pruning paint in Oak Wilt infected counties to discourage insects, especially during warm weather.

4. Sterilize all pruning tools between each tree with either Lysol™ spray or a 70 percent rubbing alcohol solution.
5. Destroy tree cuttings by burning or burying the wood or dispose of the wood in another approved method.

130.1. General Standards for Surveying*

The Engineer shall ensure that all survey work meets or exceeds the standards set in the Professional Land Surveying Practices Act, the General Rules of Procedures and Practices of the Texas Board of Professional Engineers and Land Surveyors (TBPELS), and the TxDOT *Survey Manual*, latest edition. All survey work must be accomplished in an organized and professional manner. All survey work is subject to review and approval by the County.

The Engineer shall use TxDOT *ROW Preliminary Procedures for Authority to Proceed Manual*, (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 (ROW) documents produced, including ROW maps, property descriptions (including parcel plats), and other ROW work products, unless otherwise instructed by the State.

Unless otherwise directed by the County and State, the Engineer shall use (1) 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 and (2) the datum adjustment currently in use by the State unless otherwise instructed by TxDOT.

Project or surface coordinates must be calculated by applying a combined adjustment factor (CAF) to State Plane Coordinate values. If provided by the State, the Engineer shall use a project specific CAF. Reasons to use a project specific CAF include (1) to match existing or ongoing projects, (2) to conform to a county-wide surface adjustment factor, or (3) to be calculated specifically for the project area.

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

All work utilizing the Global Positioning System (GPS), whether primary control surveys or other, must meet or exceed the requirements provided by the TxDOT *Survey Manual*, latest edition, to the order of accuracy specified in the categories listed below. If the order of accuracy is not specified in this exhibit the work must meet or exceed the order of accuracy specified in the publications listed in this section.

All conventional horizontal and vertical control surveys must meet or exceed the requirements provided by 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. If the order of accuracy is not specified in this exhibit, the work must meet or exceed the order of accuracy specified in the publications listed in this section.

If requested by the County, the Engineer shall cause the performing registered professional land surveyor (RPLS) to certify the work performed as true and correct

according to Federal Geodetic Control Subcommittee (FGCS) standards, the TxDOT *Survey Manual*, latest edition, or the TSPS *Manual of Practice for Land Surveying in the State of Texas*, as applicable.

The Engineer shall provide survey data (both original and processed) to the County on a CD, DVD, USB flash drive, 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 Word, Bentley MicroStation, Bentley OpenRoads Designer civil design system, Bentley GEOPAK Survey, Microsoft Excel, and ESRI ArcGIS. 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 County or State.

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

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 County.

130.2. Specific Work to Be Performed

The Engineer shall provide surveying services for projects and locations as directed by the County per the function codes and description of work provided below.

A. ROW Mapping

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

1. Purpose

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

2. Definitions

In this exhibit, the following definitions apply:

- a. Abstract Map means a scale drawing prepared from record documents depicting proposed ROW lines, existing ROW lines, easement lines, and private property lines with relevant grantee names, recording data, and recording dates.
- b. Closure/Area Calculation Sheet means 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.
- c. Denial of Access Line means a line that indicates specific location where access to the roadway is denied.
- d. Property Description means 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 consisting of the following two parts:
 - (1) 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.

- (2) Parcel plat, which is an 8.5" x 11" formatted scaled drawing depicting all the information shown on the ROW map regarding an individual parcel of land to be acquired.
- e. Owner means the most current title holder of record as determined by a study of the real property records.
 - f. Parent Tract means 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 ROW, easement, or separate ownership which destroys unity of use.
 - g. Parent Tract Inset means a small line drawing, to an appropriate scale, of the parent tract perimeter placed upon the ROW 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 ROW map. Since parent tract insets are used to identify the limits and location of parent tracts, they must include public ROW, utility easements and fee strips, and identifiable water courses which bound the parent tract.
 - h. P.O.B. means point of beginning, which is a corner of the parcel of land to be acquired, located on the proposed ROW line and being the beginning terminus of the first course of the property description.
 - i. P.O.C. means point of commencing, which is a monumented property corner which can be identified in the real property records and is located outside the proposed ROW 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 ROW corridor may be used.
 - j. Preliminary ROW Layout means a drawing to scale depicting proposed ROW lines; existing ROW 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 ROW lines and to each PC, PT, and angle point in the existing ROW lines in areas of no proposed acquisition.
 - k. ROW means right of way
 - l. ROW Maps means a series of 22" x 34" 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 ROW project.
3. Procedure
- The Engineer shall ensure that the survey meets or exceeds the precision and accuracy requirements of the TBPELS.
- a. Abstract Map
The Engineer shall prepare an abstract map sufficient to determine the following:
 - (1) All interests of public record held in the land to be acquired.

- (2) The total record holdings to be acquired from an owner contiguous to a land.
- (3) All interests in land held in common to be acquired (shopping mall parking lots, subdivision reserves, etc.)
- (4) All improvements proposed by other agencies that might have a bearing on project development.
- (5) All called monuments, bearings, and distances shown in record documents.

b. ROW Map

The Engineer shall field locate significant items such as: property corners, existing ROW markers, improvements, and visible utilities. The Engineer shall verify and update the planimetric file as directed by the County.

The Engineer shall prepare a ROW map for each proposed ROW project. A ROW 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 County. The Engineer shall use TxDOT standard title sheets, index sheets, and plan sheets, copies of which the Engineer shall request and secure for all purposes of this Contract.

By mutual agreement between the TBPELS and the State, ROW maps need not be signed and sealed by a RPLS.

Plan sheets must include the following:

- (1) Proposed ROW lines. Proposed ROW lines must be labeled with appropriate bearings, distances, and curve data. Curve data must include the radius, delta angle, arc length, and long chord bearing and distance.
- (2) Existing ROW lines. Existing ROW lines must be labeled 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.
- (3) Proposed project baseline alignment. Proposed project baseline alignment must be labeled with appropriate bearings, distances, and curve data. Curve data must include the station of curve, point of intersection (PI), radius, delta angle, arc length, tangent length, long chord bearing, and distance, and the northing (N) and easting (E) coordinates of the curve PI. Each alignment PCs, PTs, and even 500-foot station must be clearly labeled with its station value.
- (4) Proposed paving lines. 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 County must be shaded with a dot pattern or highlighted by some other means acceptable to the County.
- (5) Denial of Access lines. Denial of Access lines must sufficiently indicate areas where access is to be denied and where access is to be permitted.

- (6) Private property lines. Private property lines must be labeled 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.
- (7) League lines and survey lines. League lines and survey lines must be shown and identified by name and abstract number.
- (8) County lines and city limit lines. County lines and city limit lines must be located and identified by name.
- (9) North arrow. A north arrow must be shown on each sheet, and, if possible, located in the upper right corner of the sheet.
- (10) Monuments. Monumentation set or found must be shown and described as to material and size.
- (11) PC, PT, and angle points. Station and offset must be shown for each PC, PT, and angle point in the proposed ROW lines. Stations and offsets must be shown with respect to the proposed centerline alignment.
- (12) Intersecting and adjoining ROW. Intersecting and adjoining public ROW must be shown and identified by name, ROW width, and recording data.
- (13) Railroads. Railroads must be shown and identified by name, ROW width, and recording data.
- (14) Utilities corridors. Utility corridors must be identified as to easement or fee.
- (15) Easements. Easements and fee strips must be shown and identified by width, owner, and recording data.
- (16) Set-back lines. Set-back lines (e.g., building lines) must be shown and identified.
- (17) Improvements. Visible improvements located within the proposed ROW corridor or within 50 feet of a proposed ROW line must be shown and identified.
- (18) Structures.
 - i. Structures must be identified as commercial or residential, by number of stories, and as to type (e.g., brick, wood frame).
 - ii. Structures that are severed by a proposed ROW line must be dimensioned to the extent necessary to completely delineate the severed parts.
 - iii. Parking areas, billboards, and other on-premise signs that are severed by a proposed ROW 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 ROW corridor.
 - iv. For structures located outside the proposed ROW corridor but within ten feet of a proposed ROW line, the shortest distance between the structure and the proposed ROW line must be shown.
 - v. If the structure is an element of the planimetric furnished to the Engineer by the State, the Engineer may determine the shortest distance to the proposed ROW line by measuring it in the

planimetric. However, if the distance is less than three feet, the Engineer shall verify the distance in the field.

- (19) Utilities. Visible utilities located within the proposed ROW corridor or within 50 feet of a proposed ROW line must be shown and identified.
- (20) Underground fuel storage tanks. Visible location of vents and filler caps of underground fuel storage tanks situated within the proposed ROW corridor or within 50 feet of the corridor must be determined and shown.
- (21) Points of commencing and points of beginning. 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. A point of commencing is not required in the case of a total taking without a remainder.
- (22) Parcels. Each parcel of land to be acquired must be identified by a parcel number, which must appear in the ownership tabulation and on the ROW map in the proximity of the respective parcel. If the Engineer is unfamiliar with the criteria used by the State to assign parcel numbers, the Engineer shall seek the assistance of the State at the time the abstract map is complete.
- (23) Ownership tabulation. An ownership tabulation must be shown that includes the parcel number, existing area of the parent tract, lots and blocks 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 or 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 ROW map by the State. The Engineer must provide several blank lines in the tabulation block to facilitate future map additions.
- (24) Parent tract inset. A parent tract inset must be shown for each parent tract that cannot be shown to scale on the ROW 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.
- (25) Data sources. 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 name or identification number, State Plane Coordinate zone information, epoch information, grid or surface values and the combined adjustment factor or surface adjustment factor.
- (26) Notes. Appropriate notes must be included on the title sheet and each map sheet stating the following:
 - i. Month (or months) and year abstracting upon which the map is based.
 - ii. Month (or months) and year field surveys were conducted upon which the map is based.
 - iii. Month and year the map was completed by the Engineer.
- (27) ROW CSJ number. The ROW CSJ number, if available, must be shown on each ROW map sheet.

- (28) Tick marks. The Engineer 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.

c. Exhibits

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

(1) Metes and bounds description

A metes and bounds description must be prepared for each parcel of land to be acquired. The Engineer shall follow the standard formats for metes and bounds descriptions that the State has developed. If requested by the Engineer, the State will provide copies of the standard formats. Metes and bounds descriptions must include the following:

- i. State, county, and survey within which the proposed parcel of land to be acquired is located.
- ii. Reference to unrecorded and recorded subdivisions by name, lot, block, and recording data to the extent applicable.
- iii. Reference by name to the grantor and grantee, date and recording data of the most current instruments 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 must make clear which date is being used.
- iv. A point of commencing.
- v. A point of beginning with the appropriate N and E surface coordinates.
- vi. 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 labeled 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 ROW line, an existing ROW line, or a property line of the parent tract. Each property line of the parent tract must be described with an appropriate adjoiner call.
- vii. A description of all monumentation set or found, which must include size and material.
- viii. A reference to the source of bearings, coordinates, and datum used.

(2) Parcel plat

The Engineer shall prepare a parcel plat for each parcel of land to be acquired. The Engineer shall follow the standard formats for parcel plats that the State has developed. If requested by the Engineer, the State will provide copies of the standard formats. Parcel plats must

include all items of information shown on the ROW map that concern 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 ROW mapping which have proven to facilitate the processes of negotiation, appraisal, relocation assistance, and condemnation. The Engineer shall adhere to these standards and formats to every extent possible to ensure that the needs of the State are met.

5. General Specifications

The following general specifications are applicable for ROW mapping:

- a. Completed ROW 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. ROW 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 ROW projects with prior approval by the State.
- d. The smallest size lettering acceptable on a ROW map shall be 1/10 of one inch (Leroy #100) because ROW maps are reduced in size by one-half for archiving purposes. A ROW map that 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 ROW 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 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 8.5" x 11" bond paper.
- h. The Engineer shall obtain State approval prior to using a paper product not previously approved by the State.

6. General Requirements

- a. Copies of instruments of record submitted to the State must be indexed by parcel number.
- b. Coordinates appearing on ROW maps, on parcel plats, and in property descriptions must be surface coordinates based on the Texas Coordinate System of 1983. 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 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).

- c. Line and curve tables may be used when necessary.
 - d. 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.
 - e. A minimum four inch by four-inch space shall be reserved at the bottom right corner of each map sheet for future revision notes.
 - f. The State may allow the Engineer to set a 5/8-inch iron rod with the state's aluminum cap (or other appropriate monument) on the proposed ROW line to be later replaced with the State's Type II ROW marker.
If the State's 5/8" iron rod with the State's aluminum cap is set for PCs, PTs, Pls, or 1500-foot station, the Engineer shall indicate so using the double asterisk symbol (**) on the map sheets and in the property description and include following note:
**The monument described and set may be replaced with the State's Type II ROW 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 is subject to standards and required ArcGIS deliverables detailed in Chapter 4, Section 8 of the *TxDOT ROW Preliminary Procedures for the Authority to Proceed Manual*.
8. Electronic ROW Mapping Standards
The primary purpose of this section is to provide instructions for the graphics standards, file management structure, and naming conventions, for ROW mapping electronic deliverables submitted to the TxDOT Right of Way Division by engineering and surveying service providers as an integral part of the ROW mapping package.
The software, file types, and file formats must be compatible with those used by the managing TxDOT District or Division for schematics and PS&E (e.g., native MicroStation files for graphics, Microsoft Word for metes and bounds descriptions).
- a. MicroStation
All graphic files for map sheets and parcel plats must be native DGN files created using MicroStation with the State's current seed files and the State's workspace environment, settings, and resource files.
 - b. Level Library Files
The Engineer shall use the State's current MicroStation level library files for ROW mapping. The files contain all the predefined levels that are normally needed for ROW mapping and to show existing utilities.
 - c. Separate DGN Files for Each Map Sheet
The Engineer shall provide one DGN file for each map sheet so that each ROW map sheet is spatially correct (i.e., snapping on elements in MicroStation 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 ROW CSJ for the project and "S01" is the sheet number, beginning with number 1 as the cover sheet.

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

The Engineer shall provide the corrected master ROW files to the design engineer to be used in the final plans, specifications, and estimate (PS&E) so that all features of construction and the relocation of utilities are correctly placed in relation to the highway ROW and the ROW of cross streets or roadways.

The master ROW file naming convention is: MRF ROW CSJ_Logical Name.dgn. For example:

MRF212104065_Schematic90.dgn (for schematic layout 90% submittal)

MRF212104065_Schematic100.dgn (for schematic 100% submittal)

MRF212104065_SchemApprov.dgn (for final schematic, approved by State and FHWA)

MRF212104065_PSEDesign.dgn (for final PS&E design)

MRF212104065_ExROW.dgn (for existing ROW determined by RPLS)

MRF212104065_PropROW.dgn (for proposed ROW of final design)

MRF212104065_DeedPlot.dgn (for deed record)

MRF212104065_Planimetric.dgn (for aerial mapping topography)

MRF212104065_ROWTopo.dgn (for improvements data collection)

MRF212104065_DesignTopo.dgn (for design level data collection topography)

MRF212104065_ExUtil.dgn (existing utilities)

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.

- e. File Structure of Master and Reference DGN Files

If possible, the file structure must not have any subfolders to allow better transfer of data to different PCs, server drive names, or CDs, DVDs, or USB flash drives without path problems to reference files when the sheet files are opened.

- f. 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. Sheets must be completely legible at full scale sheet size (22 inches x 34 inches and when reduced to half scale sheet size (11 inches x 17 inches). It is not sufficient that originals or first-generation plots are legible, reproductions (copies) must retain legibility.

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.

For all ROW mapping, the Engineer shall use the 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 shall use TxDOT's current GEOPAK Survey SMD file that sets up new feature codes in SMD file for alignment chains, parcel chains, and survey chains that GEOPAK Survey plots from the GPK file with the correct line styles, colors, and weights to the designated levels loaded into the DGN file by the State's current level library files.

The Engineer shall use MicroStation Packager for the submission of electronic deliverables, which captures any non-State standard files (e.g., rsc, cel, text) that were used in the mapping that look and plot differently in the State's MicroStation® workspace.

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

The predominate colors of the digital orthoimagery (e.g., greens, browns) dictate which line and text colors stand out and are legible. Some degree of trial and error is often needed, and the Engineer shall maximize legibility.

h. Required Data in the GEOPAK ROW GPK File

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

If the design GPK file is too detailed for ROW use, the Engineer shall create input files for the information needed for the design GPK file to load into the ROW GPK file.

i. 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.

j. Requirements for Electronic Deliverables

- (1) Native MicroStation DGN files (reference files, sheets files, and parcel plats files);
- (2) GEOPAK Survey GPK files;
- (3) 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 file naming convention is: ROWCSJ_Type of Coordinates.csv (e.g., 212101065_Surface.csv, 212101065_Grid.csv, 212101065_WGS84.csv);
- (4) PDFs created in MicroStation 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;

- (5) PDF's of signed and sealed Property Descriptions, Parcel Plats, and Engineer's Reports and Microsoft Word documents of Property Descriptions and Engineer's Reports;
 - (6) Raw and processed GPS files including adjustment reports.
- 9. Deliverables
In preparing ROW maps, the following are required:
 - a. An Abstract Map of the current record title holders.
 - b. A Preliminary Map showing the proposed schematic and existing ROW.
 - c. A ROW map for the project limits under cover of title sheet, index sheet, control data sheet, and exhibits of the property descriptions and parcel plats.
 - d. Documentation stating that the appropriate monuments were set on the proposed ROW lines at intersecting property lines, and at all PCs, PTs, angle points, intersecting ROW lines of side streets, and at 1,500-foot stations.
 - e. Documentation stating that the appropriate monuments were set on the existing ROW lines in areas of no acquisition at all PCs, PTs, angle points, and 1,500-foot stations, and as directed by the State.
 - f. The Engineer's report, outlining the approach, reasons, and basis for the existing ROW determination, and conclusions made.
 - g. A copy of the State's ROW mapping check list, signed by the supervising RPLS.

FUNCTION CODE 145 (145,164) - MANAGING CONTRACTED/DONATED PE

CONTRACT MANAGEMENT AND ADMINISTRATION

145.1. Contract Management and Administration

The Engineer shall:

- A. Act as an agent for the County.
- B. Produce a complete and acceptable deliverable for each environmental service performed for environmental documentation.
- C. Incorporate environmental data into identification of alternatives.
- D. Notify the County of its schedule, in advance, for all field activities.
- E. Notify the County and 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 accordance with 40 Code of Federal Regulations (CFR) 1500-1508). Inform the County and State of the basis for concluding there are significant impacts and the basis for concluding that the impacts might require mitigation.
- F. Notify the County and 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 might elevate the transportation activity's status from a categorical exclusion or environmental assessment. The County and State will reassess the appropriate level of documentation.

145.2. 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 County review requirements. The

project work schedule must depict the order of the various tasks, milestones, and deliverables. The Engineer shall review the schedule monthly and provide updates regarding its progress on the schedule to the County.

- C. The Engineer shall submit written monthly progress reports to the County.
- D. The Engineer shall provide ongoing quality assurance and quality control to ensure completeness of product and compliance with the County procedures.
- E. The Engineer shall conduct site visits in both the AM and PM peak hour and develop a technical report that includes photographs outlining the findings and observations.

FUNCTION CODE 160(150) – ROADWAY DESIGN

150.1. 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 to design a project, or during layout and staking of projects for construction.

A. 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.

B. Definitions

Design survey means the combined performance of research, field work, analysis, computation, and documentation necessary to provide detailed topographic (3-dimensional) mapping of a project site. Design surveys might include locating existing right of way (ROW), cross-sections, and 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 ROW maps, and establishing control points.

Construction survey means 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.

C. Tasks to be Completed

1. Design Surveys

The Engineer shall perform design surveys. Design survey tasks include:

- a. Obtain or collect data to create cross-sections and DTMs.
- b. Locate existing utilities.
- c. Locate topographical features and existing improvements.
- d. Provide details of existing bridge structures.
- e. Provide details of existing drainage features, (e.g., culverts, manholes,).
- f. Locate all WOTUS, including wetlands.
- g. 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 (e.g., National Geodetic Survey (NGS), Federal Emergency Management Agency (FEMA)) and other local entities as directed by the County.
- h. Locate existing ROW.

- i. Review ROW maps.
- j. Locate boreholes.
- k. Perform hydrographic surveys.
- l. Update existing control data and prepare survey control data sheets, as directed by the State, for inclusion into a construction plan set.

The Engineer shall prepare a Survey Control Index Sheet and Horizontal and Vertical Control Sheets, which must be 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. Horizontal and Vertical Control sheets identify 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 Sheets must be used in conjunction with each other as a set. The TxDOT forms for these sheets can be downloaded from the TxDOT website.

The Survey Control Index Sheet must show the following:

- a. Overall view of the project and primary control monuments set for control of the project.
- b. Identification of the control points.
- c. Baseline or centerline.
- d. Graphic (bar) scale.
- e. North arrow.
- f. The note: *The survey control information has been accepted and incorporated into this PS&E*, which must be signed, sealed and dated by a Texas Professional Engineer.
- g. RPLS signature, seal, and date.
- h. The State's title block containing district name, county, highway, and CSJ.

All Horizontal and Vertical Control Sheets must show the following:

- a. Location for each control point, showing baseline or centerline alignment and North arrow.
- b. Station and offset (with respect to the baseline or centerline alignments) of each identified control point.
- c. Basis of Datum for horizontal control (base control monument/benchmark name, number, datum).
- d. Basis of Datum for the vertical control (base control monument, benchmark name, number, datum).
- e. Date of current adjustment of the datum.
- f. Monumentation set for Control (description, district name/number and location ties).
- g. Surface adjustment factor and unit of measurement.
- h. Coordinates (State Plan Coordinates (SPC) zone and surface or grid).
- i. Relevant metadata.
- j. Graphic (bar) scale.
- k. The note: *The survey control information has been accepted and incorporated into this PS&E*, which must be signed, sealed, and dated by a Texas Professional Engineer.

- l. RPLS signature, seal and date.
- m. The State's title block containing district name, county, highway, and CSJ.

D. Technical Requirements

- 1. Design surveys and construction surveys must be performed under the supervision of a registered professional land surveyor (RPLS) currently registered with the TBPELS.
- 2. Horizontal ground control used for design surveys and construction surveys, furnished to the Engineer by the State or based on acceptable methods conducted by the Engineer, 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 applicable.

- 3. Vertical ground control used for design surveys and construction surveys, furnished to the Engineer by the State or based on acceptable methods conducted by the Engineer, 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 applicable.

- 4. Side shots or short traverse procedures used to determine horizontal and vertical locations must meet the following criteria:
 - a. Side shots or short traverses must begin and end on horizontal and vertical ground control as described above.
 - b. Standards, procedures, and equipment (e.g., GPS equipment, LiDAR, total stations) used must be such that horizontal locations relative to the control are reported within the following limits:
 - (1) Bridges and other roadway structures: less than 0.1 of one foot.
 - (2) Utilities and improvements: less than 0.2 of one foot.
 - (3) Cross-sections and profiles: less than 1 foot.
 - (4) Bore holes: less than 3 feet.
 - c. Standards, procedures, and equipment (e.g., GPS equipment, LiDAR, total stations) used must be such that vertical locations relative to the control are reported within the following limits:
 - (1) Bridges and other roadway structures: less than 0.02 of one foot.
 - (2) Utilities and improvements: less than 0.1 of one foot.
 - (3) Cross-sections and profiles: less than 0.2 of one foot.
 - (4) Bore holes: less than 0.5 of one foot.

E. Automation Requirements

- 1. Planimetric design files (DGN) must be fully compatible with the TxDOT's MicroStation graphics program without further modification or conversion.
- 2. Electronically collected and processed field survey data files must be fully compatible with the TxDOT's computer systems without further modification or conversion. All files must incorporate only those feature codes currently being used by TxDOT.

3. DTM must be fully compatible with Bentley's OpenRoads Designer 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.

F. Deliverables

The deliverables for design surveys and construction surveys shall be the following:

1. Digital terrain models (DTM) and the triangular irregular network (TIN) files in a format acceptable by the County.
2. Maps, plans, or sketches prepared by the Engineer showing the results of field surveys.
3. Computer printouts or other tabulations summarizing the results of field surveys.
4. Digital files or media acceptable by the County containing field survey data (ASCII Data files).
5. Maps, plats, plans, sketches, or other documents acquired from utility companies, private corporations, or other public agencies, the contents of which are relevant to the survey.
6. Field survey notes, as electronic and hard copies.
7. An 8.5" x 11" survey control data sheet for each control point, which must include 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. The Engineer shall use a pre-formatted survey control data sheet form provided by the State in Microsoft Word format.
8. A digital and hard copy of all computer printouts of horizontal and vertical conventional traverses, GPS analysis and results, and survey control data sheets.
9. All GEOPAK GPK files.
10. Survey reports in a format requested by the County.

150.2. Aerial Mapping

Aerial Mapping involves (1) collection and reduction of aerial survey data and (2) preparation of site maps and topographic maps.

A. Purpose

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

B. Definitions

In this exhibit, the following definitions apply:

1. Aerial Photograph means a vertical photograph taken from an aircraft at an altitude above mean terrain elevation to produce a photo scale of 1:3,000 or a digital image with a ground pixel size of 5 cm or less.
2. Analytical triangulation means 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.
3. Ground control means 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.
4. Airborne GPS/IMU means 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.

5. DGN – means a two- or three-dimensional graphics file produced by MicroStation using Bentley's OpenRoads Designer tools. These files may contain features and improvements plotted in a horizontal plane along the northing (N) and easting (E) axes which correspond to Texas State Plane Coordinates. These files might contain 2D or 3D elements representing topographic, existing, proposed, schematic, and general layout features.
6. DTM means digital terrain model, which is a three-dimensional digital model of the ground containing those features necessary to define surface relief. The three-dimensional model must contain only those planimetric features that are necessary to define relief.
7. Flight Map means a map depicting the flight line layout over the project area.
8. Horizontal and Vertical Ground Control means survey control points for which the N and E coordinate and elevation have been determined by on-the-ground surveys.
9. Low Altitude Photography means aerial photography with a film photo scale of 1:3000 or a digital image with a ground pixel size of 5 cm or less.
10. Medium Altitude Photography means aerial photography with a film photo scale of 1:12,000 or a digital image with ground pixel size of 20 cm.
11. Planimetric Map means 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.
12. Project Photo Length means the distance over which photographs are required to be taken.

C. Tasks to be Completed

1. Aerial Photography

The Engineer shall provide aerial photography for low altitude aerial mapping appropriate for detailed design for the ultimate schematic alignment area shown in the map at the beginning of this scope of work, assuming a 1200 feet width along the limits of the centerline of the schematic.

a. Ground Control Accuracy Standards

- (1) The Engineer 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 applicable.
- (2) The Engineer 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 applicable.

b. Paneling Placement Specifications

All standards and specifications must be in accordance with established guidelines and recommended or approved by the State.

c. Aerial Photography Standards and Specifications

All standards and specifications shall be in accordance with established guidelines and recommended or approved by the State.

- d. LiDAR Technology
The use of LiDAR technology (mobile, terrestrial, or aerial) is acceptable when approved by the State and the accuracies of the specified tasks it will be used for are met or exceeded.
 - e. Deliverables
The Engineer shall provide digital orthophotos on CD, DVD, USB flash drive, or by File Transfer Protocol (FTP).
2. DGN, DTM, and TIN Files
The Engineer shall prepare DGN, DTM and TIN files covering the specific work location and meeting standards and specifications as required by the State.
- a. Horizontal Ground Control Accuracy Standards
The Engineer 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 applicable.
 - b. Vertical Ground Control Accuracy Standards
The Engineer 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 applicable.
 - c. 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.
- The State may require field verification of adherence to the required accuracy specification.
- d. Statement of Map Accuracy
For maps that are not field checked but have been compiled to meet the State's accuracy standard, the Engineer 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.
- e. DGN File Specifications
 - (1) Files must be fully compatible with TxDOT's MicroStation graphics system without further modification or conversion.
 - (2) File features and level structure must be in compliance with TxDOT's current photogrammetry mapping legend.
 - (3) 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").
 - f. DTM and TIN Files Specifications
 - (1) Files must be fully compatible with Bentley's OpenRoads Designer graphics system without further modification or conversion.

- (2) TxDOT's current level library files for photogrammetry mapping will be provided by the State.
- (3)
- (4) File features and level structure must comply with TxDOT's current photogrammetry mapping legend.
- (5) 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").
- g. Deliverables
The Engineer shall provide:
 - (1) DGN, DTM, and TIN files on a medium and in a format acceptable to the State, delivered on CD, DVD, USB flash drive, hard-drive, or by FTP.
 - (2) Orthophotography (created using the DTM) delivered on CD, DVD, USB flash drive, hard-drive, or by FTP in ECW format (3 banded) with world files. If digital, depending on intended use, deliverable formats must include color photography – rectified – 3 Band ECW with associated world file.
 - (3) The TxDOT's photogrammetry mapping legend and supplements
 - (4) Bare earth LiDAR data in .LAS format.

150.3. 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.

A. Purpose

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

B. Definitions

Aerial photography control survey means 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.

C. Tasks to be Completed

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

- 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.
- 2. Establish and determine the coordinates of the offsite and control points, and aerial ground control points.
- 3. Establish and determine the elevations of the offsite and control points, and aerial control points.
- 4. Place aerial ground control target material at the established points and maintain until the photographs from the flight are approved.
- 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.

D. Technical Requirements

1. Aerial photography control surveys must be performed under the direct supervision of a registered professional land surveyor (RPLS) currently registered with the TBPELS.
2. The coordinate location of the aerial control points shall be based on acceptable methods, conducted by the Engineer, and must meet the standards of accuracy as set forth below:
3. Refer to the 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 applicable.
4. The elevation of the aerial control points must be based on acceptable methods, conducted by the Engineer, and meet the standards of accuracy as set forth below:
5. Refer to the 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 applicable.
6. The elevation of aerial control points based on side shots or short traverses must meet the following criteria:
 - a. Side shots or short traverses must begin and end on vertical ground control as described above.
 - b. 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.

E. 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 is acceptable.

F. Deliverables

The Engineer shall:

1. Submit a final aerial control point layout showing the location of the points and labeled with their respective alpha-numeric designations.
2. Submit a plot and computer graphics of an 11" x 17" 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.
3. Submit a plot and computer graphics of an 11" x 17" 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.
4. Submit an 8.5" x 11" data sheet for each aerial ground control point, which must include a location sketch, a physical description of the point, surface coordinates, the elevation, and datums used.
5. Submit a CD, DVD, or USB flash drive containing the graphics files and scanned images of the control data sheets.
6. Submit a written statement describing the datum used along with copies of all relevant NGS and data sheets.
7. 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 160 (163) – ROADWAY DESIGN

MISCELLANEOUS (ROADWAY)

163.1. Utility Engineering Investigation

Utility engineering investigation includes utility investigations subsurface and above ground prepared in accordance with ASCE/CI Standard 38-02

[(<http://www.fhwa.dot.gov/programadmin/asce.cfm>)] and Utility Quality Levels.

A. Utility Quality Levels (QL)

Utility Quality Levels are defined in cumulative order (least to greatest) as follows:

1. Quality Level D - Quality level value assigned to a utility segment or utility feature after a review and compilation of data sources such as existing records, oral recollections, locations marked by DIGTESS, and data repositories.
2. Quality Level C - Quality level value assigned to a utility segment or utility feature after surveying aboveground (i.e., visible) utility features and using professional judgement to correlate the surveyed locations of these features with those from existing utility records.
3. Quality Level B - Designate: Quality level value assigned to a utility segment or subsurface utility feature whose existence and position is based upon appropriate surface geophysical methods combined with professional judgment and whose location is tied to the project survey datum. Horizontal accuracy of Designated Utilities is 18" (including survey tolerances) unless otherwise indicated for a specific segment of the deliverable. Quality Level B incorporates quality levels C and D information. A composite plot is created.
4. Quality Level A – Quality level value assigned to a portion (x, y, and z geometry) of a point of a subsurface utility feature that is directly exposed, measured, and whose location and dimensions are tied to the project survey datum. Other measurable, observable, and judged utility attributes are also recorded (per District Best Practices). The utility location must be tied to the project survey datum with an accuracy of 0.1 feet (30-mm) vertical and to 0.2 feet (60-mm) horizontal. As test holes may be requested up front or during the project, test holes done prior to completion of QL D, C, or B deliverables must be symbolized on the QL B deliverable with a call out indicating test holes number. This is in addition to and not in lieu of the test hole.

B. Utility Investigations Methodology

1. Utility Investigation Quality Level D

The Engineer shall:

- a. Perform records research from all available resources. Sources include: Texas811, Railroad Commission of Texas (Texas RRC), verbal recollection, as-built information from plans, plats, permits and any other applicable information provided by the utility owners or other stakeholders.
- b. Document utility owners and contact information.
- c. Create a utility drawing of information gathered.

2. Utility Investigation Quality Level C

The Engineer shall:

- a. In combination with existing Quality Level D information, utilize surveyed above-ground utility features and professional judgement to upgrade

Quality Level D information to Quality Level C. For those utilities unable to be upgraded, retain as Quality Level D.

- b. Overhead utilities information must be gathered and depicted. Sag elevations of lowest utility must be documented at road crossings, per best practices document.
- c. Storm and sanitary sewer information must be gathered from Level D and upgraded to Level C as possible, unless otherwise directed by the County.
- d. Mapping of underground vaults may be requested by the County.
- e. Create composite utility drawing of information gathered.

3. Designate (Quality Level B)

Designate means to indicate the horizontal location of underground utilities by the application and interpretation of appropriate non-destructive surface geophysical techniques and reference to established survey control. Designating (Quality Level B) services are inclusive of Quality Levels C and D.

The Engineer must:

- a. As requested by the County, compile "as-built" information from plans, plats and other location data as provided by the utility owners.
- b. Coordinate with utility owner when utility owner's policy is to designate their own facilities at no cost for preliminary survey purposes. The Engineer shall examine utility owner's work to ensure accuracy and completeness.
- c. Designate, record, and mark the horizontal location of the existing utility facilities using non-destructive surface geophysical techniques.
- d. Using both active and passive scans to attempt to locate any additional utilities, including unrecorded and abandoned storm and sanitary sewer facilities, at the direction of the County, may be investigated using additional methods such as rodding that would then classify them as Quality Level B. A non-water based pink paint or pink pin flags must be used on all surface markings of underground utilities.
- e. Correlate utility owner records with designating data and resolve discrepancies using professional judgment. The Engineer must prepare and deliver to County a color-coded composite utility facility plan with utility owner names, quality levels, line sizes and subsurface utility locate (test hole) locations. The Engineer and County acknowledge that the line sizes of designated utility facilities detailed on the deliverable will be from the best available records and that an actual line size is normally determined from a test hole vacuum excavation. A note must be placed on the designate deliverable that states "line sizes are from best available records". All above-ground utility feature locations must be included in the deliverable to the County. This information must be provided in the latest version of OpenRoads Designer civil design system used by the State. The Engineer shall deliver the electronic file on CD, DVD, or USB flash drive, as requested by the County. A hard copy is required and must be signed, sealed, and dated by the registered engineer overseeing the utility engineering investigation. When requested by the County, the designated utility information must be overlaid on the County's design plans.
- f. Determine and inform the County of the approximate electronic utility depths at critical locations as determined by the County. The limits of this additional information should be determined prior to the commencement of

work. This depth indication is understood by both the Engineer and the County to be approximate only and is not intended to be used preparing the ROW and construction plans.

- g. Provide a monthly summary, with weekly updates, of work completed and in process with adequate detail to verify compliance with agreed work schedule.
 - h. Close-out permits as required.
 - i. Clearly identify all utilities that were discovered from Quality Levels C and D investigation but cannot be depicted in Quality Level B standards. These utilities must have a unique line style and symbology in the designate (Quality Level B) deliverable.
 - j. Comply with all applicable TxDOT policy and procedural manuals.
4. Subsurface Utility Locate (Test Hole) Service (Quality Level A)
- Locate is the process used to obtain precise horizontal and vertical position, material type, condition, size, and other data that may be obtainable about the utility facility and its surrounding environment through exposure by non-destructive excavation techniques that ensures the integrity of the utility facility. Subsurface Utility Locate (Test Hole) Services (Quality Level A) are inclusive of Quality Levels B, C, and D.

The Engineer must:

- a. Review requested test hole locations and advise the County in the development of an appropriate locate (test hole) work plan relative to the existing utility infrastructure and proposed highway design elements.
- b. Coordinate with utility owner inspectors as may be required by law or utility owner policy.
- c. Place Texas 811 ticket 48 hours prior to excavation.
- d. Neatly cut and remove existing pavement material, such that the cut does not exceed 0.10 square meters (1.076 square feet) unless unusual circumstances exist.
- e. Measure and record the following data on an appropriately formatted test hole data sheet that has been sealed and dated by the Engineer:
 - (1) Elevation of top of utility tied to the datum of the furnished plan.
 - (2) Minimum of two benchmarks utilized. Elevations must be within an accuracy of 15mm (.591 inches) of utilized benchmarks.
 - (3) Elevation of existing grade over utility at test hole location.
 - (4) Horizontal location referenced to project coordinate datum.
 - (5) Outside diameter of pipe or width of duct banks and configuration of non-encased multi-conduit systems.
 - (6) Utility facility materials.
 - (7) Utility facility condition.
 - (8) Pavement thickness and type.
 - (9) Coating/wrapping information and condition.
 - (10) Unusual circumstances or field conditions.
- f. Excavate test holes in such a manner as to prevent any damage to wrappings, coatings, cathodic protection, and other protective coverings and features. Water excavation can only be utilized with written approval from the appropriate TxDOT district office.
- g. Be responsible for any damage to the utility during the locating process. In the event of damage, the Engineer must stop work, notify the appropriate utility facility owner, the County, and appropriate regulatory agencies. The

regulatory agencies include: the Railroad Commission of Texas and the Texas Commission on Environmental Quality. The Engineer shall not resume work until the utility facility owner has determined the corrective action to be taken. The Engineer is liable for all costs involved in the repair or replacement of the utility facility.

- h. Back fill all excavations with appropriate material, compact backfill by appropriate mechanical means, and restore pavement and surface material. The Engineer is responsible for the integrity of the backfill and surface restoration for a period of three years.
- i. Furnish and install a permanent above-ground marker (as specified by the County, directly above center line of the utility facility).
- j. Provide complete restoration of work site and landscape to equal or better condition than before excavation. If a work site and landscape is not appropriately restored, the Engineer shall return to correct the condition at no extra charge to the County.
- k. Plot utility location position information to scale and provide a comprehensive utility plan signed and sealed by the responsible professional engineer. This information must be provided in the latest version of MicroStation and be fully compatible with the OpenRoads Designer civil design system used by the State. The electronic file will be delivered on CD, DVD or USB flash drive as requested. When requested by the County, the locate information must be overlaid on the County's design plans.
- l. Return plans, profiles, and test hole data sheets to the County. If requested, conduct a review of the findings with the County.
- m. Close-out permits as required.

163.2. Utility Coordination

A. 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. The Engineer shall create and maintain a utility conflict matrix along with a utility conflict exhibit through the duration of the contract identifying potential known conflicts.

Utility Coordination

The Engineer shall assist the County in conducting utility coordination meetings with utility companies, as required, to facilitate utility conflict identification and resolution.

1. The Engineer shall establish contact with all existing utilities within and adjacent to the project limits and set up utility coordination meetings to discuss concepts and options for design and construction. This process must also be extended to utilities that approach the County, regarding plans to install facilities within the project limits after the project has been initiated.
2. The Engineer shall establish and conduct workshop meetings, both individually with each utility and with all utilities that incorporate the County's project team to review and resolve conflicts.
3. The Engineer shall create agenda and exhibits for all coordination meetings as directed by the County.

4. The Engineer shall establish and promote the desired agenda and methodologies for utility construction within the project limits. This shall consist primarily of promoting the construction of utilities as a part of the highway contract.
5. The Engineer shall schedule and conduct a utility kick-off meeting to obtain more information on existing facilities within the project limits. Major utility facilities must be discussed and analyzed to avoid relocation, if possible.
6. The Engineer shall schedule and conduct milestone meetings (or as-needed meetings) with the County to coordinate the work effort and resolve problems. The Engineer shall prepare a written report of these meetings. The meetings must include review of the following:
 - a. Existing facilities including major facilities to be avoided with the project, if possible
 - b. Utility Conflict Matrix
 - c. Utility Conflict Exhibit
 - d. Long lead items that could potentially impact the schedule during PS&E

B. Deliverables

1. Utility Conflict Matrix along with Utility Conflict Exhibit. The Utility Conflict Exhibit must be on 11" x 17" sheets and include callouts to indicate the conflict ID#, utility owner, type of line (water, sewer, high pressure gas, etc.), material (if it is an AC pipeline), and size (if known).
2. Utility Contacts list in excel and pdf format
3. Utility Summary to indicate major utility facilities or time sensitive items pertaining to utilities that need to be addressed in PS&E.

163.3. Geotechnical Borings and Investigations

- A. The Engineer shall determine the location of proposed soil borings for information only along the project alignment in accordance with the latest edition of TxDOT's Geotechnical Manual. The County will review and provide comments for a boring layout submitted by the Engineer showing the general location and depths of the proposed borings. Once the Engineer receives the County's review comments, the Engineer shall perform soil borings (field work), soil testing, and prepare the boring logs in accordance with the latest edition of TxDOT's Geotechnical Manual and the local TxDOT district's procedures and design guidelines.
- B. All geotechnical work must be performed in accordance with the latest version of TxDOT's Geotechnical Manual. The schematic level geotechnical work will be for information only and not cover full PS&E design. All testing must be performed in accordance with TxDOT's Manual of Test Procedures. American Society for Testing Materials (ASTM) test procedures may be used only in the absence of the TxDOT procedures. All soil classification must be done in accordance with the Unified Soil Classification System.
- C. The Engineer shall coordinate with the County to determine the select locations of soil borings to be drilled along the proposed alignment. The scope of this work includes drilling two (2) borings to a maximum depth of 80 feet below existing grade within the project limits. All the borings will be drilled during daytime hours. The Engineer shall provide a boring layout for the County's review and comment. If

applicable, the Engineer will coordinate coring of existing pavement and traffic control required for geotechnical field drilling.

- D. The Engineer shall incorporate soil boring data sheets prepared, signed, sealed, and dated by the Geotechnical Engineer.
- E. The Engineer shall evaluate geotechnical field and lab data from the borings, as well as literature review of existing geotechnical data in the vicinity of the proposed alignment, to present a high-level summary report of major geotechnical risks related to the design and construction of the following elements: roadway pavement, retaining walls, and bridge foundations. The Engineer shall compile all geotechnical data and recommendations in a Geotechnical Desktop Study Report submit to the County for review.
- F. If applicable, geotechnical study related to Uptake Parcel Permit with U.S. Army Corps of Engineers (USACE) will be performed via a supplementary scope.
- G. Deliverables
 - 1. Geotechnical Engineering Report
 - 2. DGN files containing drilling log data from Geotechnical analysis

163.4. Illumination Schematic Design

The Engineer shall perform field work and analysis necessary to design high mast illumination schematic plans for designated locations and /or sections of roadways.

The Engineer shall:

- A. Perform illumination study to be sure illumination warrants are met for any proposed lighting.
- B. Perform field work that may include, but not be limited to, taking measurements, locating utilities, locating existing illumination equipment, identifying existing conditions, and taking digital photos of the locations.
- C. Prepare schematic layouts for safety and/or continuous illumination design according to current State specifications, district format, and approved city preferences.
- D. For high mast lighting, prepare photometric data layout and submit for review and approval before performing detail design.
- E. For high mast lighting, submit Federal Aviation Administration (FAA) study request and obtain FAA determination for each pole.
- F. Prepare schematic package in accordance with the applicable requirements of the TxDOT Specifications and Manuals (latest revision) as provided by the State and available on the State's website.
- G. Provide copies of the illumination design schematic layouts.

- H. Contact the local utility company to confirm electrical power for illumination equipment and identify conflicts with overhead and underground utility lines. Identify utility company, contact person, and phone number on plans.
- I. Perform revisions to the schematic plans as necessary to address any comments received from the State and the City.
- J. Verify that proposed illumination work meets the requirements of the NEC and the TxDOT Highway Illumination Manual.
- K. Provide copies of the schematic package.

Provide electronic files of the design and schematic package.

Deliverables

A. Illumination warrant studies

B. Preliminary illumination schematic layout

163.5. Railroad and Airport Coordination

- A. Engineer Shall coordinate meetings between Railroad companies, County, State, and other local agencies related to the interaction of Rail and Roadway Operations within the corridor and potential future uses as applicable to accomplish the following:
 - 1. The Engineer shall conduct Field Diagnostic Investigations
 - 2. The Engineer shall assemble and submit a preliminary Railroad crossing exhibit for all rail and Roadway at-grade and grade separated crossings
 - 3. The Engineer shall develop preliminary Railroad agreement and track, monitor, and report on status of agreement
- B. Engineer Shall coordinate meetings with Airport owners:
 - 1. The Engineer shall prepare preliminary air/highway clearance exhibits and layouts to assist the State in preparing necessary agreements.

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Fee Summary by Task and Firm

Task	LJA Engineering, Inc		American Structurepoint, Inc.		Beyond Engineering and Testing LLC		The Rice Group, Inc. (HUB)		VRX, Inc. (HUB)		Schnabel Engineering Consultants, Inc.		Dallas Aerial (HUB)		Totals	
	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost	Hours	Cost
Labor Costs																
FC 110 - Feasibility & Route Studies & Schematics	4,404.00	\$836,185.15	1,582.00	\$319,631.49	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	64.00	\$14,847.60	0.00	\$0.00	8,050.00	\$ 1,170,784.27
FC 120 - Social, Economic & Env Studies and Public Inv	4,013.00	\$825,055.95	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	911.00	\$53,712.22	0.00	\$0.00	0.00	\$0.00	4,924.00	\$ 808,808.17
FC 130 - Right-of-Way (ROW) Data - To be provided in PS&E	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$ -
FC 145 - Project Management	1,012.00	\$304,315.47	236.00	\$53,263.69	0.00	\$0.00	363.00	\$42,266.86	82.00	\$18,406.72	63.00	\$15,769.68	0.00	\$0.00	1,753.00	\$ 432,118.63
FC 160 (160) - Roadway Design (Survey)	1,106.00	\$129,793.81	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	0.00	\$0.00	380.00	\$59,949.52	1,486.00	\$ 189,743.33
FC 160 (163) - Miscellaneous Roadway	642.00	\$151,652.14	0.00	\$0.00	252.00	\$52,057.66	229.00	\$36,583.54	0.00	\$0.00	24.00	\$5,357.42	0.00	\$0.00	1,047.00	\$ 245,637.76
Total Labor	11,078.00	\$2,247,052.56	1,818.00	\$372,895.16	252.00	\$52,057.66	592.00	\$78,849.42	693.00	\$103,117.94	151.00	\$38,074.90	380.00	\$59,848.52	14,962.00	\$ 2,847,092.18
Total Unit Costs		\$83,738.00		\$0.00		\$14,547.00		\$93,500.00		\$0.00		\$0.00		\$1,000.00		\$ 102,803.00
Total ODE Costs		\$181,947.65		\$2,327.50		\$6,770.00		\$12,200.00		\$3,875.00		\$0.00		\$34,428.00		\$ 221,289.15
Total Estimated Project Costs	11,078.00	\$2,482,774.21	1,818.00	\$375,228.66	252.00	\$73,374.66	592.00	\$184,849.42	693.00	\$103,692.94	151.00	\$38,074.90	380.00	\$95,078.52	14,962.00	\$ 3,281,164.31
Percentage per Firm		74.10%		11.15%		2.18%		6.43%		3.09%		1.07%		2.83%		100.00%
Percent HUB						2.18%		6.43%		3.09%				2.83%		13.60%

**Schematic and Environmental
Bonde Ranch Road, Segment 2
Exhibit B - Fee Schedule**

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION			Project Manager (Senior)	Deputy Project Manager	Quality Manager	Engineer (Senior)	Engineer (Project) - Senior	Engineer (Project)	Engineer (Design)	Engineer-In-Training B	Engineer Technician	GIS Manager	GIS Analyst	CADD Operator (Senior)	Admin/ Clerical	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATE:			\$175.29	\$110.18	\$287.08	\$110.18	\$247.47	\$211.17	\$155.11	\$134.29	\$140.23	\$220.88	\$148.79	\$141.22	\$112.18		
SC110 (102) - Route and Design Studies																	
DEVELOP PRELIMINARY CONCEPTS																	\$20.00
110.1.1.	A	SCHEMATIC DESIGN WORK OUTLINE															\$20.00
110.1.1.	A	DEVELOP BASE MAPS	4	4		8		20	40	80						154	\$25,774.12
110.1.1.	D	PLANIMETRICS AND AERIAL MAPPING	4	4				8		24		4	12			50	\$11,903.84
110.1.1.	C	ANALYZE EXISTING CONDITIONS	4	4		4		8	8	24						52	\$10,135.07
110.1.1.	D	SCHEMATIC ALTERNATIVES															0
110.1.1.	D	ALTERNATIVE 1	4	4	5	8		30	45	60						180	\$31,469.47
110.1.1.	D	ALTERNATIVE 2	4	4	5	8		30	45	60						180	\$31,469.47
110.1.1.	D	ALTERNATIVE 3	4	4	5	8		30	45	60						180	\$31,469.47
110.1.1.	D	ALTERNATIVE ANALYSIS MEMO	4	4	2	4		4								18	\$5,401.16
110.1.1.	F	DATA COLLECTION	4	4		4		8	12		24	4	12			72	\$13,567.54
110.1.1.	G	ROADWAY DESIGN CRITERIA	4	4		4		12		24						52	\$10,580.10
110.1.1.	H	PRELIMINARY DESIGN CONFERENCE	4	4		4		12		24						52	\$10,580.10
110.1.2.		SCHEMATIC DESIGN - GENERAL TASK														0	\$0.00
110.1.2.	A	ROW PROPERTY BASE MAP	4	4	4			8		12	16					48	\$9,434.57
110.1.2.	B	TYPICAL SECTIONS	4	4		8		12		24						54	\$11,900.42
110.1.2.	C	ENVIRONMENTAL CONSTRAINTS	4	4				4		8						18	\$4,292.14
110.1.2.	O	DRAINAGE														0	\$0.00
110.1.2.	D	1 HYDROLOGIC ANALYSIS (3 COORDINATES & 2 DAM SHEETS)			5	14	20	60		32				8		197	\$36,569.87
110.1.2.	D	2 HYDRAULIC ANALYSIS (1 FEMA & 4 NON-FEMA)			8	24	32	96		180						370	\$56,418.64
110.1.2.	D	3 PRELIMINARY HYDRAULIC DATA SHEETS (1 FEMA SHEET & 2 NON-FEMA SHEETS)			2	8	8	20		28				8		72	\$13,578.32
110.1.2.	D	4 DRAINAGE STRUCTURE CROSS SECTION SHEETS, 11X7 (2 SHEETS)			1	4	4	12		16				4		41	\$7,755.25
110.1.2.	D	5 LONGITUDINAL SECTION DRAINS AND DITCHES			3	12	15	45		75						150	\$27,868.95
110.1.2.	D	6 PRELIMINARY HYDRAULIC REPORT (DRAFT AND FINAL)			2	10	12	30		60						129	\$22,365.35
110.1.2.	E	ROW REQUIREMENTS	4	4	4			12		24						82	\$10,887.71
110.1.2.	F	DESIGN EXCEPTIONS AND WAIVERS	4	4	4			12		20	24					72	\$13,716.72
110.1.2.	G	TRAFFIC DATA AND PROJECTIONS	4	4	2			12		20	12					68	\$11,456.28
110.1.2.	H	FINANCIAL PLAN AND PROJECT MANAGEMENT PLAN	18	32	8	80		120	24	80					8	368	\$63,743.23
110.1.2.	I	TRAFFIC AND OPERATIONAL ANALYSIS	4	4	2	4		12		24	12					68	\$13,297.02
110.1.2.	J	SAFETY ANALYSIS	4	4	2	4		12		24	12					68	\$13,297.02
110.1.2.	K	BICYCLE AND PEDESTRIAN ACCOMMODATIONS	4	4	2	4		12		24	12					68	\$13,297.02
110.1.3.		CONCEPTUAL DESIGN SCHEMATICS (30%)	4	4	8			50		80	40					200	\$35,362.01
110.1.4.		GEOMETRIC DESIGN SCHEMATICS														0	\$0.00
110.1.4.	A	1. 60%	4	4	4	16		80		120	40					270	\$49,658.78
110.1.4.	A	2. 50%	4	4	4	8		40		60	20					174	\$24,255.20
110.1.4.	A	3. 100%	4	4	4	4		20		30	10					78	\$15,211.58
110.1.5.		CROSS-SECTIONS	4	4	4			40		80						138	\$24,882.11
110.1.6.		RETAINING WALLS	4	4	4			20		40						78	\$14,725.78
110.1.7.		RENDERING AND TRAFFIC SIMULATION	4	4	4			40		60	140					200	\$40,415.81
110.1.8.		PRELIMINARY CONSTRUCTION SEQUENCE	4	4	4			40		80						130	\$24,320.58
110.1.9.		PRELIMINARY COST ESTIMATE	4	4	4			12		20						116	\$19,392.72
110.1.10.		PRODUCTION SUMMARY REPORT	4	4	4			18		30						84	\$15,742.46
110.1.11.		SUPPORT OR ATTENDANCE AT VALUE ENGINEERING STUDY	18	32		24		80								152	\$25,732.28
TOTAL HOURS			548.00	260.00	121.00	288.00	91.00	1,363.00	360.00	1,729.00	372.00	8.00	24.00	18.00	8.00	4,404.00	
TOTAL LABOR COSTS			\$55,538.76	\$80,641.88	\$34,734.74	\$82,502.85	\$22,519.87	\$215,907.81	\$55,840.87	\$231,655.88	\$52,168.45	\$1,797.04	\$3,570.72	\$2,543.00	\$897.49		\$836,185.18

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION		Project Manager (Senior)	Deputy Project Manager	Quality Manager	Engineer (Senior)	Engineer (Project)	Engineer-In-Training II	Engineer Technician	GIS Manager	GIS Analyst	Support Manager (ENV)	GIS Analyst (Senior/ENV)	GIS Analyst (ENV)	Environmental Specialist - Senior	Environmental Specialist	Field Technician - Env, Bio, Arch - Senior	Field Technician - Env, Bio, Arch	Architectural Historian - Senior	Architectural Historian	Public Involvement Specialist	TOTAL LER HOURS	TOTAL COSTS	
HOURLY RATES:		\$376.20	\$310.16	\$287.66	\$310.16	\$211.17	\$134.20	\$140.23	\$220.80	\$148.78	\$269.22	\$117.18	\$90.75	\$197.92	\$148.53	\$180.00	\$112.00	\$119.83	\$104.30	\$117.48			
FC120 ENVIRONMENTAL CONSTRAINTS & PUBLIC INVOLVEMENT																							
120.1.	1.	ENVIRONMENTAL DOCUMENTATION STANDARDS	4	8	4																16	\$5,130.50	
120.2.	2.	ENVIRONMENTAL ASSESSMENT (EA) CONTENT AND FORMAT	4	8	4						90	10			790	12			8		6	426	\$200,073.31
120.2.	2.	ENVIRONMENTAL TECHNICAL ANALYSIS DOCUMENTATION (REVIEW)	32	64	8																104	\$34,155.20	
120.3.	3. A	ENVIRONMENTAL CONSTRAINTS MAP						10	30	8			36	2	8			2			80	\$13,069.84	
120.3.	3. B	ENVIRONMENTAL INFORMATION FORM, SCORING MATERIALS, EPIC FORM								4			8		8						14	\$2,787.26	
120.3.	3. C. 1.	PROTECTED LANDS (E.G., APT)								4					2				40		50	\$6,700.44	
120.3.	3. C. 2.	COMMUNITY IMPACTS ANALYSIS						5	18	8		12	8	2	24						60	\$9,536.21	
120.3.	3. C. 3.	INDUCED GROWTH AND CUMULATIVE IMPACT ANALYSIS								12	16			60	12						100	\$18,739.06	
120.3.	3. C. 4.	AIR QUALITY STUDIES								2			2	20	2						26	\$4,971.40	
120.3.	3. C. 5.	NOISE ANALYSIS TECHNICAL REPORTING								12	16			140	18						184	\$35,158.80	
120.3.	3. C. 6.	WATER RESOURCES (DRAINAGE)								8					4						10	\$2,201.44	
120.3.	3. C. 6.	WATER RESOURCES (A/SPACE PERMITS)								8					4						10	\$2,201.44	
120.3.	3. C. 7.	BIOLOGICAL RESOURCES								8					6						12	\$2,434.56	
120.3.	3. C. 8.	INITIAL SITE ASSESSMENT (ISA)								6					6						12	\$2,434.56	
120.3.	3. C. 9.	ARCHAEOLOGICAL BACKGROUND STUDY								2			12	12	2						28	\$4,295.54	
120.3.	3. C. 9.	ARCHAEOLOGICAL SURVEY, REPORT AND RECORDS CURATION								4		6		12	4	30	10				81	\$14,703.94	
120.3.	3. C. 10.	HISTORIC/HISTORICAL IDENTIFICATION, EVALUATION, AND DOCUMENTATION								18			18		8			106	18		164	\$21,625.96	
120.3.	3. C. 11.	FLOODPLAIN IMPACTS								6					4						10	\$2,201.44	
120.3.	3. C. 12.	STORMWATER PERMITS (SECTION 402 OF THE CLEAN WATER ACT)								2					2						4	\$534.26	
120.4.		PUBLIC INVOLVEMENT																			0	\$0.00	
120.4.	A. 1.	MEETINGS WITH PROPERTY OWNERS / DEVELOPERS (12)	96	80	2	96					12				8						316	\$94,685.80	
120.4.	A. 2.	PUBLIC INVOLVEMENT PLAN	4	4	2						18				32						66	\$13,556.67	
120.4.	A. 3.	PUBLIC INVOLVEMENT DIGITAL DATABASE	4	4	2						6				4						72	\$5,055.70	
120.4.	A. 4.	PROJECT FACT SHEET AND LOCATION MAP	2	4	2						8	8			12						32	\$5,849.92	
120.4.	A. 5.	WALISTE INFORMATION AND UPDATES	2	4	2		4	12			8	4			12						48	\$9,432.32	
120.4.	A. 6.	STAKEHOLDER MEETING (2)	12	12	12		10	28			12	12			8					12	124	\$26,027.60	
120.4.	A. 7.	TECHNICAL WORK GROUP MEETING (2)	18	18	8	24	36	40	40		36	24			38						280	\$59,850.34	
120.4.	A. 8.	PUBLIC MEETINGS (2)	24	24	4	8	80	80		20	20	80	100		280					20	720	\$128,813.24	
120.4.	A. 8.	PUBLIC HEARING (1)	8	8	4	4	40	40	10	10	40	50			100					6	320	\$57,373.20	
120.4.	A. 10.	PREPARING NOTICES	2	2						2	2				6						12	\$2,268.48	
120.4.	A. 11.	COORDINATING PROJECT MARKETING	4	8			12	24			8				8					2	64	\$13,300.40	
120.4.	A. 15.	PUBLIC MEETING AND SUMMARY DOCUMENTATION (2)	24	24	8	12	32	32			80				120					12	324	\$58,670.06	
120.4.	A. 15.	PUBLIC HEARING AND SUMMARY DOCUMENTATION	12	12	4	8	16	16			28				60					8	182	\$34,113.42	
120.4.	A. 16.	EMAIL UPDATES (4)	4	8	2					4											18	\$5,633.34	
120.5.		RIGHT OF ENTRY	4	8	1	12	12		10	20	12				8						81	\$19,819.64	
TOTAL HOURS		260.00	316.00	67.00	164.00	248.00	272.00	40.00	55.00	80.00	624.00	261.00	72.00	\$30.00	780.00	68.00	10.00	158.00	16.00	84.00	4,013.00		
TOTAL LABOR COSTS		\$97,668.10	\$98,010.80	\$19,233.29	\$50,866.42	\$52,371.83	\$36,627.74	\$5,619.30	\$12,148.40	\$11,390.20	\$141,871.28	\$30,883.68	\$6,934.50	\$104,897.60	\$113,758.70	\$9,960.00	\$1,120.00	\$18,904.70	\$1,872.00	\$9,868.32		\$825,095.85	

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION				Project Manager (Senior)	Deputy Project Manager	Engineer (Senior)	Engineer (Project) - Senior	Admin/ Clerical	Support Manager (ENV)	Environmental Specialist - Senior	Environmental Specialist	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:				\$375.28	\$318.18	\$318.18	\$247.47	\$112.19	\$289.22	\$197.92	\$148.53		
FCMS SCHEMATIC - PROJECT COORDINATION AND MANAGEMENT													
145	1.		COORDINATION/ COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (58 MEETINGS)	72	72	72			38		18	260	\$83,218.45
145	2.	A	INTERNAL COORDINATION OF PROJECT TASKS (A/R/M/O @ 18 MONTHS)	72	72	72			72	17	46	340	\$103,474.37
145	2.	D	PROJECT WORK SCHEDULE	60	60	40			8	4		170	\$55,538.82
145	2.	C	PROVIDE MONTHLY PROGRESS REPORTS (A/R/M/O @ 18 MONTHS)	36	36			36	18	4		130	\$34,351.52
145	2.	E	SITE VISITS AND REPORT	24	24	24	24					86	\$29,833.77
TOTAL HOURS				294.00	264.00	208.00	24.00	35.00	132.00	20.00	64.00	1,012.00	
TOTAL LABOR COSTS				\$99,069.15	\$81,892.51	\$64,913.51	\$5,918.25	\$4,038.69	\$35,537.04	\$3,958.40	\$9,377.92		\$304,315.47

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION				Survey - RPLS (Junior)	Surveyor - Senior (RPLS)	Survey - RPLS	Survey Technician	Survey Technician Senior	Admin/ Clerical	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES:				\$158.33	\$248.41	\$298.21	\$154.84	\$110.78	\$112.18		
FC180 (150) - SURVEY											
150.	1.	1.	Survey, ROW & Aerial Mapping								
150.	1.	C	Design Survey								
150.	1.	C	1. Prepare Plans DTM and Contours from Neotop		5		6	30		37	\$4,198.72
150.	1.	C	1. Establish and Maintain Primary Horizontal and Vertical Control Monuments (Est 10 Primary)		1		10	32	1	44	\$4,961.00
150.	1.	C	1. Prepare Primary Horizontal and Vertical Control Data Sheets (index and H&V total sheets)	8	5		40	24	1	74	\$8,454.84
150.	1.	C	1. Topographic Surveys to Supplemental Aerial Data, (map check for missing features and obscured areas estimated at 2 acres)	4	5	8	68	38		105	\$12,187.33
150.	1.	C	1. Provide Details of Existing Utilities and Drainage Features (e.g., culverts, manholes, of all types etc.)	2	1		58	48		115	\$12,548.55
150.	1.	C	1. Provide Details of Existing Railroad Track Crossings (up to 3) and 4409 Top of Rail Surveys	2	1		32	48		81	\$9,004.02
150.	1.	C	1. Merge Supplemental Survey Data		1		18	68		85	\$9,441.43
150.	1.	C	1. Provide Cross-Sections and memo DTM's (Up to 12)		1		12	24		37	\$4,192.00
150.	1.	C	1. Provide Final Design Topographic Files, ASCII Coordinate File, Field Notes & Sketches		1		18	24		43	\$4,789.00
150.	1.	C	1. Provide Subsurface Utilities (Quickly Level AT) Test Holes (Up to 10)	1			18	8		23	\$2,495.07
150.	1.		ROW Mapping								
150.	1.	C	1. Create Existing ROW (HWY 287, Bonds Ranch Rd and 2 adjacent Railroad ROW's)	4	4	30	68	102		208	\$25,008.00
150.	1.	C	1. Obtain and Review Abstracts	1	2	8	32	48		81	\$10,961.31
150.	1.	C	1. Place Existing Easements on Parcel Boundaries	1	2	8	32	20		63	\$7,890.31
150.	1.	C	1. Locate As-Built Utilities Across Placement of Existing Easements	1	2	10	32	10		55	\$7,201.22
150.	2.		Aerial Mapping								
150.	2.	B	2. Establish Horizontal and Vertical Control for Aerial mapping (20 targets, 20 leveling shots)		1		32	18		48	\$5,368.80
TOTAL HOURS				24.00	20.00	82.00	672.00	538.00	2.00	1,108.00	
TOTAL LABOR COSTS				\$3,751.92	\$4,968.20	\$12,871.02	\$44,188.80	\$59,087.50	\$224.37		\$126,781.81

**Schematic and Environmental
Bonda Ranch Road, Segment 2
Exhibit B - Fee Schedule**

PRIME PROVIDER: LJA Engineering, Inc.

TASK DESCRIPTION				Project Manager (Senior)	Deputy Project Manager	Engineer (Senior)	Engineer (Project) - Senior	Utilities Coordinator - Senior	Utilities Coordinator	TOTAL LER HOURS	TOTAL COSTS
HOURLY RATES:				\$376.26	\$310.10	\$210.10	\$247.47	\$235.92	\$101.70		
FC140 (143) - MISCELLANEOUS DESIGN SERVICES											
103.	1.										
103.	2.									0	\$0.00
103.	2.	A.						30	30	60	\$11,634.60
103.	2.	A.						12	24	36	\$5,473.76
103.	2.	A.						12	24	36	\$5,473.76
103.	3.									0	\$0.00
103.	4.									0	\$0.00
103.	5.									0	\$0.00
				96	120	96	96			408	\$176,776.96
TOTAL HOURS				96.00	120.00	96.00	96.00	54.00	90.00	542.00	
TOTAL LABOR COSTS				\$36,026.14	\$37,219.33	\$20,775.46	\$23,757.02	\$12,739.70	\$12,142.48		\$181,659.14

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PRIME PROVIDER: LIA Engineering, Inc.

UNIT COSTS	# OF UNITS	UNIT	COST/UNIT	
DESIGN SURVEY				
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	310	hour	\$175.00	\$54,250.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	54	hour	\$200.00	\$11,280.00
LIDAR Terrestrial Laser Scanning	1	day	\$2,600.00	\$2,600.00
				\$0.00
Turning Movement Counts				\$0.00
24-Hour Video System Classification Counts - Major Intersection	2	per intersection	\$1,700.00	\$3,400.00
24-Hour Video System Classification Counts - Minor Intersection	8	per intersection	\$1,380.00	\$11,040.00
24-Hour Automated Tube Counts - Speed or Class	4	per direction/per countway	\$320.00	\$1,280.00
				\$0.00
SUE				
				\$0.00
SUE (Quality Level C and D) includes labor and equipment for records research, CADD, and mapping.		LF	\$0.65	\$0.00
SUE (Quality Level B - Utility Designation) includes labor and equipment for records research, design, engineering, engineering, surveying, CADD, mapping and limited traffic control.		LF	\$1.85	\$0.00
SUE (Quality Level A - Utility Locate, Test Holes) includes labor and equipment for vacuum excavation, engineering, surveying, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.				
Level A - 0 to 4 ft.		EA	\$1,050.00	\$0.00
Level A - 4 to 8 ft.		EA	\$1,250.00	\$0.00
Level A - 8 to 12 ft.		EA	\$1,550.00	\$0.00
Level A - 12 to 20 ft.		EA	\$2,800.00	\$0.00
GEOTECH				
Testing and Materials (8 Bridge Core Logs)		EA	\$9,000.00	\$0.00
Testing and Materials (24 Retaining Wall Drillcore Logs)		EA	\$7,000.00	\$0.00
Testing and Materials (10 Railroad Core Logs)		EA	\$1,500.00	\$0.00
Testing and Materials (2 Pavement Core Logs)		EA	\$1,500.00	\$0.00
ROW SURVEY				
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$175.00	\$0.00
3 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)		hour	\$210.00	\$0.00
SUBTOTAL UNIT COSTS				\$83,768.00

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.

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

PRIME PROVIDER: LJA Engineering, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)	3,600	mile	\$0.700	\$2,520.00
Lodging (incl. April Taxes and fees)	5	day/person	\$45.00	\$225.00
Food/Drink (Lunch and breakfast included)	5	day/person	\$175.00	\$875.00
Meals (including alcohol and tips, overnight stay required)	5	day/person	\$60.00	\$300.00
Air Travel - In State - 2+ Week Notice (Coach)		rd trip/person	\$240.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$160.00	\$0.00
Air Travel - Out of State - 2+ Week Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,600.00	\$0.00
Overseas, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (includes taxes and fees, insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (includes gratuities)		each/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$50.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SVU or ATV Rental (includes taxes and fees, insurance costs will not be reimbursed)		day	\$105.00	\$0.00
Administrative				
CDs	2	each	\$2.00	\$4.00
USPS Flashdrive (up to 32 GB)		each	\$15.00	\$0.00
Personal Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)	5	letter	\$0.73	\$3.65
Cardstock Color (8 1/2" x 11")	200	each	\$1.00	\$200.00
Photocopies BW (11" x 17")	400	each	\$0.25	\$100.00
Photocopies BW (8 1/2" x 11")	1,650	each	\$0.15	\$247.50
Photocopies Color (11" x 17")	400	each	\$1.25	\$500.00
Photocopies Color (8 1/2" x 11")	700	each	\$1.00	\$700.00
Plots (A1) on board	250	per sq. ft.	\$1.10	\$275.00
Plots (Color on Board)	250	per sq. ft.	\$1.75	\$437.50
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and Ribbons		each	\$10.00	\$0.00
Confirmed Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$26.06	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing	1	each	\$80.00	\$80.00
Notebooks		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$70.00	\$0.00
Presentation Boards, 32" X 48" Color Mounted	10	each	\$100.00	\$1,000.00
Presentation Boards, 48" X 96" Color Mounted	5	each	\$175.00	\$875.00
Construction				
Cylinder Molds		each	\$1.00	\$0.00
DMM - Digital Measuring Instrument		each	\$700.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (includes operation, and maintenance costs, insurance costs will not be reimbursed) (8 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (includes operation, and maintenance costs, insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (includes operation, and maintenance costs, insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (includes operation and maintenance costs, insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4x4 (includes operation and maintenance costs, insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Onsite Tracker Rental		each	\$750.00	\$0.00
Safety Harness and Lanyards		each	\$400.00	\$0.00
Monthly Housing and Food Allowance - This rate shall be used when an Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel, Travel Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use the monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time Self Inspection Inspection Job construction projects.		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scales, (1 ea) 8" shaker, (1 set) 8" cones, (1 ea) splitter, (1 ea) hot ovens, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Oxydator Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAD Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAD Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Detection Testing (1 trip over 100 miles from office to job)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Detection Testing (1 trip over 100 miles from office to job)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Truck Drilling Equipment less 100 miles		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Truck Drilling Equipment more than 100 miles		mile	\$18.00	\$0.00
ATV Exchange (for on installation on ATV)		LF	\$5.00	\$0.00
Stand By or Drilling Equipment		hour	\$350.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

PRIME PROVIDER: LJA Engineering, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (less within 100 miles from office to well)		day	\$600.00	\$0.00
Mobilization and Demobilization of Drilling Rig (less over 100 miles from office to well)		day	\$5.00	\$0.00
Mobilization of coring equipment used to drill deviate and rigid pavement (2-man crew minimum, labor paid separately)(less 100 miles)		trip	\$0.00	\$0.00
Mobilization of coring equipment used to drill deviate and rigid pavement (2-man crew minimum, labor paid separately)(less 100 miles)		trip	\$8.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include travel)		each	\$2,150.00	\$0.00
Field Laboratory Equipment Rental		month	\$1,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$5,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Asphalt Laboratory		each	\$5,500.00	\$0.00
Concrete and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shutty Lubric Transportation Box		per box	\$175.00	\$0.00
Environmental Planning / Environmental				
Nose Meter Rental - Unit - includes nose meter, camera, imports, calculator	1	per project	\$500.00	\$500.00
Nose Meter Rental - Unit - includes nose meter, camera, imports, calculator		per day/working	\$3,000.00	\$0.00
2nd Party Data		each package	\$500.00	\$0.00
2nd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
2nd Party Traffic Data Subscription - Multi-mode (50 zones)		each package	\$25,000.00	\$0.00
2nd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" x 50" scale)		each	\$175.00	\$0.00
Cursor (Drawer and TX Archeological Research) (on for artifacts and report)		each	\$4,000.00	\$0.00
LAW - Citation Fee	1	avg	\$200.00	\$500.00
Environmental Field Supplies (fishes, stakes, flags, spray paint, etc.)		each	\$35.00	\$0.00
CEMA FTS (Mapping)		each	\$50.00	\$0.00
CEMA FTS Backup Data Request		each	\$500.00	\$0.00
CEMA Map Review Submitted (CEMA/DMR) (Submitting Fee Only)		each	\$10,000.00	\$0.00
CEMA Model Mapping (Landmap)		each	\$500.00	\$0.00
Historical Aerial Imagery		unit	\$1,200.00	\$0.00
Mapprint Records		sheet	\$1.75	\$0.00
File Report		each	\$300.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
Public Involvement				
Court Reporter		hour	\$70.00	\$0.00
Court Reporter (Public Meetings, Hearings and Testification)		day	\$1,000.00	\$0.00
Costumes for Public Involvement	1	hour	\$70.00	\$60.00
Newspaper Advertisement - Community Newspaper	3	per publication	\$1,000.00	\$3,000.00
Newspaper Advertisement - Urban Newspaper	3	per publication	\$11,800.00	\$34,600.00
Public Meeting Notices with one (1) embedded project video to be sent to call participants a third-party list-based service third-party provider (Monthly)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental	3	8 hours	\$1,500.00	\$10,500.00
Public Involvement Facility Rental	3	4 hours	\$3,500.00	\$10,500.00
Public Involvement Facility Rental	3	hour	\$2,500.00	\$10,500.00
Public Involvement Supplies	3	per meeting	\$200.00	\$600.00
Public Notices - Mass Mailing (500 notices)	3	per mailing	\$450.00	\$1,350.00
Public Notices - Mass Mailing (3 Self Addressed Return Envelope (500 pieces)	3	per mailing	\$1,100.00	\$3,300.00
Postcards (Every Day Direct) (postcard or project area)	3	each	\$3,000.00	\$9,000.00
Signage/Displays	3	each	\$5,000.00	\$15,000.00
Audio - Equipment Rental	3	each	\$1,500.00	\$4,500.00
Audio - Visual Equipment Rental	3	event	\$500.00	\$1,500.00
Sound Technician for Public Involvement	3	event	\$450.00	\$1,350.00
Professional Narrator	3	event	\$2,500.00	\$7,500.00
Professional Narrator	3	hour	\$1,500.00	\$4,500.00
Translator (English to Spanish, other languages as appropriate, or Sign Language)	3	event	\$500.00	\$1,500.00
Translator (English to Spanish, other languages as appropriate, or Sign Language)	3	hour	\$500.00	\$1,500.00
Interpretive Services - Includes International coordination with entities outside of the U.S. (prior to DOT) (written approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LIDAR (Mobile Mapping System) (less to travel) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Airborne Aerial Imagery/LIDAR - Project Flight Mile (aerial only) and on-ground flight miles		per mile	\$35.00	\$0.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment - Aerial Imagery/LIDAR - Project Flight Mile (aerial only) and on-ground flight miles		per mile	\$65.00	\$0.00
Universal Laser Scanner (beam applied to actual line scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type B ROW Control Monument - Excavated/Chisel, rock, rocky soil, 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$1,000.00	\$0.00
Type B ROW Control Monument - Poured 2-3 Foot (includes equipment, materials, and rentals). Marker supplied by TxDOT	30	each	\$300.00	\$9,000.00
Vertical Photogrammetry Camera		hour	\$175.00	\$0.00
Autumn GPS/IMU Data collection/Processing		per project	\$2,500.00	\$0.00
Autumn Point Road Setting (24 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$275.00	\$0.00
Pathometer		day	\$50.00	\$0.00
Ground Target (includes point and panel markers)	20	each	\$50.00	\$1,000.00
Hydrographic Sound Equipment		hour	\$200.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scan/print)		per image	\$20.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

PRIME PROVIDER: LIA Engineering, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Infrared Processing (film development, scanning)		per frame	\$78.00	\$0.00
Photo Lab Service - Color Processing (film development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$78.00	\$0.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$8.00	\$0.00
Portfolio LIDAR System (Back Pack Mounted)		day	\$1,750.00	\$0.00
Controlled Desert Capes		sheet	\$2.55	\$0.00
Desert Capes	80	sheet	\$2.00	\$160.00
Rephotography		per sq. ft.	\$5.00	\$0.00
Li-Poly (Military only)		each	\$5.00	\$0.00
Deconstructor Potts (Military only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LIDAR Fixed Wing Aircraft (includes aircraft, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LIDAR (includes helicopter, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering		day	\$250.00	\$0.00
Ground Penetrating Radar (equipment only) (GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydrovacuum Excavation (equipment, materials and labor)		hour	\$450.00	\$0.00
Traffic Control				
Portable Message Board	42	day	\$500.00	\$21,000.00
Flashing Arrow Board		day	\$100.00	\$0.00
New Enforcement Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator Trucks - (Lane Closure) (includes labor, equipment and fuel)		day	\$1,500.00	\$0.00
Attenuator Trucks - (No Lane Closure) (includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator Trucks - (Includes labor, equipment and fuel)		day	\$5,150.00	\$0.00
Miscellaneous				
Backfill (off-site purchase)		c/y	\$200.00	\$0.00
Dashboard Mounted Video Camera System		per system	\$250.00	\$0.00
Light Tower		day	\$350.00	\$0.00
Steel Plate Rental		per day	\$50.00	\$0.00
Air Card / Hot Spot		each/month	\$35.00	\$0.00
Boat with Motor		day	\$400.00	\$0.00
Backhoe Rental		day	\$1,500.00	\$0.00
Bulldozer Rental		day	\$3,000.00	\$0.00
Site Clearance		day	\$2,500.00	\$0.00
Railroad - Insurance in addition to \$10 Minimum Required (Minimum Coverage of \$1 Million, required by RTR)		each	\$2,500.00	\$0.00
Railroad - Permit		each	\$4,500.00	\$0.00
Railroad - Safety Training (If required - Heavy Rail Safety Training Certificate, includes Classroom training and on-the-job coordination card)		per person	\$525.00	\$0.00
Railroad - Value Signs	10	per sheet	\$75.00	\$750.00
Railroad Flagging (Service provided by RTR)	4	per day	\$1,620.00	\$6,480.00
Railroad Heelwork (Provided by the Railroad)		per day	\$15.00	\$0.00
Rental Equipment - Gasoline Powered Auger		day	\$100.00	\$0.00
Crane & Dredging Operations (up to 100' elevation (Mobility))		per project	\$50,750.00	\$0.00
Value Engineering		per project	\$40,000.00	\$0.00
Utilities	1	per project	\$1,000.00	\$1,000.00
Total				\$161,987.65

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: American Structuralpoint

TASK DESCRIPTION	Support Manager	Technical Advisor (Senior)	Quality Manager	Engineer (Senior)	Engineer Traffic (Senior)	Engineer (Project)	Engineer-In-Training	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:	\$319.56	\$320.14	\$297.18	\$252.45	\$239.87	\$188.54	\$138.53		
PC 102 (110) - Route and Design Studies									
110. 1. A									
110. 1. B									
110. 1. C									
110. 1. D 4.									
110. 1. D 4.									
110. 1. D 4.									
110. 1. D 4.									
110. 1. F									
110. 1. G									
110. 1. H									
110. 2.									
110. 2. A									
110. 2. B									
110. 2. C									
110. 2. D									
110. 2. D 1.									
110. 2. D 2.									
110. 2. D 3.									
110. 2. D 4.									
110. 2. D 5.									
110. 2. D 6.									
110. 2. E									
110. 2. F									
110. 2. G									
110. 2. H									
110. 2. I									
110. 2. J									
110. 2. K									
110. 2. L									
110. 3.									
110. 4.									
110. 4. A 1.									
110. 4. A 2.									
110. 4. A 3.									
110. 5.									
110. 6.									
110. 7.									
110. 8.									
110. 9.									
110. 10.									
110. 11.									
TOTAL HOURS	70.00	12.00	80.00	308.00	116.00	520.00	478.00	1582	
TOTAL LABOR COSTS	\$22,383.20	\$3,841.68	\$23,775.20	\$77,754.50	\$27,891.72	\$98,040.80	\$66,840.28		\$319,631.48

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: American Structurepoint				Support Manager	Engineer (Project)	Engineer (Design)	Admin/ Clerical	TOTAL HOURS	TOTAL COSTS
TASK DESCRIPTION									
HOURLY RATES:				\$319.56	\$188.54	\$176.79	\$97.28		
FC145 SCHEMATIC - PROJECT COORDINATION AND MANAGEMENT									
145	1			0	0	0		24	\$3,478.88
COORDINATION/COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (8 MEETINGS)									
145	2	A		36	36	36		108	\$24,854.08
INTERNAL COORDINATION OF PROJECT TASKS (2 18 MONTHS)									
145	2	A							
PROJECT WORK SCHEDULE									
145	2	C		30			36	72	\$18,006.24
PROVIDE MONTHLY PROGRESS REPORTS (2 TIMES (2 18 MONTHS)									
145	2	E		16	16			32	\$8,129.60
SITE VISITS AND REPORT									
TOTAL HOURS				86.00	68.00	44.00	36.00	234	
TOTAL LABOR COSTS				\$30,677.76	\$11,512.40	\$7,777.44	\$3,502.08		\$53,269.68

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

American Structurepoint				
Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)	1.575	mile	\$0.700	\$1,102.50
Lodging/Hotel (Just taxes and fees)		day/person	\$45.00	\$0.00
Lodging/Hotel (Taxes and fees not included) (4 in-person meetings and 1 site visit)	5	day/person	\$125.00	\$625.00
Meals (Excluding alcohol and fees, overnight stay required)	10	day/person	\$60.00	\$600.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$500.00	\$0.00
Air Travel - In State - Short Notice (Economy)		rd trip/person	\$350.00	\$0.00
Air Travel - Out of State - 2-Week Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,500.00	\$0.00
Oversize, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees, insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes RideShare)		each trip/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$350.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SUV or ATV Rental (Includes taxes and fees, insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
City		each	\$2.00	\$0.00
USA Filing Fee (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.75	\$0.00
Color Postage (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopies BW (11" x 17")		each	\$0.25	\$0.00
Photocopies BW (8 1/2" x 11")		each	\$0.15	\$0.00
Photocopies Color (11" x 17")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" x 11")		each	\$1.00	\$0.00
Plots (BW on Bond)		per sq. ft.	\$1.00	\$0.00
Plots (Color on Bond)		per sq. ft.	\$1.75	\$0.00
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and delivery		each	\$10.00	\$0.00
Carried Letter Return Request (Current Postal Rate)		each	\$3.75	\$0.00
Shipment Mail - letter size (Current Postal Rate)		each	\$26.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing		each	\$80.00	\$0.00
Notarized		each	\$10.00	\$0.00
Color Copies on Foam Board		sq. yard foot	\$20.00	\$0.00
Presentation Boards, 36" X 48" Color Mounted		each	\$100.00	\$0.00
Presentation Boards, 48" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Molds		each	\$3.00	\$0.00
DML - Digital Measured Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs, insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs, insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and ladders		each	\$400.00	\$0.00
Monthly Housing and Food Allowance - this rate should be used when an Apartment, house, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of the rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use this monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by invoices submitted for the full time taken on the project. No reimbursement for the construction costs.		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)				
Geotechnical / Materials		each	\$250.00	\$0.00
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) spin-on oven, (1 ea) briars, (1 ea) 6" shaker, (1 ea) 8" sieve, (1 ea) splitter, (1 ea) hot oven, (1 ea) vibrating table and dustbin, (1 ea) vacuum pump, and (1 ea) Texas Oysterbox Press. All component parts, consumables, and required maintenance is considered subsidiary to this fee.		month	\$750.00	\$0.00
HMAG Testing Equipment Monthly Rental < 150 Miles		each project	\$1,000.00	\$0.00
HMAG Testing Equipment Monthly Rental > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Track Driver Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Track Driver Equipment more than 100 mile		mile	\$13.00	\$0.00
ATV Buggy for an inspector on ATV		1.5	\$5.00	\$0.00
Stand By of Driving Equipment		hour	\$350.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips within 100 miles from office to site)		trip	\$600.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-min crew minimum, labor and material included 100 miles)		trip	\$600.00	\$0.00
Mobilization of boring equipment used to drill flexible and rigid pavement (2-min crew minimum, labor and material included 100 miles)		mile	\$5.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,150.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$5,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$5,000.00	\$0.00
AASHTO Accreditation Acceptance Laboratory		each	\$5,000.00	\$0.00
Cement and Concrete Reference Lab (CCR) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shelby Tubes Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripod, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripod, calibrator		per 24 hr/active	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multi mode (50 zones)		each package	\$75,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photography (1" = 500' scale)		each	\$125.00	\$0.00
Graphic (Color and TX Archaeological Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
Arch. Consultation Fee		site	\$5,000.00	\$0.00
Environmental Field Supplies (batteries, stamps, flagging, survey pins, etc.)		day	\$15.00	\$0.00
EMA FIS (Manual)		each	\$50.00	\$0.00
EMA FIS Review Data Request		each	\$500.00	\$0.00
EMA Map Review/Review (ECONOMIC DATA SUBMITTAL Fee Only)		each	\$10,000.00	\$0.00
EMA Maps/Topographic Map		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plot Reports		sheet	\$7.50	\$0.00
Title Report		each	\$900.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
Public Involvement				
Court Reporter		case	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Transcription)		day	\$1,000.00	\$0.00
Support for Public Involvement		hour	\$50.00	\$0.00
Weekly or Ad-hoc news - Community Newspaper		per publication	\$5,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third-party location-based service data provider (Vlocity)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$1,500.00	\$0.00
Public Involvement Facility Rental		2 hours	\$500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailing (500 pieces)		per mailing	\$300.00	\$0.00
Public Notices - Mass Mailing with Self-Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Survey/Drawings		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$500.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

American Structurepoint				
Other Direct Expenses	Quantity	Unit	Rate	Total
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		event	\$500.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		hour	\$500.00	\$0.00
Interpretive Services - Includes International coordination with entities outside of the U.S. (prior to DOT District approval required)		month	\$10,000.00	\$0.00
Mobile Mapping System (Surveying / ROW) - Includes all equipment, software, and personnel	20,000	per mile	\$10.00	\$2,000.00
Mobile Mapping System (Surveying / ROW) - Includes all equipment, software, and personnel		per mile	\$10.00	\$0.00
Fixed Wing Aerial Imagery (UDAR - Project Flight Miles (from local airport and on-project flight miles)		per mile	\$35.00	\$0.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Radio		hour	\$30.00	\$0.00
Mobile Mapping Equipment - Aerial Imagery (UDAR - Project Flight Miles (from local airport and on-project flight miles)		per mile	\$65.00	\$0.00
Terrrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (Scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW Control Monument - Excavated (dirt, rocks, rocky soil, 2-4 inch depth) (includes equipment, materials, and personnel. Minors supplied by TxDOT)		each	\$100.00	\$0.00
Type II ROW Control Monument - Poured 2-3 feet (includes equipment, materials, and personnel. Minors supplied by TxDOT)		each	\$300.00	\$0.00
Terrrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GPS/IMU Data collection/Processing		per project	\$2,500.00	\$0.00
Survey Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Fieldworker		day	\$20.00	\$0.00
Ground Target (includes point and panel material)		each	\$30.00	\$0.00
Hydrographic Sonar Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$25.00	\$0.00
Photo Lab Service - Color Processing (film, development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$25.00	\$0.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$3.00	\$0.00
Portable UDAR System (Case, Pack Mounted)		day	\$1,750.00	\$0.00
Cost-Net Dead Copies		sheet	\$7.50	\$0.00
Dead Copies		sheet	\$2.00	\$0.00
Remediation		per sq. ft.	\$5.00	\$0.00
Drill/Retest Points (Materials only)		each	\$5.00	\$0.00
Drill/Retest Points (Materials only)		each	\$25.00	\$0.00
Terrrestrial Laser Scanner (rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery (UDAR Fixed Wing Aircraft) (includes aircraft, pilot, sensor/UDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery (UDAR) (includes helicopter, pilot, sensor/UDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering (includes all equipment, software, and personnel)		day	\$750.00	\$0.00
Ground Penetrating Radar (equipment only) (GPR owned by provider)		per day	\$300.00	\$0.00
Push Camera Mapping (Equipment) (owned by provider)		day	\$700.00	\$0.00
Ground Penetrating Radar (equipment only)		per day	\$700.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$700.00	\$0.00
Hydrovacuum Excavation (equipment, materials, and labor)		hour	\$450.00	\$0.00
Portable Message Board		day	\$500.00	\$0.00
Flashing Arrow Board		day	\$500.00	\$0.00
Lane Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Abutment Trucks - (Lane Shoulder Closure) (includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Abutment Trucks - (No Lane Closure) (includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Abutment Trucks - (includes labor, equipment and fuel)		day	\$5,150.00	\$0.00
Origin & Destination telephone trip data collection (Mobility)		per project	\$50,750.00	\$0.00
Value Engineering (CVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$2,327.50

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

SUB PROVIDER: Beyond Engineering and Testing

TASK DESCRIPTION			Project Manager (Senior)	Engineer (Senior)	Engineer (Project)	Engineer (Design)	Engineer-In- Training I	Geologist	TOTAL HOURS	TOTAL COSTS
HOURLY RATES			\$239.22	\$318.81	\$240.76	\$187.07	\$150.23	\$143.38		
FC160 (163) - MISCELLANEOUS (ROADWAY)										
163	1	UTILITY ENGINEERING INVESTIGATION								
163	2	UTILITY COORDINATION								
163	3	GEO TECHNICAL BORINGS AND INVESTIGATIONS								
	A	Kudhoff Meeting, Boring Location Plan, Field Coordination	3	2	4		8		16	\$3,476.50
	B	Boring Shoring, Traffic Control Coordination and Utility B11 Location	2	2	1	1		4	10	\$7,311.00
	C	Logging, Sampling and Coordination	1		2			48	61	\$7,798.96
	D	Laboratory Assignments and Result Review			2				2	\$1,673.63
	E	Boring Log and Pavement Core Preparation			3	8	6		17	\$3,900.19
	F	Review Existing Geologic and Geotechnical Data	3		4	14	10		31	\$6,741.94
	G	Preliminary Foundation Recommendations	4		10	20			34	\$7,705.78
	H	Drill Desktop Study Report Preparation	10		20	38			68	\$15,301.72
	I	Final Desktop Study Report Preparation	4		6	8			18	\$4,377.84
163	4	ILLUMINATION SCHEMATIC DESIGN								
163	6	RAILROAD AND AIRPORT COORDINATION								
TOTAL HOURS			28.00	4.00	53.00	67.00	30.00	52.00	252.00	
TOTAL LABOR COSTS			\$6,818.72	\$1,256.44	\$12,759.75	\$17,145.09	\$4,500.80	\$7,358.78		\$52,037.86

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Beyond Engineering and Testing, LLC

UNIT COSTS	# OF UNITS	UNIT	COST/UNIT	COST
GEOTECHNICAL ENGINEERING SERVICES				
Volume Shrinkage		each	\$130.00	\$0.00
Laboratory Compression Characteristics of Soil Using Standard Effort		each	\$315.00	\$0.00
Modified Proctor Test		each	\$370.00	\$0.00
Soil/Rock Coring with Standard Penetration Test (SPT) Drilling and Geotech Manual Sampling/Coring (< 60 ft)	170	LF	\$54.00	\$9,180.00
Soil/Rock Coring with Standard Penetration Test (SPT) Drilling and Geotech Manual Sampling/Coring (> 60 ft)	40	LF	\$63.00	\$2,520.00
Soil/Rock Coring with Continuous Sampling/Coring (< 60 ft)		LF	\$72.00	\$0.00
Soil/Rock Coring with Continuous Sampling/Coring (> 60 ft)		LF	\$57.00	\$0.00
Soil/Rock Testing without Sampling (Auguring or Roller Cone) (< 60 ft)		LF	\$37.00	\$0.00
(a) Additional Standard Penetration Test (SPT) and Split-Hammer Sampling of Soils		each	\$42.00	\$0.00
(b) Additional Shelby Push Tube Sampling Encountered in Field		each	\$42.00	\$0.00
(c) Additional Texas Cone Penetration (TCP) Sampling		LF	\$56.50	\$0.00
Soil/Rock Boring without Sampling (Auguring or Roller Cone) (> 60 ft)		LF	\$42.00	\$0.00
(a) Additional Standard Penetration Test (SPT) and Split-Hammer Sampling of Soils		each	\$50.00	\$0.00
(b) Additional Shelby Push Tube Sampling Encountered in Field		each	\$45.00	\$0.00
(c) Additional Rock Coring		LF	\$65.00	\$0.00
(d) Additional Texas Cone Penetration (TCP) Sampling		each	\$46.00	\$0.00
Soil/Rock Boring with Texas Cone Penetration (TCP) Drilling and Geotech Manual Sampling/Coring (< 60 ft) (evaluation of existing structures)		LF	\$51.50	\$0.00
Soil/Rock Coring with Texas Cone Penetration (TCP) Drilling and Geotech Manual Sampling/Coring (> 60 ft) (evaluation of existing structures)		LF	\$61.00	\$0.00
California Shrinkage Ratio (SHR) of Laboratory-Compacted Soils (Single Sample without MO Dune)		test	\$440.00	\$0.00
Unconfined Compressive Strength (Soil)		each	\$87.00	\$0.00
Permeability of Granular Soils (Constant Head)		each	\$500.00	\$0.00
One-Dimensional Consolidation Properties of Soils Using Instruments Loading		each	\$700.00	\$0.00
Field Vane Shear Test		each	\$720.00	\$0.00
Unconfined Compressive Strength (Rock)		each	\$150.00	\$3,000.00
Standard Test Method for Moisture, Ash, and Organic Matter of Plastic and Other Organic Soils	2	each	\$37.00	\$0.00
Direct Shear Test of Soils Under Consolidated Drained Conditions		set of 3	\$1,100.00	\$0.00
Soil/Tissue Strength of Intact Rock Core Specimens		each	\$180.00	\$0.00
Aquifer Test Method in Determining Hydraulic Properties by Well Techniques		LF	\$375.00	\$0.00
Standard Test Method for Determinative Characteristics of Clay Soil by Double Hydrometer		each	\$355.00	\$0.00
Standard Test Method for Rapid Determination of Carbonate Content in Soils		each	\$110.00	\$0.00
Hydraulic Conductivity of Unconsolidated Soils		each	\$250.00	\$0.00
One Dimensional Swell or Collapse of Soils, Methods A & B		each	\$110.00	\$0.00
One Dimensional Swell or Collapse of Soils, Method C		each	\$375.00	\$0.00
Standard Test Methods for Identification and Classification of Unconsolidated Clay Soils by the Plasticity Test		each	\$420.00	\$0.00
Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter		each	\$350.00	\$0.00
Standard Quicks for Comparison of Field Methods for Determining Hydraulic Conductivity in Vadose Zone		each	\$650.00	\$0.00
Measurement of Soil Potential (Suction) Using Filter Paper		each	\$105.00	\$0.00
Ground Penetrating Radar (GPR) Testing		day	\$4,100.00	\$0.00
Standard Test Methods for Determining Descriptive Characteristics of Clayey Soils by the Clegg Test		each	\$65.00	\$0.00
Dynamical Cone Penetrometer in Shallow Pavement Applications		each	\$315.00	\$0.00
Soil Organic Content Using UV-VIS Method		each	\$450.00	\$0.00
Borehole Grouting - Bentonite Chips	160	TF	\$15.00	\$2,400.00
Casagrande Type Piezometers		each	\$5.75	\$0.00
Coneograph Type Piezometers Installation		each	\$683.00	\$0.00
Conventional Patch	3	per patch	\$101.00	\$303.00
Cone Drill Assembly		each	\$163.00	\$0.00
Cone Drill Concrete		each	\$225.00	\$0.00
Concrete (operator/technician and boring equipment) used to drill flexible and rigid pavement (2-man crew)				\$0.00
(a) 4-in. diameter bore		inch	\$28.00	\$0.00
(b) 6-in. diameter bore	35	inch	\$44.00	\$1,540.00
Concrete (operator/technician and boring equipment) used to drill flexible and rigid pavement (2-man crew)				\$0.00
(a) Hot Mix Asphalt (over, etc.)		each	\$750.00	\$0.00
(b) Concrete (up to 18 inches) (up to 4-inches diameter)		each	\$395.00	\$0.00
(c) Concrete (more than 18 inches)		each	\$500.00	\$0.00
Cure Repair/Patch Asphalt Cold Mix		each	\$98.00	\$0.00
Cure Repair/Patch Concrete-Uniform		each	\$155.00	\$0.00
Electronic Water Level Device		day	\$140.00	\$0.00
Membrane Cover for Piezometer		each	\$325.00	\$0.00
Night Driving Surfaces Level equipment & material by TxDOT PM required		each	\$850.00	\$0.00
Nighttime Testing (optional) per hour, all pavement testing equipment (prior agreement & approval by TxDOT PM required)		each	\$250.00	\$0.00
Non Destructive Deflection Testing				\$0.00
Falling Weight Deflection (FWD)		day	\$4,150.00	\$0.00
Heavy Weight Deflection (HWD)		day	\$4,400.00	\$0.00
Piezometer-1"		LF	\$43.00	\$0.00
Piezometer-2" (including well completion and installation)		LF	\$58.00	\$0.00
Piezometer Abandonment		each	\$960.00	\$0.00
Piezometer Completion/Abandonment		each	\$1,185.00	\$0.00
Piezometer Completion				\$0.00
Piezometer Finish (a) Flush Mount w/ 2" x 2" pad		each	\$600.00	\$0.00
Piezometer Finish (b) Stickup w/ 4 bolts on 4" x 4" pad		each	\$1,210.00	\$0.00
Stand By of Crew (prior agreement & approval by TxDOT PM required)		hour	\$350.00	\$0.00
Vertical Indrometer		each	\$1,070.00	\$0.00
Vertical Indrometer Installation		each	\$1,187.00	\$0.00
Vibrating Wire Piezometer		each	\$1,300.00	\$0.00
Vibrating Wire Piezometer Installation		each	\$1,418.00	\$0.00
MATERIALS ENGINEERING SERVICES				

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Determining Slaking Time		each	\$134.00	\$0.00
Determining Moisture Content in Soil Materials	4	each	\$32.00	\$128.00
Determining Liquid Limit of Soils	2	each	\$58.00	\$116.00
Determining Plastic Soil Limits	2	each	\$58.00	\$112.00
Calculating the Plasticity Index of Soils	2	each	\$60.00	\$120.00
Determining the Free Water Content of Soils		each	\$15.00	\$0.00
Determining the Specific Gravity of Soils		each	\$20.00	\$0.00
Particle Size Analysis of Soils Part 1		each	\$130.00	\$0.00
Particle Size Analysis of Soils Part 2		each	\$270.00	\$0.00
Determining the Amount of Material in Soils Finer than the 75 Micrometer (No. 200) Sieve	2	each	\$84.00	\$168.00
Adapting Tests to Measure Plasticity Index of Soils		each	\$308.00	\$0.00
Laboratory Compression Characteristics and Moisture-Density Relationship of Base Materials		each	\$380.00	\$0.00
Laboratory Compression Characteristics and Moisture-Density Relationship of Subgrade, Embankment Soils, and Base/Subgrade Material		each	\$350.00	\$0.00
Ball Mill Method for Determining the Description of Particle Size Material		each	\$300.00	\$0.00
Triaxial Compression Test for Disturbed Soils and Base Materials		each	\$7,000.00	\$0.00
Triaxial Compression Test for Undisturbed Soils		each	\$400.00	\$0.00
Soil-Cement Testing- Part 1		each	\$483.00	\$0.00
Soil-Cement Testing- Part 2		each	\$475.00	\$0.00
Soil-Lime Testing- Part 1		each	\$515.00	\$0.00
Soil-Lime Testing- Part 2		each	\$483.00	\$0.00
Soil-Lime Testing - Part 3		each	\$441.00	\$0.00
Determining the Shrinkage Factor of Soil Materials		each	\$475.00	\$0.00
Potential Vertical Rise of Natural Subgrade Soils	2	each	\$158.00	\$316.00
Determining Modulus of Subgrade Reaction (K Value)		each	\$480.00	\$0.00
Mooring, Testing, and Evaluating Asphalt (Base Base Materials)		each	\$7,650.00	\$0.00
Linear Hy-Ash Compressive Strength Test Methods- Part 1		each	\$920.00	\$0.00
Linear Hy-Ash Compressive Strength Test Methods- Part 2		each	\$1,175.00	\$0.00
Determining Soil pH		each	\$70.00	\$0.00
Measuring the Resistivity of Soil Materials		each	\$183.00	\$0.00
Consolidated Undrained (CU) Triaxial Compression Test for Undisturbed Soils- Single Stage	set of 3		\$7,735.00	\$0.00
Consolidated Undrained (CU) Triaxial Compression Test for Undisturbed Soils- Multiple Stage	set of 3		\$7,100.00	\$0.00
Freezing and Thawing Tests of Compacted Soil-Cement Mixtures		each	\$600.00	\$0.00
Manual Procedure for Description and Identification of Soils		each	\$55.00	\$0.00
Laboratory Classification of Soils for Engineering Purposes		each	\$85.00	\$0.00
Determining Sulfate Content in Soils - Colormetric Method		each	\$150.00	\$0.00
Conductivity Test for Field Detection of Sulfates in Soil		each	\$138.00	\$0.00
Determining Chloride and Sulfate Contents in Soils		each	\$250.00	\$0.00
ROW SURVEY				
2 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	hour		\$175.00	\$0.00
1 - Person Survey Crew (GPS and Robotic Total Stations included in indirect cost rate. Mileage not included.)	hour		\$210.00	\$0.00
SUBTOTAL UNIT COSTS				\$14,547.00

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 listed 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.

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Beyond Engineering and Testing, LLC

Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)	600	mile	\$0.700	\$420.00
Lodging (Hotel) (Rates and fees not included)		day/person	\$45.00	\$0.00
Lodging (Hotel) (Rates and fees not included)		day/person	\$75.00	\$0.00
Meals (Excluding alcohol and tip, overnight stay required)		day/person	\$50.00	\$0.00
Air Travel - In State - 2+ Week Notice (Coach)		rd./person	\$500.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd./person	\$900.00	\$0.00
Air Travel - Out of State - 2+ Week Notice (Coach)		rd./person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd./person	\$1,600.00	\$0.00
Overseas - special handling or extra baggage airline fees		each	\$100.00	\$0.00
Carriage		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees, insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes RideShare)		each/person	\$40.00	\$0.00
Rail Travel over 100 miles		rd./person	\$50.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SLV or ATV Rental (Includes taxes and fees, insurance costs will not be reimbursed)		day	\$105.00	\$0.00
Administrative				
CDs		each	\$7.00	\$0.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.75	\$0.00
Overnight Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopies B&W (11" x 17")		each	\$2.25	\$0.00
Photocopies B&W (8 1/2" x 11")		each	\$0.15	\$0.00
Photocopies Color (11" x 17")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" x 11")		each	\$1.00	\$0.00
Phone (Cell) on Bond		per eq. m.	\$1.00	\$0.00
Phone (Cell) on Bond		per eq. m.	\$1.25	\$0.00
Phone (Cell) on Photocopy Paper		per eq. m.	\$5.00	\$0.00
Report Binding and Laminating		each	\$10.00	\$0.00
Certified Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$25.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Garage Services		each	\$45.00	\$0.00
Report Printing		each	\$80.00	\$0.00
Notepaper		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 40" Color Mounted		each	\$100.00	\$0.00
Presentation Boards 40" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Mikes		each	\$3.00	\$0.00
DHM - Digital Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed) (6 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs, insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs, insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and lanyards		each	\$400.00	\$0.00
Monthly Housing and food allowance - This rate shall be used when on Apartment, House, or RV. Not in tent (includes Apartment/House Rental or Rental of RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use the monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspection use construction projects.		each/month	\$4,000.00	\$0.00
PPS (Photocopy Equipment)		each	\$750.00	\$0.00
Geotechnical / Materials				
Hot Box Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignitor oven, (1 ea) scales, (1 ea) 1" choker, (1 ea) 8" sealer, (1 ea) splitter, (1 ea) hot ovens, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyratory Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMVAC Testing Equipment Mobilization < 150 Miles		each dropped	\$1,000.00	\$0.00
HMVAC Testing Equipment Mobilization > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Collection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Collection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV/Buggy/Track Drilling Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV/Buggy/Track Drilling Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV Sunscreen (for its installed on ATV)		LF	\$5.00	\$0.00
Stand By of Drilling Equipment		hour	\$350.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Beyond Engineering and Testing, LLC

Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (1 trip within 100 miles from office to site)	1	trip	\$600.00	\$600.00
Mobilization and Demobilization of Drilling Rig (1 trip over 100 miles from office to site)	1	trip	\$2.00	\$2.00
Mobilization of coring equipment used to drill flexible and rigid pavements (2-man crew minimum, labor paid separately (less 100 miles)	1	trip	\$600.00	\$600.00
Mobilization of coring equipment used to drill flexible and rigid pavements (2-man crew minimum, labor paid separately (over 100 miles)		mile	\$8.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,160.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregate Laboratory		each	\$6,000.00	\$0.00
Commet and Concrete Reference Lab (CCR) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Smiley Tube Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripod, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripod, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Admitted (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multi-mode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photography (1" x 500 scale)		each	\$125.00	\$0.00
Grants (Driver and TX Address/Spec) (Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
FAIR, Current Fee		site	\$5,000.00	\$0.00
Environmental Field Supplies (batteries, stakes, tamping, spray paint, etc.)		day	\$35.00	\$0.00
FEMA FIS (Manual)		each	\$25.00	\$0.00
FEMA FIS (Book & Data Request)		each	\$500.00	\$0.00
FEMA Map Revision Submittal (ICOMRA/OMH) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Work Product History		each	\$500.00	\$0.00
Historical Aerial Imagery		unit	\$1,200.00	\$0.00
Map/Plan Records		sheet	\$7.50	\$0.00
Tide Report		each	\$400.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$100.00	\$0.00
Environmental Database Search		per project	\$7,500.00	\$0.00
Public Involvement				
Goal Report		day	\$75.00	\$0.00
Cost Report (Public Meeting, Hearings and Transcription)		day	\$1,000.00	\$0.00
Customs for Public Involvement		hour	\$60.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Minutes with one (1) employee project video to be sent to cell phones using a third-party location based service (e.g. Google Maps)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$7,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		hour	\$3,600.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailings (500 pieces)		per mailing	\$400.00	\$0.00
Public Notices - Mass Mailings with Self Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Displays		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$500.00	\$0.00
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		hour	\$150.00	\$0.00
Professional Translator		hour	\$150.00	\$0.00
Translator (English to Spanish, other languages as appropriate, or both languages)		event	\$500.00	\$0.00
Translator (English to Spanish, other languages as appropriate, or both languages)		hour	\$200.00	\$0.00
Interpretative Services - Includes International coordination with entities outside of the U.S. (prior to DOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LIDAR Mobile Mapping System (road to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Aerial Imagery/LIDAR - Project Flight Mile (bottom local airport and on-ground flight miles)		per mile	\$35.00	\$0.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment, Aerial Imagery/LIDAR - Project Flight Miles (bottom local airport and on-ground flight miles)		per mile	\$65.00	\$0.00
Terrestrial Laser Scanner (price applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW Control Monument - Extended (drill, rock, rocky soil, 24" inch depth (includes equipment, materials, and permits). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW Control Monument - Poured 2-3 Feet (includes equipment, materials, and permits). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GIS/IMA Data collection/Processing		per project	\$2,500.00	\$0.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Reflector		day	\$30.00	\$0.00
Ground Tarping (includes tarp and panel material)		each	\$30.00	\$0.00
Hydrographic Survey Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00
Photo Lab Service - Color Inkjet Processing (film, development, scanning)		per frame	\$75.00	\$0.00

Schematic and Environmental
Bonde Ranch Road, Segment 2
Exhibit B - Fee Schedule

Beyond Engineering and Testing, LLC

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Processing (film development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$25.00	\$0.00
Photo Lab Service - Enlargements, Lamination, Mounting		per sq. ft.	\$5.00	\$0.00
Portable LIDAR System (BackPack Mounted)		day	\$1,750.00	\$0.00
Copies (Hard Copies)		sheet	\$2.65	\$0.00
Good Copies		sheet	\$2.00	\$0.00
Microfilm/Video		per sq. ft.	\$5.00	\$0.00
Leads (Automatic only)		each	\$5.00	\$0.00
Drillmaster (Pilot) (Materials only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LIDAR (Fixed Wing Aircraft) (Includes aircraft, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LIDAR (Includes helicopter, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (fixed to project) (includes vehicle)		per project	\$7,500.00	\$0.00
~~Unmanned Aerial System (UAS) Utility Engineering~~	~~1~~	~~day~~	~~\$250.00~~	~~\$0.00~~
Ground Penetrating Radar (equipment only) (GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment) (owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Grid or Vacuum Excavation (equipment, materials, and labor)		hour	\$450.00	\$0.00
~~Unmanned Aerial System (UAS) Traffic Control~~	~~1~~	~~day~~	~~\$500.00~~	~~\$0.00~~
Portable Message Board		day	\$500.00	\$0.00
Flashing Arrow Board		day	\$500.00	\$0.00
Live Enforcement Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator Trucks - (1 Lane/Shoulder Closing) (Includes labor, equipment and fuel)		day	\$1,500.00	\$0.00
Attenuator Trucks - (No Lane Closure) (Includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator trucks - (Includes labor, equipment and fuel)	1	day	\$5,150.00	\$5,150.00
~~Unmanned Aerial System (UAS) Miscellaneous~~	~~1~~	~~day~~	~~\$500.00~~	~~\$0.00~~
Origin & Destination cell-phone log data collection (Mobility)		per project	\$50,750.00	\$0.00
Value Engineering (EVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$5,770.00

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: The Rice Group

TASK DESCRIPTION				Project Manager (Senior)	Deputy Project Manager	TOTAL HOURS	TOTAL COSTS
HOURLY RATE:				\$258.42	\$200.88		
FC145 - CONTRACT MANAGEMENT AND ADMINISTRATION							
145	1		COORDINATION / COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (36 MEETINGS)	36	36	72	\$16,526.88
145	2	A	INTERNAL COORDINATION OF PROJECT TASKS (4 HOURS / 18 MONTHS)	36	36	72	\$16,526.88
145	2	A	PROJECT WORK SCHEDULE				\$0.00
145	2	C	PROVIDE MONTHLY PROGRESS REPORTS (2 HOURS / 18 MONTHS)	36		36	\$9,303.12
145	2	E	SITE VISITS AND REPORT				\$0.00
TOTAL HOURS				108.00	72.00	180	\$42,356.88
TOTAL LABOR COSTS				\$27,909.36	\$14,447.52	360.00	\$42,356.88

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

PAYEE PROVIDER: The Ries Group

TASK DESCRIPTION				Project Manager (Senior)	Deputy Project Manager	CADD Operator (Senior)	Utilities Coordinator - Senior	Utilities Coordinator	Admin/ Clerical	TOTAL HOURS	TOTAL COSTS
HOURLY RATE:				\$258.42	\$200.00	\$112.48	\$187.82	\$133.05	\$100.33		
FC160 - MISCELLANEOUS (ROADWAY)											
163.	1.		UTILITY ENGINEERING INVESTIGATION (See unit rate)								\$0.00
163.	2.		UTILITY COORDINATION								\$0.00
163.	2.	A	Utility Rate Map	2	18	24	8	24		74	\$11,364.52
163.	2.	B	Coordination with Utility Companies, Individual & Group Utility Mts. Coordination with the Project Team.	1		4	12	24	4	45	\$8,837.54
163.	2.	B	Utility Kiosk Off Mapping and set out								\$0.00
163.	2.	B	Grants and Maintain Utility Contact List, Map and Exhibit			12	12	20	4	48	\$8,918.64
163.	2.	C	Deliverables and Quality Control	2	8		8	12		30	\$5,381.28
163.	3.		N/A								\$0.00
163.	4.		N/A								\$0.00
163.	5.		RAILROAD COORDINATION (UPRR and BNSF RR)	8	18				8	32	\$8,063.64
			Include Proposals and coordinating the following								\$0.00
			ROE documents (Inclusive and non-inclusive)								\$0.00
			Test Hole Exhibits								\$0.00
			Construction Work Plans								\$0.00
			RR Hoping Sitework (Road Pros)								\$0.00
			RR Construction Observer Services								\$0.00
TOTAL HOURS				13.00	40.00	40.00	40.00	80.00	16.00	229.00	
TOTAL LABOR COSTS				\$3,359.46	\$8,025.40	\$4,499.60	\$7,504.80	\$11,188.00	\$1,605.28		\$36,583.64

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

The Rice Group

UNIT COSTS	# OF UNITS	UNIT	COST/UNIT	COST
\$/LF				
SUE (Quality Level D) Includes labor and equipment for records research and CADD (including overhead utilities).	50,000	LF	\$0.57	\$28,500.00
SUE (Quality Level C) Includes labor and equipment for records research, CADD, and surveying (including overhead utilities) per utility owner. For overhead utilities, measurement for payment will be LF per utility owner. (Apurandee must be surveyed)	16,000	LF	\$0.78	\$12,000.00
SUE (Quality Level B - Utility Designation) Includes labor and equipment for records research, designating, engineering, surveying, CADD, mapping and limited traffic control.	10,000	LF	\$1.78 *	\$17,500.00
SUE (Quality Level A - Utility Design, Test Plans) Includes labor and equipment for vacuum excavation, engineering, surveying, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.				\$0.00
Level A: 0 to 4 ft.		EA	\$1,350.00	\$0.00
Level A: > 4 to 8 ft.		EA	\$1,650.00	\$0.00
Level A: > 8 to 12 ft.	10	EA	\$2,000.00	\$20,000.00
Level A: > 12 to 20 ft.		EA	\$2,900.00	\$0.00
Quality Level A SUE (Daily Rate)		DAY	\$3,300.00	\$0.00
				\$0.00
One (1) Designating Person with equipment	20	HR	\$145.00	\$11,600.00
Two (2) Designating Person with equipment	20	HR	\$145.00	\$3,900.00
Coring and repairing the pavements include labor, equipment, and materials		EA	\$450.00	\$0.00
				\$0.00
SUBTOTAL UNIT COSTS				\$51,500.00

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 disbursement included in the contract, but not in a work authorization, is not eligible for payment under that work authorization.

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

The Riles Group

Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rates)		mile	\$0.700	\$0.00
Lodging (Hotel (Just Taxes and Fees)		day/night	\$45.00	\$0.00
Lodging (Hotel (Taxes and Fees not included)		day/night	\$125.00	\$0.00
Meals (Excluding alcohol and fees, overnight stay required)		day/night	\$60.00	\$0.00
Air Travel - In State - 2+ Week Notice (Coach)		roundtrip	\$530.00	\$0.00
Air Travel - In State - Short Notice (Coach)		roundtrip	\$79.00	\$0.00
Air Travel - Out of State - 2+ Week Notice (Coach)		roundtrip	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		roundtrip	\$1,400.00	\$0.00
Overseas - special handling of data belongs airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (includes taxes and fees, insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (including Rushshare)		each/night	\$40.00	\$0.00
Bike Travel over 100 miles		roundtrip	\$350.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SUV or ATV Rental (includes taxes and fees, insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs		each	\$2.00	\$0.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
Stationery and Draw		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.73	\$0.00
Cardstock Color (a 1/2" x 11")		each	\$1.00	\$0.00
Photocopies B&W (8 1/2" X 11")		each	\$0.25	\$0.00
Photocopies B&W (8 1/2" X 11")		each	\$0.15	\$0.00
Photocopies Color (8 1/2" X 11")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" X 11")		each	\$1.00	\$0.00
Plots (DW on Hand)		per sq. ft.	\$1.00	\$0.00
Plots (Color on Hand)		per sq. ft.	\$1.75	\$0.00
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and Labels		each	\$10.00	\$0.00
Cardstock Letter Stationery (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$25.35	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing		each	\$60.00	\$0.00
Utilities		each	\$10.00	\$0.00
Color Graphics on Firm Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 42" Color Mounted		each	\$100.00	\$0.00
Presentation Boards 48" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Marks		each	\$3.00	\$0.00
DIM - Digital Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (includes operation, and maintenance costs, insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (includes operation, and maintenance costs, insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (includes operation, and maintenance costs, insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (includes operation and maintenance costs, insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4x4 (includes operation and maintenance costs, insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$150.00	\$0.00
Survey Harness and Inventory		each	\$400.00	\$0.00
Monthly Housing and Food allowance - This allowance will be used when on Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use the monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspecting the construction projects.		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scales, (1 ea) 6" shaker, (1 ea) 8" sieves, (1 ea) splitter, (1 ea) hot oven, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyraloy Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAC Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAC Testing Equipment Mobilizations > 150 Miles		per mile	\$2.00	\$0.00
Mobilization and Demobilization of Non Destructive Collection Testing (1 trip over 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Collection Testing (1 trip over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV/Buggy / Track Driving Equipment less 100 miles		each	\$1,400.00	\$0.00
Mobilization of ATV/Buggy / Track Driving Equipment more than 100 miles		mile	\$18.00	\$0.00
ATV/Surcharge for in installed on ATV		LF	\$5.00	\$0.00
Stand by or 15 min Equipment		hour	\$350.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

The Rice Group				
Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (Trips within 100 miles from office to site)		trip	\$600.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trips over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, unless paid separately) (Less 100 miles)		trip	\$600.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, unless paid separately) (Over 100 miles)		mile	\$6.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include labor)		each	\$2,150.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregates Laboratory		each	\$6,500.00	\$0.00
Cement and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Flourescent Calibration		each	\$7,500.00	\$0.00
Shelby Lucas Transportation Box		per box	\$175.00	\$0.00
Planning / Environmental Studies				
Noise Motor Rental Unit - includes noise meter, camera, tripod, calibrator		per project	\$500.00	\$0.00
Noise Motor Rental Unit - includes noise meter, camera, tripod, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multi mode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photography (1:1 = 500 scale)		each	\$125.00	\$0.00
Consultor (Director and 1X Architectural) (Research Lab for airfares and report)		each	\$4,000.00	\$0.00
IAIR, Curator Fee		air	\$5,000.00	\$0.00
Environmental Field Supplies (flashers, stakes, signage, spray paint, etc.)		day	\$35.00	\$0.00
FMMA FHS (Manual)		each	\$50.00	\$0.00
FMMA FHS Backup Data Flashes		each	\$500.00	\$0.00
FMMA Map Reviewer Submitted (2 CMRA CMR) (Submitted Fees Only)		each	\$10,000.00	\$0.00
FMMA Model/Booklet Mapwork		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plot Records		sheet	\$7.50	\$0.00
Traffic Report		each	\$600.00	\$0.00
Permit		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$750.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
Public Involvement				
Court Reporter		page	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Transcription)		day	\$1,000.00	\$0.00
Costation for Public Involvement		hour	\$20.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Green Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third party text-on-behalf service data provider (Mobile)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		hour	\$3,500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Meeting (500 pieces)		per mailing	\$600.00	\$0.00
Public Notices - Mass Meeting with Self Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Display		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$500.00	\$0.00
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other languages as appropriate, or Sign Language)		hour	\$500.00	\$0.00
Translator (Spanish to English, other languages as appropriate, or Sign Language)		hour	\$500.00	\$0.00
Interpretive Services - Includes international coordination with parties outside of the U.S. (prior to DOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for 1 (1) Aerial Imagery System (travel to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Airborne Aerial Imagery/LDAR - Project Flight Miles (from local airport and on-airport flight miles)		per mile	\$35.00	\$0.00
RTK Base Rate		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment - Aerial Imagery/LDAR - Project Flight Miles (from local airport and on-airport flight miles)		per mile	\$55.00	\$0.00
Terrestrial Laser Scanner (rules applied to actual time scanner unit is in use) (scanner owned by contractor)		hour	\$125.00	\$0.00
Type II ROW Control Monument - Excavated/Drilled, rock, rebar, 24 inch auger (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW Control Monument - Poured 24 inch Foot (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne G-35AMU Data collection/Processing		per project	\$2,500.00	\$0.00
Drum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Rebar		day	\$30.00	\$0.00
Ground Target (excludes paint and paint material)		each	\$30.00	\$0.00
Hydrographic Survey Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per frame	\$20.00	\$0.00
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$28.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

The Base Group

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Processing (film, development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing		per frame	\$75.00	\$0.00
Photo Lab Service - Enlargement, Lamination, Mounting		per sq. ft.	\$5.00	\$0.00
Portable LIDAR System (Back Pack Mounted)		day	\$17,500.00	\$0.00
Corr-hos (Devil Copes)		sheet	\$2.00	\$0.00
Devil Copes		sheet	\$2.00	\$0.00
Radiomicroscopy		per sq. ft.	\$5.00	\$0.00
Leica Probe (Microscope only)		each	\$5.00	\$0.00
Detector Probe (Microscope only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner rental rates applied to actual time sensor unit is in use		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LIDAR Fixed Wing Aircraft (includes aircraft, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LIDAR (includes helicopter, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering				
Ground Penetrating Radar (equipment only) (GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment) (owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydrovacuum Excavation (equipment, materials, and labor)		hour	\$150.00	\$0.00
Traffic Control				
Portable Message Board		day	\$500.00	\$0.00
Flashing Arrow Board		day	\$600.00	\$0.00
Law Enforcement Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator Trucks - 8' (one Shoulder Clearance) (includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Attenuator Trucks - 16' (one Lane Closure) (includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator Trucks - (includes labor, equipment and fuel)	1	day	\$5,150.00	\$5,150.00
Railroad (UPRR and BNSF)				
Railroad - Insurance in addition to STD Minimum Required		each	\$2,500.00	\$0.00
Minimum Coverage of \$1 Million required by RPR -				
Railroad ROE (non-invasive)	2	each	\$1,500.00	\$3,000.00
Railroad ROE (invasive)		each	\$5,000.00	\$0.00
Railroad Safety Training (if required - Heavy Rail Safety Training Certificate, includes Classroom (signs and employee certification card)	2	per person per RH	\$525.00	\$1,050.00
Railroad Flyover	2	day	\$1,500.00	\$3,000.00
Railroad Flyover (Weekday Overtime)		hour	\$125.00	\$0.00
Railroad Flyover - Weekend		day	\$1,700.00	\$0.00
Railroad Flyover (Weekend Overtime)		hour	\$154.00	\$0.00
Railroad Construction Observer - Burienburg		day	\$200.00	\$0.00
Railroad Construction Observer - Meriden		1 lump sum	\$1,000.00	\$1,000.00
Railroad Construction Observer - Day Rate (Week Day)		DAY	\$1,400.00	\$0.00
Railroad Construction Observer - Day Rate (Week Day - Overtime)		hour	\$200.00	\$0.00
Downhole Fill for Test Hole Performed in RPR ROW		each	\$500.00	\$0.00
Mobile Phone Service				
Origin & Destination cell phone trip data collection (Mobile)		per project	\$50,750.00	\$0.00
Value Engineering (EVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$12,200.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

SUB PROVIDER:

VRX, Inc.

TASK DESCRIPTION			Technical Advisor (Senior)	Environmental Planner (Senior)	Environmental Scientist (Senior)	Environmental Scientist (IV)	Environmental Scientist (III)	Environmental Scientist (II)	Admini- strative	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:			\$255.87	\$228.34	\$198.42	\$143.00	\$109.84	\$83.49	\$84.37		
PC 120 - Social, Economic & Environmental Review and Public Involvement											
120.1	1	ENVIRONMENTAL DOCUMENTATION STANDARDS									\$0.00
120.2	2	ENVIRONMENTAL ASSESSMENT (EA) CONTENT AND FORMAT	8	48	8	16	4	28	2	114	\$20,003.28
120.3	3	ENVIRONMENTAL TECHNICAL ANALYSIS DOCUMENTATION									\$0.00
120.3.A	A	ENVIRONMENTAL CONSTRAINTS MAP									\$0.00
120.3.B	B	ENVIRONMENTAL INFORMATION FORM, SCOPING MATERIALS, EPIC FORM									\$0.00
120.3.C.1	C.1	PROTECTED LANDS									\$0.00
120.3.C.2	C.2	COMMUNITY IMPACT ANALYSIS									\$0.00
120.3.C.3	C.3	INDUCED GROWTH AND CUMULATIVE IMPACT ANALYSIS									\$0.00
120.3.C.4	C.4	AIR QUALITY STUDIES									\$0.00
120.3.C.5	C.5	NOISE ANALYSIS TECHNICAL REPORTING									\$0.00
120.3.C.6	C.6	WATER RESOURCES (Delineation)	1	8	6	10	24	64	2	117	\$13,642.41
120.3.C.6	C.6	WATER RESOURCES (RUSACE Permit)	1	8	10	4	22	68	2	135	\$15,111.13
120.3.C.7	C.7	BIOLOGICAL RESOURCES (T&E, Farmland)	2	12	12	12	16	68	4	126	\$15,542.30
120.3.C.8	C.8	INITIAL SITE ASSESSMENT (ISA)	2	10	32	32		24	2	107	\$16,068.68
120.3.C.9	C.9	ARCHAEOLOGICAL BACKGROUND STUDY									\$0.00
120.3.C.9	C.9	ARCHAEOLOGICAL SURVEY AND DOCUMENTATION									\$0.00
120.3.C.10	C.10	HISTORIC RESOURCE IDENTIFICATION, EVALUATION AND DOCUMENTATION									\$0.00
120.3.C.11	C.11	FLOODPLAIN IMPACTS	2	10			5			17	\$3,364.44
120.3.C.12	C.12	STORMWATER PERMITS (SECTION 407 OF THE CLEAN WATER ACT)									\$0.00
120.4	4	PUBLIC INVOLVEMENT									\$0.00
120.4.A.1	A.1	MEETINGS WITH PROPERTY OWNERS / DEVELOPERS (10)									\$0.00
120.4.A.2	A.2	PUBLIC INVOLVEMENT PLAN									\$0.00
120.4.A.3	A.3	PUBLIC INVOLVEMENT DIGITAL DATABASE									\$0.00
120.4.A.4	A.4	PROJECT FACT SHEET AND LOCATION MAP									\$0.00
120.4.A.5	A.5	WEBSITE INFORMATION AND UPDATES									\$0.00
120.4.A.6	A.6	STAKEHOLDER MEETINGS (3)									\$0.00
120.4.A.7	A.7	TECHNICAL WORK GROUP MEETINGS (3)									\$0.00
120.4.A.8	A.8	PUBLIC MEETINGS (2)									\$0.00
120.4.A.9	A.9	PUBLIC HEARING (1)									\$0.00
120.4.A.10	A.10	PUBLIC INVOLVEMENT LETTER									\$0.00
120.4.A.11	A.11	PUBLIC MEETING OUTREACH									\$0.00
120.4.A.12	A.12	PUBLIC MEETING AND SUMMARY DOCUMENTATION (2)									\$0.00
120.4.A.13	A.13	PUBLIC HEARING AND SUMMARY DOCUMENTATION									\$0.00
120.4.A.14	A.14	EMAIL UPDATES (4)									\$0.00
120.5	5	MARKET OF ENTRY									\$0.00
TOTAL HOURS			18.00	88.00	70.00	74.00	71.00	272.00	12.00	611.00	
TOTAL LABOR COSTS			\$4,605.72	\$20,092.84	\$13,958.40	\$10,582.00	\$7,805.74	\$24,341.79	\$1,012.44		\$83,712.27

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

SUB PROVIDER: VRX, Inc.

TASK DESCRIPTION				Technical Advisor (Senior)	Environmental Planner (Senior)	Administrative/ Clerical	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:				\$259.67	\$228.34	\$84.37		
FC 120- Social, Economic & Environmental Studies and Public Involvement								
145	1			6	12		18	\$4,276.40
145	2	A			24		24	\$5,480.16
145	2	B						\$0.00
145	2	C		4	18	18	40	\$6,651.46
145	2	E						\$0.00
TOTAL HOURS				10.00	64.00	18.00	92.00	
TOTAL LABOR COSTS				\$2,658.70	\$12,310.56	\$1,518.66		\$16,487.92

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

VRX, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)	1,000	mile	\$0.70	\$100.00
Indemnity (L&E) (Less and Less)		day/person	\$45.00	\$0.00
Indemnity (L&E) (Less and Less)		day/person	\$125.00	\$0.00
Meals (Excluding alcohol and tips, overnight stay required)		day/person	\$50.00	\$0.00
Air Travel - In State - 2+ Way Notice (Coach)		roundtrip/person	\$530.00	\$0.00
Air Travel - In State - Short Notice (Coach)		roundtrip/person	\$950.00	\$0.00
Air Travel - Out of State - 2+ Way Notice (Coach)		roundtrip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		roundtrip/person	\$1,500.00	\$0.00
Overnight, special handling or extra baggage and/or fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Includes taxes and fees, insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Equipment (Includes Rateshere)		each/person	\$40.00	\$0.00
Bike Travel over 100 miles		roundtrip/person	\$500.00	\$0.00
Toll Charges	10	day	\$50.00	\$500.00
SUV or ATV Rental (Includes taxes and fees, insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs		each	\$2.00	\$0.00
USPS Freshdays (up to 37 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		item	\$0.75	\$0.00
Cardstock Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopies (BW 11" x 17")		each	\$0.25	\$0.00
Photocopies (BW 8 1/2" x 11")		each	\$0.15	\$0.00
Photocopies Color (11" x 17")		each	\$1.25	\$0.00
Photocopies Color (8 1/2" x 11")		each	\$1.00	\$0.00
Plots (BW on Roll)		per sq. ft.	\$1.00	\$0.00
Plots (Color on Roll)		per sq. ft.	\$1.75	\$0.00
Plots (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and Labeling		each	\$10.00	\$0.00
Confidential Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - Letter size (Current Postal Rate)		each	\$26.50	\$0.00
Overnight Mail - document size		each	\$100.00	\$0.00
Materials and Shipping		per package	\$100.00	\$0.00
Courier Services		each	\$45.00	\$0.00
Report Printing		each	\$80.00	\$0.00
Notarizations		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Photomontage Boards 30" x 42" Color Mounted		each	\$100.00	\$0.00
Photomontage Boards 48" x 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Makers		each	\$3.00	\$0.00
QW - Dry-Off Moistening Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge Equipment Charge		day	\$75.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (Includes operation, and maintenance costs, insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs, insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4x4 (Includes operation and maintenance costs, insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Safety Harness and Lanyards		each	\$400.00	\$0.00
Monthly Housing and Food Allowance - This rate shall be used when an Apartment, House, or RV Lot is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expense, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time inspectors who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use the monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by invoices submitted for the full time field inspection/inspection the construction projects.		each/month	\$4,000.00	\$0.00
PHS (Photographic Equipment)		each	\$750.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 ea) ignition oven, (1 ea) scale, (1 ea) 8" shaker, (1 ea) 8" sieve, (1 ea) splitter, (1 ea) hot oven, (1 ea) vibrating table and bucket, (1 ea) vacuum pump, and (1 ea) Texas Gyrotron Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HVAC Testing Equipment Mobilizations < 150 Miles		each/trip	\$1,000.00	\$0.00
HVAC Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to job)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to job)		mile	\$5.00	\$0.00
Mobilization of ATV/Buggy/T-Track Drilling Equipment (less 100 mile)		each	\$1,800.00	\$0.00
Mobilization of ATV/Buggy/T-Track Drilling Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV/Buggy/T-Track Drilling Equipment (on ATV)		hour	\$5.00	\$0.00
Stand By of Drilling Equipment		hour	\$350.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

VRX, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (Truck within 100 miles from office to site)		trip	\$500.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Truck over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, 1-hour rent separately)(less 100 miles)		trip	\$800.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, 1-hour rent separately)(over 100 miles)		mile	\$8.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include report)		each	\$2,150.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$9,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$9,000.00	\$0.00
AASHTO Accreditation Asphaltes Laboratory		each	\$5,500.00	\$0.00
Cement and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shrink Tubes Transportation Box		per box	\$175.00	\$0.00
Public Involvement / Planning / Environmental				
Noise Meter Rental Unit - includes noise meter, camera, tripod, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripod, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multi mode (30 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" x 600 scale)		each	\$125.00	\$0.00
Corridor (Driver and TX Archibishop) Research Lab for before and after		each	\$4,000.00	\$0.00
LAN, Curbside Fee		mile	\$5,000.00	\$0.00
Environmental Field Supplies (batteries, stakes, banners, spray paint, etc.)	5	day	\$35.00	\$175.00
FEMA FIS Worksheet		each	\$50.00	\$0.00
FEMA FIS Backup Data Request		each	\$500.00	\$0.00
FEMA Map Revision Submittal (CLOM, OMR) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Model Floodplain Hardcopy		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plan Redlines		sheet	\$7.50	\$0.00
Title Report		each	\$800.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search	1	per project	\$2,500.00	\$2,500.00
Public Involvement				
Court Reporter		page	\$20.00	\$0.00
Cost Report (Public Meeting, Interview and Transportation)		day	\$1,000.00	\$0.00
Cost Report for Public Involvement		hour	\$50.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third party location based service (this provider (Monday)		per meeting	\$8,000.00	\$0.00
Public Involvement Field Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Field Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Field Rental		hour	\$3,500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailing (500 pieces)		per mailing	\$800.00	\$0.00
Public Notices - Mass Mailing with Self-Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Displays		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visuals Equipment Rental		event	\$600.00	\$0.00
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other languages as appropriate, or Sign Language)		event	\$500.00	\$0.00
Translator (English to Spanish, other languages as appropriate, or Sign Language)		hour	\$500.00	\$0.00
Interpretative Services - Includes informational coordination with outside of the U.S. (prior to DOT District approval required)		month	\$10,000.00	\$0.00
Surveying / ROW				
Mobilization for LIDAR Mobile Mapping System (travel to project) (includes vehicle)		bot mile	\$10.00	\$0.00
Fixed Wing Aerial Imagery LIDAR - Project Flight Miss (bottom local airport and on-proposed flight miles)		per mile	\$35.00	\$0.00
RTK Time Setup		hour	\$30.00	\$0.00
GPS Receiver Rate		hour	\$30.00	\$0.00
Helicopter Equipment Aerial Imagery LIDAR - Project Flight Miss (bottom local airport and on-proposed flight miles)		per mile	\$65.00	\$0.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type I ROW Control Monument - Encrusted/tilled, rocks, rocky soil, 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT.		each	\$100.00	\$0.00
Type II ROW Control Monument - Poured 2-3 Foot (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Airborne GIS/MU Data collection/Processing		per project	\$2,500.00	\$0.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Bathymetry		day	\$30.00	\$0.00
Ground Target (includes paint and panel material)		each	\$30.00	\$0.00
Hydrographic Rental Equipment		day	\$500.00	\$0.00
Photo Lab Services - Black and White Processing (film, development, scanning)		per frame	\$10.00	\$0.00
Photo Lab Services - Color Infrared Processing (film, development, scanning)		per frame	\$28.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

VRX, Inc.

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Services - Color Processors (film development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Services - Digital image processing		per frame	\$70.00	\$0.00
Photo Lab Services - Enlargements (1 enlargement, 8" x 10")		per 8x10	\$8.00	\$0.00
Portable LIDAR System (Rack Pack Mounted)		day	\$1,750.00	\$0.00
Perished Road Cones		each	\$7.00	\$0.00
Dead Cones		each	\$7.00	\$0.00
Flagging (10' x 10' only)		per sq. ft.	\$0.00	\$0.00
Flagging (10' x 10' only)		each	\$5.00	\$0.00
Delimited Points (Material only)		each	\$25.00	\$0.00
Terrestrial Laser Scanner (rental rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LIDAR (Fixed Wing Aircraft) (includes aircraft, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Helicopter Aerial Imagery/LIDAR (includes helicopter, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (travel to project) (includes vehicle)		per project	\$7,500.00	\$0.00
UTILITY ENGINEERING				
Ground Penetrating Radar (equipment only) (GPR owned by provider)		day	\$750.00	\$0.00
Push Camera Mapping (Equipment) (owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$350.00	\$0.00
Hydroexcavation (equipment, materials and labor)		hour	\$450.00	\$0.00
TRAFFIC CONTROL				
Portable Message Board		day	\$400.00	\$0.00
Flashing Arrow Board		day	\$500.00	\$0.00
Law Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator Trucks - (1 Lane Shoulder Closure) (includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Attenuator Trucks - (No Lane Closure) (includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator Trucks - (includes labor, equipment and fuel)		day	\$3,150.00	\$0.00
MISCELLANEOUS				
Origin & Destination cell-phone (top data collection (Mobility)		per project	\$50,750.00	\$0.00
Value Engineering (CVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$3,875.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

PRIME PROVIDER: Schnabel Engineering Consultants, Inc.

TASK DESCRIPTION		Support Manager	Engineer (Senior)	Engineer (Project)	Engineer/Training II	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATES		\$314.28	\$288.48	\$204.15	\$178.58		
FC110 (102) - Route and Design Studies							
DEVELOP PRELIMINARY CONCEPTS							
110. 1.	A	SCHEMATIC DESIGN WORK OUTLINE					
110. 1.	B	DEVELOP BASE MAPS					
110. 1.	C	PLANIMETRICS AND AERIAL MAPPING					
110. 1.	D 4.	ANALYZE EXISTING CONDITIONS	2	4	8	22	\$4,798.44
110. 1.	D 4.	SCHEMATIC ALTERNATIVES				0	\$0.00
	D 4.	ALTERNATIVE 1				0	\$0.00
	D 4.	ALTERNATIVE 2				0	\$0.00
	D 4.	ALTERNATIVE 3				0	\$0.00
	D 8.	ALTERNATIVE ANALYSIS MEMO				0	\$0.00
110. 1.	F	DATA COLLECTION				0	\$0.00
110. 1.	G	ROADWAY DESIGN CRITERIA				0	\$0.00
110. 1.	H	PRELIMINARY DESIGN CONFERENCE				0	\$0.00
110. 2.		SCHEMATIC DESIGN - GENERAL TABS				0	\$0.00
110. 2.	A	ROW PROPERTY BASE MAP				0	\$0.00
110. 2.	B	TYPICAL SECTIONS	2	4	12	18	\$4,200.32
110. 2.	C	ENVIRONMENTAL CONSTRAINTS				0	\$0.00
110. 2.	D	CHAPRAGE				0	\$0.00
110. 2.	D 1.	HYDROLOGIC ANALYSIS				0	\$0.00
110. 2.	D 2.	HYDRAULIC ANALYSIS				0	\$0.00
110. 2.	D 3.	PRELIMINARY HYDRAULIC DATA SHEETS				0	\$0.00
110. 2.	D 4.	PRELIMINARY CULVERT DESIGN AND LAYOUTS				0	\$0.00
110. 2.	D 5.	LONGITUDINAL STORM DRAINS AND DITCHES				0	\$0.00
110. 2.	E	ROW REQUIREMENTS				0	\$0.00
110. 2.	F	DESIGN EXCEPTIONS AND WAIVERS				0	\$0.00
110. 2.	G	TRAFFIC DATA AND PROJECTIONS				0	\$0.00
110. 2.	H	FINANCIAL PLAN AND PROJECT MANAGEMENT PLAN				0	\$0.00
110. 2.	I	TRAFFIC AND OPERATIONAL ANALYSIS				0	\$0.00
110. 2.	J	SAFETY ANALYSIS				0	\$0.00
110. 2.	K	BICYCLE AND PEDESTRIAN ACCOMMODATIONS				0	\$0.00
110. 2.	L	PROJECT IMPLEMENTATION PLAN				0	\$0.00
110. 3.		CONCEPTUAL DESIGN SCHEMATICS (DCS)				0	\$0.00
110. 4.		GEOMETRIC DESIGN SCHEMATICS				0	\$0.00
110. 4.	A 1.	65%				0	\$0.00
110. 4.	A 2.	85%				0	\$0.00
110. 4.	A 3.	100%				0	\$0.00
110. 5.		CROSS-SECTIONS				0	\$0.00
110. 6.		RETAINING WALLS	4	8	12	24	\$5,852.64
110. 7.		RENDERING AND TRAFFIC SIMULATION				0	\$0.00
110. 8.		PRELIMINARY CONSTRUCTION SEQUENCES				0	\$0.00
110. 9.		PRELIMINARY COST ESTIMATES				0	\$0.00
110. 10.		ENGINEERING SUMMARY REPORT				0	\$0.00
110. 11.		SUPPORT OR ATTENDANCE AT VALUE ENGINEERING STUDY				0	\$0.00
TOTAL HOURS		8.00	16.00	22.00	8.00	64.00	
TOTAL LABOR COSTS		\$2,514.24	\$4,615.68	\$6,532.80	\$1,412.72		\$14,947.80

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

PRIME PROVIDER: Schnabel Engineering Consultants, Inc.

TASK DESCRIPTION				Support Manager	Engineer (Senior)	Engineer (Project)	TOTAL LBR HOURS	TOTAL COSTS
HOURLY RATE:				\$314.28	\$253.49	\$204.19		
FC143 SCHEMATIC - PROJECT COORDINATION AND MANAGEMENT								
145	1		COORDINATION / COMMUNICATION WITH CLIENT FOR THE DURATION OF THE STUDY (26 MEETINGS)	1	4	4	9	\$7,252.84
145	2	A	INTERNAL COORDINATION OF PROJECT TASKS (44 HOURS) (2.18 MONTHS)	6	24	24	54	\$13,617.04
145	2	B	PROJECT WORK SCHEDULE					
145	2	C	PROVIDE MONTHLY PROGRESS REPORTS (21 HOURS) (2.18 MONTHS)					
145	2	E	SITE VISITS AND REPORT					
TOTAL HOURS				7.00	28.00	28.00	63.00	
TOTAL LABOR COSTS				\$2,198.98	\$7,053.72	\$5,718.20		\$15,768.88

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: Schnabel Engineering Consultants, Inc.

TASK DESCRIPTION				Support Manager	Engineer (Senior)	Engineer (Project)	Engineer-In-Training #	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:				\$314.28	\$280.49	\$204.16	\$176.89		
FC100 (163) - MISCELLANEOUS (ROADWAY)									
163.1	1.		UTILITY ENGINEERING INVESTIGATION						
163.1	2.		UTILITY COORDINATION						
163.1	3.		GEOTECHNICAL BORINGS AND INVESTIGATIONS	2	8	8	8	24	\$5,367.42
163.1	4.		ILLUMINATION SCHEMATIC DESIGN						
163.1	5.		RAILROAD AND AIRPORT COORDINATION						
TOTAL HOURS				2.00	8.00	8.00	8.00	24.00	
TOTAL LABOR COSTS				\$628.56	\$1,682.94	\$1,633.28	\$1,412.72		\$5,357.42

Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule

SUB PROVIDER: Dallas Aerial

TASK DESCRIPTION				Project Coordinator- AM	LIDAR Processing Technician	Certified Photogramme- tist	Analical Triangulation Specialist	Aerial Mapping Technician	Orthophoto Specialist	Mapping Editor	Project Coordinator- FWAL	Admin/ Clerical	TOTAL HOURS	TOTAL COSTS
HOURLY RATES:				\$215.83	\$144.54	\$173.96	\$166.23	\$149.90	\$144.84	\$154.63	\$212.62	\$94.48		
FC160 (150) - ROADWAY DESIGN														
150	1		DESIGN SURVEYS AND CONSTRUCTION SURVEYS										0	\$0.00
150	2		AERIAL MAPPING	37	10	24	55	159	55	29	8	8	390	\$59,949.57
150	3		HORIZONTAL AND VERTICAL CONTROL FOR AERIAL MAPPING										0	\$0.00
TOTAL HOURS				32.00	10.00	24.00	55.00	159.00	55.00	29.00	8.00	8.00	390.00	
TOTAL LABOR COSTS				\$6,918.56	\$1,445.40	\$4,175.04	\$9,142.65	\$23,857.10	\$7,943.70	\$4,484.27	\$1,700.96	\$755.84		\$59,949.52

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Dallas Aerial				
UNIT COSTS	# OF UNITS	UNIT	COST/UNIT	COST
DESIGN SURVEY				
Fixed Wing Flight Crew (Includes Pilot and Sensor Operator)	4	hour	\$750.00	\$1,000.00
3 - Person Survey Crew (GPS and Robote Total Stations included in indirect cost rate. Mileage not included.)		hour	\$209.00	\$0.00
LiDAR Terrestrial Laser Scanning		day	\$2,600.00	\$0.00
SUB				\$0.00
SUE (Quality Level C and D) Includes labor and equipment for records research, CADD, and mapping.		LF	\$0.55	\$0.00
SUE (Quality Level B - Utility Designation) Includes labor and equipment for records research, designating, engineering, surveying, CADD, mapping and limited traffic control.		LF	\$1.55	\$0.00
SUE (Quality Level A - Utility Locals, Test Holes) Includes labor and equipment for vacuum excavation, engineering, surveying, CADD, and limited traffic control. These prices reflect that a Quality Level B service has been provided.				\$0.00
Level A: 0 to 4 ft.		EA	\$1,050.00	\$0.00
Level A: > 4 to 8 ft.		EA	\$1,250.00	\$0.00
Level A: > 8 to 12 ft.		EA	\$1,550.00	\$0.00
Level A: > 12 to 20 ft.		EA	\$2,600.00	\$0.00
SUB				\$0.00
GEOTECH				
Testing and Materials (8 Bridge Core Logs)		EA	\$9,000.00	\$0.00
Testing and Materials (24 Retaining wall Drill Core Logs)		EA	\$7,000.00	\$0.00
Testing and Materials (10 Retained Core Logs)		EA	\$1,500.00	\$0.00
Testing and Materials (2 Pavement Core Logs)		EA	\$1,500.00	\$0.00
ROW SURVEY				
2 - Person Survey Crew (GPS and Robote Total Stations included in indirect cost rate. Mileage not included.)		hour	\$175.00	\$0.00
3 - Person Survey Crew (GPS and Robote Total Stations included in indirect cost rate. Mileage not included.)		hour	\$210.00	\$0.00
SUBTOTAL UNIT COSTS				\$1,000.00

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.

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Dallas Aerial				
Other Direct Expenses	Quantity	Unit	Rate	Total
Travel				
Mileage (Current State Rate)		mile	\$0.700	\$0.00
Lodging/Motel (Just taxes and fees)		day/person	\$45.00	\$0.00
Lodging/Motel (Fees and fees not included)		day/person	\$125.00	\$0.00
Meals (Excluding alcohol and tips, overnight stay required)		day/person	\$50.00	\$0.00
Air Travel - In State - 2+ Week Notice (Coach)		rd trip/person	\$500.00	\$0.00
Air Travel - In State - Short Notice (Coach)		rd trip/person	\$600.00	\$0.00
Air Travel - Out of State - 2+ Week Notice (Coach)		rd trip/person	\$1,000.00	\$0.00
Air Travel - Out of State - Short Notice (Coach)		rd trip/person	\$1,500.00	\$0.00
Overtime, special handling or extra baggage airline fees		each	\$100.00	\$0.00
Parking		day	\$30.00	\$0.00
Rental Car (Exclusive taxes and fees, insurance costs will not be reimbursed)		day	\$100.00	\$0.00
Rental Car Fuel		gallon	\$5.00	\$0.00
Taxi/Cab fare (Includes Redshirts)		each/person	\$40.00	\$0.00
Bus Travel over 100 miles		rd trip/person	\$350.00	\$0.00
Toll Charges		day	\$50.00	\$0.00
SUV or ATV Rental (Includes taxes and fees, insurance costs will not be reimbursed)		day	\$185.00	\$0.00
Administrative				
CDs		each	\$2.00	\$0.00
USB Flashdrive (up to 32 GB)		each	\$10.00	\$0.00
External Hard Drive		each	\$150.00	\$0.00
Standard Postage (Current Postal Rate)		letter	\$0.73	\$0.00
Cardstock Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photocopy B/W (11" x 17")		each	\$0.25	\$0.00
Photocopy B/W (8 1/2" x 11")		each	\$0.15	\$0.00
Photocopy Color (11" x 17")		each	\$1.25	\$0.00
Photocopy Color (8 1/2" x 11")		each	\$1.00	\$0.00
Photo (B/W on Bond)		per sq. ft.	\$1.00	\$0.00
Photo (Color on Bond)		per sq. ft.	\$1.75	\$0.00
Photo (Color on Photographic Paper)		per sq. ft.	\$5.00	\$0.00
Report Binding and Mailing		each	\$10.00	\$0.00
Certified Letter Return Receipt (Current Postal Rate)		each	\$3.75	\$0.00
Overnight Mail - letter size (Current Postal Rate)		each	\$26.95	\$0.00
Overnight Mail - oversized box		each	\$100.00	\$0.00
Mailing and Shipping		per package	\$100.00	\$0.00
Catering Services		each	\$45.00	\$0.00
Report Printing		each	\$50.00	\$0.00
Notebooks		each	\$10.00	\$0.00
Color Graphics on Foam Board		square foot	\$20.00	\$0.00
Presentation Boards 30" X 40" Color Mounted		each	\$100.00	\$0.00
Presentation Boards 48" X 60" Color Mounted		each	\$175.00	\$0.00
Construction				
Cylinder Molds		each	\$3.00	\$0.00
DWL - Detail Measuring Instrument		each	\$200.00	\$0.00
Nuclear Density Gauge/Equipment Charge		day	\$75.00	\$0.00
Construction Truck (includes operator, and maintenance costs, insurance costs will not be reimbursed) (4 hours or less)		4 hours	\$70.00	\$0.00
Construction Truck (includes operator, and maintenance costs, insurance costs will not be reimbursed)		month	\$1,200.00	\$0.00
Construction Truck (includes operator, and maintenance costs, insurance costs will not be reimbursed)		day	\$1,200.00	\$0.00
Construction Truck 4x4 (includes operator and maintenance costs, insurance costs will not be reimbursed)		month	\$1,450.00	\$0.00
Construction Truck 4x4 (includes operator and maintenance costs, insurance costs will not be reimbursed)		day	\$1,450.00	\$0.00
Office Trailer Rental		each	\$750.00	\$0.00
Salary/Harness and lanyards		each	\$400.00	\$0.00
Monthly Housing and food allowance - This rate shall be used when an inspector, geologist, or RV is rented. (Includes Apartment/House Rental or Rental of Lot at RV Park, Travel Trailer Expenses, and Utilities, Taxes, and Meals). The only receipt necessary for the reimbursement of this rate is for the Apartment, House, or RV Lot Rental. ONLY full-time employees who are in the field inspecting the designated construction projects may use this rate. The inspector must be in the field a minimum of 3 weeks per calendar month to use the monthly per diem rate. Daily per diem rates cannot be used by the same inspector that uses the monthly per diem rate in the same calendar month. Use of this rate shall be substantiated by timesheets submitted for the full time field personnel inspection on the construction records.		each/month	\$4,000.00	\$0.00
PPE (Protective Equipment)		each	\$250.00	\$0.00
Geotechnical / Materials				
Hot Mix Asphalt Testing Equipment Monthly Rental - Required equipment must meet or exceed applicable TxDOT specifications. Required equipment includes (1 eq) ignition oven, (1 eq) scales, (1 eq) 10' shifter, (1 eq) 10' saws, (1 eq) splitter, (1 eq) hot oven, (1 eq) vibrating table and bucket, (1 eq) vacuum pump, and (1 eq) Texas Gyrology Press. All component parts, consumables, and required maintenance are considered subsidiary to this item.		month	\$750.00	\$0.00
HMAT Testing Equipment Mobilizations < 150 Miles		each project	\$1,000.00	\$0.00
HMAT Testing Equipment Mobilizations > 150 Miles		per mile	\$7.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips within 100 miles from office to site)		each	\$500.00	\$0.00
Mobilization and Demobilization of Non Destructive Deflection Testing (Trips over 100 miles from office to site)		mile	\$5.00	\$0.00
Mobilization of ATV Buggy / Truck Driving Equipment less 100 mile		each	\$1,800.00	\$0.00
Mobilization of ATV Buggy / Truck Driving Equipment more than 100 mile		mile	\$18.00	\$0.00
ATV Surcharge (for rig installed on ATV)		L.F.	\$5.00	\$0.00
Stand By of Driving Equipment		hour	\$350.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Other Direct Expenses				
	Quantity	Unit	Rate	Total
Mobilization and Demobilization of Drilling Rig (Truck within 100 miles from office to site)		trip	\$500.00	\$0.00
Mobilization and Demobilization of Drilling Rig (Trucks over 100 miles from office to site)		mile	\$6.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, further paid separately)(less 100 miles)		trip	\$600.00	\$0.00
Mobilization of coring equipment used to drill flexible and rigid pavement (2-man crew minimum, labor paid separately)(over 100 miles)		mile	\$6.00	\$0.00
Mobilization/Demobilization Laboratory (includes transportation, utility set-up, does not include travel)		each	\$2,150.00	\$0.00
Field Laboratory Equipment Rental		month	\$5,000.00	\$0.00
AASHTO Accreditation Hot Mix Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Soil Laboratory		each	\$8,000.00	\$0.00
AASHTO Accreditation Aggregates Laboratory		each	\$8,500.00	\$0.00
Corrosion and Concrete Reference Lab (CCRL) Accreditation		each	\$12,000.00	\$0.00
Equipment Calibration		each	\$2,500.00	\$0.00
Shelby Tubes Transportation Box		per box	\$175.00	\$0.00
~~Environmental Data Collection Planning / Environmental Monitoring and Data Collection~~	~~per project~~	~~each~~	~~\$500.00~~	~~\$0.00~~
Noise Meter Rental Unit - includes noise meter, camera, tripod, calibrator		per project	\$500.00	\$0.00
Noise Meter Rental Unit - includes noise meter, camera, tripod, calibrator		per alternative	\$500.00	\$0.00
3rd Party Data		each package	\$30,000.00	\$0.00
3rd Party Traffic Data Subscription - Advanced (50 zones)		each package	\$15,000.00	\$0.00
3rd Party Traffic Data Subscription - Multi-mode (50 zones)		each package	\$25,000.00	\$0.00
3rd Party Traffic Data Subscription (50 zones)		each package	\$10,000.00	\$0.00
Aerial Photographs (1" x 500' scale)		each	\$125.00	\$0.00
Quarrier (Drew or TX Archaeological Research Lab for artifacts and report)		each	\$4,000.00	\$0.00
TARI: Curation Fee		city	\$5,000.00	\$0.00
Environmental Field Supplies (Rubbish, gloves, training, spray paint, etc.)		city	\$25.00	\$0.00
FEMA FIS (Manual)		each	\$50.00	\$0.00
FEMA FIS Backup Data Request		each	\$500.00	\$0.00
FEMA Map Revision Submittal (CLMRA/CMR) (Submittal Fee Only)		each	\$10,000.00	\$0.00
FEMA Model/Block/then Hardcopy		each	\$500.00	\$0.00
Historical Aerial Images		unit	\$1,200.00	\$0.00
Map/Plan Records		sheet	\$7.50	\$0.00
Title Report		each	\$400.00	\$0.00
Permits		each	\$1,000.00	\$0.00
Soil Disposal Fee		each	\$250.00	\$0.00
GPS Rental		per day	\$120.00	\$0.00
Environmental Database Search		per project	\$2,500.00	\$0.00
~~Public Involvement~~	~~per project~~	~~each~~	~~\$10,000.00~~	~~\$0.00~~
Count Report		page	\$20.00	\$0.00
Court Reporter (Public Meetings, Hearings and Testimony)		day	\$1,000.00	\$0.00
Costation for Public Involvement		hour	\$60.00	\$0.00
Newspaper Advertisement - Community Newspaper		per publication	\$3,000.00	\$0.00
Newspaper Advertisement - Urban Newspaper		per publication	\$11,500.00	\$0.00
Public Meeting Notices with one (1) embedded project video to be sent to cell phones using a third-party, location-based service data provider (Metaboly)		per meeting	\$8,000.00	\$0.00
Public Involvement Facility Rental		8 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		4 hours	\$3,500.00	\$0.00
Public Involvement Facility Rental		hour	\$3,500.00	\$0.00
Public Involvement Meeting Supplies		per meeting	\$200.00	\$0.00
Public Notices - Mass Mailing (500 pieces)		per mailing	\$500.00	\$0.00
Public Notices - Mass Mailing Self-Addressed Return Envelope (500 pieces)		per mailing	\$1,100.00	\$0.00
Signage/Flags		each	\$5,000.00	\$0.00
Audio - Equipment Rental		each	\$500.00	\$0.00
Audio - Visual Equipment Rental		event	\$500.00	\$0.00
Sound Technician for Public Involvement		event	\$450.00	\$0.00
Professional Narrator		event	\$750.00	\$0.00
Professional Narrator		hour	\$750.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		event	\$500.00	\$0.00
Translator (English to Spanish, other language as appropriate, or Sign Language)		hour	\$500.00	\$0.00
Interpretive Services - includes internal and coordination with entities outside of the U.S. (prior to DOT District approval required)		month	\$10,000.00	\$0.00
~~Surveying / ROW~~	~~per project~~	~~each~~	~~\$10,000.00~~	~~\$0.00~~
Mobilization for LIDAR Mobile Mapping System (trailer to project) (includes vehicle)		per mile	\$10.00	\$0.00
Fixed Wing Aerial Imagery/LIDAR - Project Flight Miles (aircraft local airport and on-project flight miles)	49	per mile	\$55.00	\$3,165.00
RTK Base Radio		hour	\$30.00	\$0.00
GPS Receiver Role		hour	\$30.00	\$0.00
Helicopter Equipment Aerial Imagery/LIDAR - Project Flight Miles (aircraft local airport and on-project flight miles)		per mile	\$55.00	\$0.00
Terrestrial Laser Scanner (rates applied to actual time scanner unit is in use) (scanner owned by provider)		hour	\$125.00	\$0.00
Type II ROW Control Monument - Engraved Drilled, rock, rebar, soil, 2-4 inch depth (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$100.00	\$0.00
Type II ROW Control Monument - Poured 2-3 Feet (includes equipment, materials, and rentals). Marker supplied by TxDOT		each	\$300.00	\$0.00
Terrestrial Photogrammetry Camera		hour	\$125.00	\$0.00
Aerobics GPS/IMU Data collection/Processing	1	per project	\$2,500.00	\$2,500.00
Datum Point Rod Setting (3/4 inch aluminum rod driven to refusal, TxDOT Survey Manual Fig. C-7)		each	\$375.00	\$0.00
Echometer		city	\$90.00	\$0.00
Ground Target (includes paint and panel materials)		each	\$30.00	\$0.00
Hydrographic Survey Equipment		day	\$500.00	\$0.00
Photo Lab Service - Black and White Processing (film, development, scanning)		per image	\$10.00	\$0.00
Photo Lab Service - Color Infrared Processing (film, development, scanning)		per frame	\$25.00	\$0.00

**Schematic and Environmental
Bonds Ranch Road, Segment 2
Exhibit B - Fee Schedule**

Dollar Aerial

Other Direct Expenses	Quantity	Unit	Rate	Total
Photo Lab Service - Color Processing (film development, scanning)		per frame	\$30.00	\$0.00
Photo Lab Service - Digital image processing	123	per frame	\$28.00	\$3,444.00
Photo Lab Service - Enlargements - 11x14 inch		per sq. ft.	\$8.00	\$0.00
Portable LIDAR System (Back Pack Mounted)		day	\$1,750.00	\$0.00
Certified Duet Copies		sheet	\$2.00	\$0.00
Duet Copies		sheet	\$2.00	\$0.00
Hydrographs		per sq. ft.	\$5.00	\$0.00
Lithography (Materials only)		each	\$5.00	\$0.00
Dolomitic Paper (Materials only)		each	\$25.00	\$0.00
Tarrentine Laser Scanner (initial rates applied to actual time scanner unit is in use)		hour	\$120.00	\$0.00
Mobilization for Aerial Imagery/LIDAR Fixed Wing Aircraft (includes aircraft, pilot, sensor/LIDAR operator, fuel and transportation cost)	1	per project	\$25,000.00	\$25,000.00
Mobilization for Helicopter Aerial Imagery/LIDAR (includes helicopter, pilot, sensor/LIDAR operator, fuel and transportation cost)		per project	\$25,000.00	\$0.00
Mobilization for Unmanned Aerial System (UAS) (includes vehicle)		per project	\$7,500.00	\$0.00
Utility Engineering		hour	\$150.00	\$0.00
Ground Penetrating Radar (equipment only) (GPR owned by provider)		day	\$250.00	\$0.00
Push Camera Mapping (Equipment) (owned by provider)		per day	\$300.00	\$0.00
Ground Penetrating Radar (equipment only)		day	\$200.00	\$0.00
Push Camera Mapping (Equipment)		per day	\$250.00	\$0.00
Hydrographing (equipment, materials, and labor)		hour	\$450.00	\$0.00
Traffic Control		day	\$500.00	\$0.00
Portable Message Board		day	\$500.00	\$0.00
Flashy Arrow Board		day	\$800.00	\$0.00
Law Enforcement/Uniform Officer (including vehicle)		hour	\$150.00	\$0.00
Attenuator Trucks - (B and Shoulder Closure) (includes labor, equipment and fuel)		day	\$1,600.00	\$0.00
Attenuator Trucks - (B/L Lane Closure) (includes labor, equipment and fuel)		day	\$1,000.00	\$0.00
Traffic Control Services, Arrow Boards and Attenuator Trucks - (includes labor, equipment and fuel)		day	\$5,150.00	\$0.00
Miscellaneous		hour	\$150.00	\$0.00
Origin & Destination (optional) (trip data collection (Mobility)		per project	\$60,750.00	\$0.00
Value Engineering (EVS & Associates, Inc.)		per project	\$40,000.00	\$0.00
Total				\$34,129.00

EXHIBIT C
PROJECT SCHEDULE

Contract No. XX-XXXX

ID	Task Name	Duration	Start	Finish	M	J	J	A	S	O	N	D	2026	J	F	M	A	M	J	J	A	S	O	N	D	2027	J	F
1	CONTRACT EXECUTION DATE: JULY 1, 2025	1 day	Tue 7/1/25	Tue 7/1/25			◆ 7/1																					
2	SCHEMATIC ALTERNATIVES	73 days	Tue 7/1/25	Thu 10/9/25																								
3	DEVELOP 30% CONCEPTUAL SCHEMATIC	45 days	Wed 12/10/25	Tue 2/10/26																								
4	DEVELOP 60% GEOMETRIC SCHEMATIC	80 days	Wed 2/11/26	Tue 6/2/26																								
5	DEVELOP 90% GEOMETRIC SCHEMATIC	63 days	Tue 4/28/26	Thu 7/23/26																								
6	DEVELOP 100% GEOMETRIC SCHEMATIC	24 days	Fri 6/26/26	Wed 7/29/26																								
7	TRAFFIC DATA AND PROJECTIONS AND OPERATIONAL ANALYSIS	70 days	Tue 7/29/25	Mon 11/3/25																								
8	HYDROLOGY & HYDRAULIC STUDIES	105 days	Tue 11/4/25	Mon 3/30/26																								
9	ENVIRONMENTAL STUDY	298 days	Fri 7/25/25	Tue 9/15/26																								
10	PUBLIC MEETING 1	1 day	Tue 12/9/25	Tue 12/9/25																								
11	PUBLIC MEETING 2	1 day	Thu 5/7/26	Thu 5/7/26																								
12	PUBLIC HEARING	1 day	Tue 10/6/26	Tue 10/6/26																								
13	SURVEY, AERIAL & EXISTING ROW MAPPING	109 days	Fri 7/18/25	Wed 12/17/25																								
14	GEOTECHNICAL INVESTIGATION	97 days	Wed 1/14/26	Thu 5/28/26																								
15	UTILITIES ENGINEERING INVESTIGATION	115 days	Mon 9/22/25	Fri 2/27/26																								
16	CONTRACT TERMINATION DATE: JANUARY 15, 2027	1 day	Fri 1/15/27	Fri 1/15/27																								

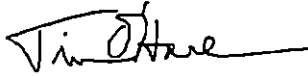
Bonds Ranch Road Seg 2
Date: Fri 5/9/25

Task  Milestone ◆

Consideration of a Professional Services Agreement with LJA Engineering, Inc. for Engineering Services for the Bonds Ranch Road Improvement Project.

SIGNED AND EXECUTED this 3 day of June, 2025.

**COUNTY OF TARRANT
STATE OF TEXAS**

A handwritten signature in black ink, appearing to read "Tim O'Hare", with a long horizontal line extending to the right.

Tim O'Hare
County Judge
6/9/2025

Mark Kratovil - Criminal District Attorney

Mark Kratovil
Criminal District Attorney
<#c7a61bf5-2cdb-4940-9146-08dcd424509a-DateSigned#>

Kimberly Buchanan - Auditor

Kimberly Buchanan
Auditor
<#d039116f-df26-4991-9147-08dcd424509a-DateSigned#>