

HIDALGO COUNTY
Professional Engineering Services
Contract # C-13-305-10-07
Work Authorization Form

WORK AUTHORIZATION NO. 2

THIS WORK AUTHORIZATION is made pursuant to the terms and conditions of Article 1 of the Agreement made by and between HIDALGO COUNTY, action herein by and through the Commissioner's Court, hereinafter called the "Owner," and, L&G Consulting Engineers, Inc. d/b/a L&G Engineering, professional engineers of Mercedes, Texas hereinafter called "Engineer".

PART 1. SCOPE OF WORK

The purpose of this Work Authorization is for the Engineer to provide Engineering Services required for the preparation of the Phase II PS&E Development for the Mile 3 project from Tom Gill Road to FM 492.

The scope of services to be provided by the Owner is identified in *EXHIBIT "A" - Scope of Services to be provided by the Owner* attached hereto.

The scope of services to be provided by the Engineer is identified in *EXHIBIT "B" - Scope of Services to be provided by the Engineer* attached hereto.

PART 2. ESTIMATED COST

The estimated cost for services under this Work Authorization is \$1,348,400.00. This amount is based upon the costs outlined in the Estimated Cost Proposal attached hereto as *EXHIBIT "D-2" - Estimated Man-hour Breakdown*.

PART 3. PAYMENT

Compensation and payment to the Engineer for the services established under this Work Authorization shall be made in accordance with Article 6 of the Agreement.

PART 4. FUNDING

This Work Authorization No. 2 shall be funded through funding source:

Account No. 5-1345-431-00-123-051-0-721

Requisition Number _____ (MUST BE INCLUDED AFTER CC APPROVAL)

PART 5. PERIOD OF SERVICE

This Work Authorization shall become effective on the date of final acceptance of the parties hereto, and terminate upon completion of scopes of the work authorization, as identified on *EXHIBIT "C" - Work Schedule*.


PART 6. RESPONSIBILITIES AND OBLIGATIONS

This Authorization does not waive the parties' responsibilities and obligations provided under the Agreement.

PART 7. ACKNOWLEDGEMENT AND CONFIRMATION

Acknowledgement and confirmation by Hidalgo County Precinct No. 3, Commissioner Joe Flores as to the content and detail of this Work Authorization No. 2.

HIDALGO COUNTY
COMMISSIONER PRECINCT NO. 3

BY:  _____

PART 8. ACCEPTANCE AND APPROVAL

This Work Authorization is hereby accepted, approved by Hidalgo County Commissioners' Court on _____ as indicated below.

THE ENGINEER:
L&G ENGINEERING


By: Jacinto Garza, P.E.
President

THE OWNER:
HIDALGO COUNTY

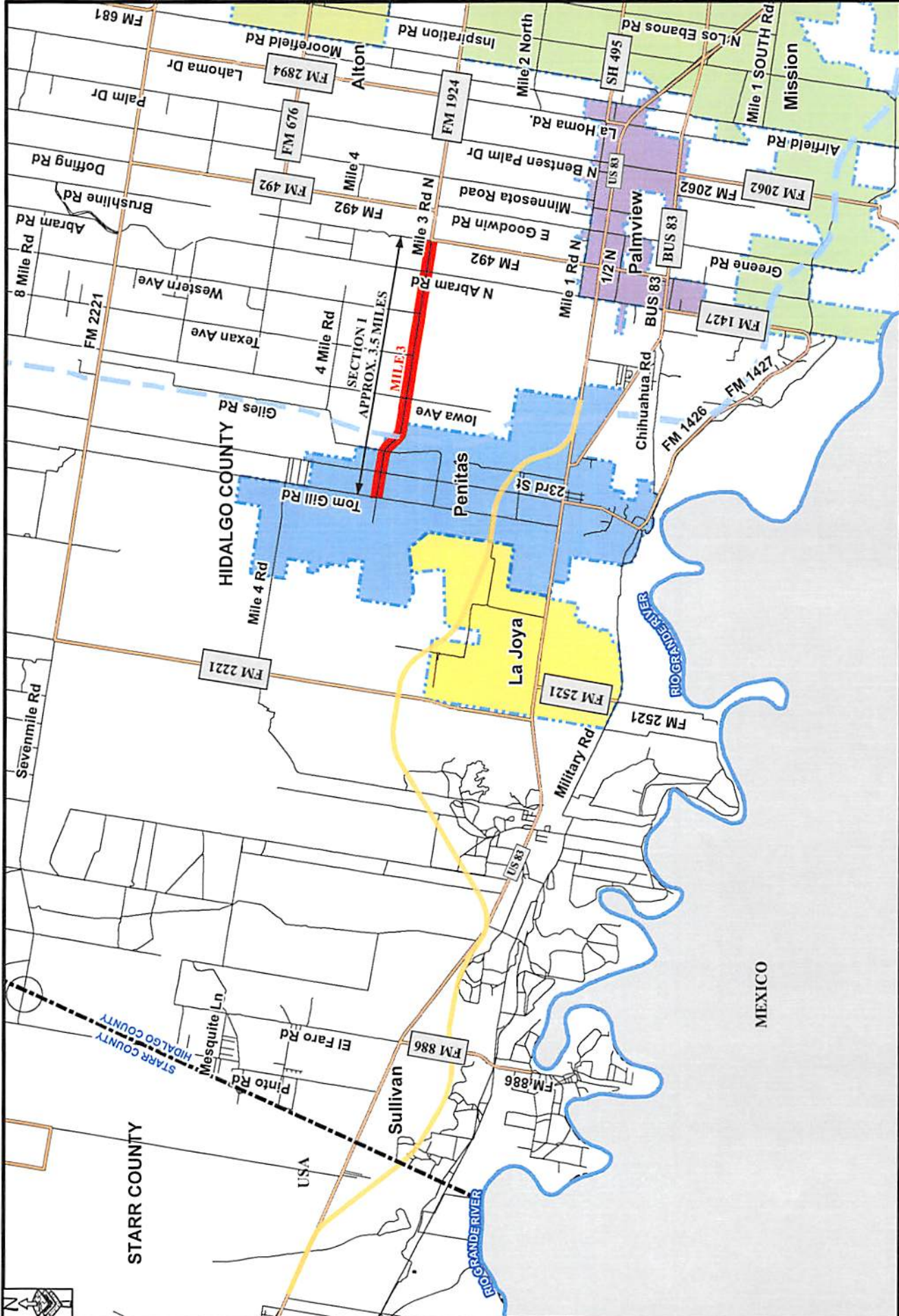
By: Ramon Garcia,
County Judge

ATTEST:

By: Arturo Guajardo, Jr., County Clerk

LIST OF EXHIBITS

- Location Map
- Exhibit A - Services to be provided by Owner
- Exhibit B - Services to be provided by Engineer
- Exhibit C - Work Schedule
- Exhibit D-1 - Fee Schedule
- Exhibit D-2 - Estimated Man-hour Breakdown
- Exhibit D-3 - Sub-Consultant (R.O.W.S.S.) Fee Schedule
- Exhibit D-4 - Sub-Consultant (ETSI) Fee Schedule



LEGEND

- MILE 3 PROJECT LIMITS
- PROJECT APPROX. LENGTH: 3.5 MILES
- PROPOSED HCMRA PROJECTS
- CITY LIMITS
- COUNTY LIMITS
- LA JOYA BYPASS
- STREETS
- STATE ROADS

MILE 3
PROJECT LOCATION MAP
SECTION I - FROM TOM GILL TO FM 492

L & G Engineering
 Transportation Consulting Engineers

Document Path: G:\GIS\PROJECTS\HIDALGO\MILE 3 LOCATION MAP\ZOOMEDOUT 15-15.mxd

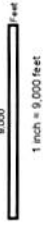


EXHIBIT "A"
SERVICES TO BE PROVIDED BY THE OWNER

1. The COUNTY will issue work authorization to initiate all required services and designate the authorized representative of the coordination of each work authorization.
2. The COUNTY will provide copies of all subdivision plats of record and/or in the subdivision process.
3. They COUNTY, will provide copies of Engineering, Drainage Studies within or near the project limits
4. The COUNTY will provide the ENGINEER with on-going guidance, timely reviews, and decisions necessary to complete services required by the work authorization in order to permit the ENGINEER to maintain an agreed upon project schedule.
5. The COUNTY will process all acceptable requests for payment in a timely manner.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

SECTION 1 - PROJECT DESCRIPTION

The services designated herein as "Services provided by the ENGINEER" shall include the performance of all engineering services for the following described facility:

COUNTY/CITY: HIDALGO COUNTY

CONTROL: _____

PROJECT/DESCRIPTION: Preparation of Plans, Specifications and Estimates for the MILE 3 PROJECT

LENGTH: 3.5 MILES

HIGHWAY: MILE 3 PROJECT

LIMITS: from TOM GILL ROAD TO FM 492

EXISTING FACILITY

PROJECT CLASSIFICATION

(Place an "X" in only one Project Classification)

- Surface Treatment
- Overlay
- Rehabilitation Existing Road (Scarify & Reshape)
- Convert Non-Freeway to Freeway
- Widen Freeway
- Widen Non-Freeway
- New Location Toll Freeway
- New Location Non-Freeway
- Interchange (New or Reconstruct)
- Bridge Widening or Rehabilitation
- Bridge Replacement
- Upgrade to Standards - Freeway
- Upgrade to Standards - Non-Freeway
- Miscellaneous Studies (Use Function Code 110 for All Tasks)

ENGINEER shall mean L&G Engineering.

STATE shall mean Texas Department of Transportation.

COUNTY shall mean the Hidalgo County.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

SECTION 5 - FIELD SURVEYING AND PHOTOGRAMMETRY

(Function Code 150)

Services
Provided By:
SURVEYOR COUNTY

To be provided by Sub-Consultant: R.O.W. Surveying Services, LLC.

1. Field Surveying
- YES NO a. Primary Project Control - 3 to 5 miles spacing
Precision shall be 1 part in 20,000 or better, unless otherwise directed by the district engineer.
(1) Establish horizontal control points
(2) Establish vertical control points
- NOTE: ALL BEARING AND DISTANCE SHALL BE BASED ON THE STATE PLANE COORDINATE SYSTEM NAD 1983, SOUTH ZONE.
- ALL DISTANCES AND COORDINATES SHALL BE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999960
- This project shall be tied to the same H&V on Liberty Road. The Engineer shall provide the control points to tie into. The Surveyor shall tie into the H&V Control Points of the Mile 3 project (SH 107 to FM 1925).**
- YES NO b. Secondary Project Control (Surveyor shall recover and/or reset H&V Control Points as provided by the Engineer and create Survey Data Sheets for inclusion in the Project Plans.
- No traverse should exceed 25 angle points. Planimetrics shall be 20 ft Lt & Rt from the proposed ROW as per the schematic provided by the Engineer.
 - The unadjusted angular error should not exceed 2 seconds per angle, plus 14 seconds.
 - The unadjusted ratio of precision should be one part in 10,000 or better. (The ratio of precision is the total length of the traverse divided by the total error.)
 - The unadjusted vertical error should not exceed 0.03 foot per mile of traverse.
- (1) Project control base lines
- NO (2) Photogrammetric ground control
- (a) Establish horizontal control
 - (b) Establish vertical control points
 - (c) Place and maintain control point targets
- NO
- NO
- NO
- YES NO c. Other Field Surveying
- (1) **The limit of the Design surveys shall be 1,500-ft before and after the limits of the project as identified by the Project Engineer on the schematic. Establish horizontal and vertical control.** Set benchmarks at 1000-ft intervals along the project proposed right-of-way. Provide x,y,z for each Benchmak. Provide a BM along each outfall identified on the Hydrologic Map. The BM's shall be #5 I.R. 2-ft in depth set in concrete. **The surveyor shall provide A H&V Book (a Sample shall be provided by the Engineer to the Surveyor).** The Surveyor will provide a 3-pt reference sketch with ties to the BMs for inclusion the the existing H&V Control Book. Establish benchmark circuit throughout the project with a tolerance of 0.03'/ft per mile error vertically.
 - (2) Complete topographic and cross section survey, data processing, and CADD mapping (2D & 3D) for the limits of the project.
 - (3) Locate all visible utilities, data processing and CADD mapping (2D & 3D) including irrigation lines. Follow sample provided by the Engineer.
 - (4) Field locate cross culverts, driveway culverts, invert, irrigation lines, within the project limits, data processing and CADD mapping (2D & 3D).
 - (5) Right of Entry, Right of Way Research, and Appraisal District Records is the responsibility of the Surveyor.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

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| | | (6) The Surveyor shall also paint the proposed centerline on the existing pavement as approved by Engineer. (500-ft stations and a tick mark at 100-ft. stations –12 inches long with approved paint by Engineer) before construction for the purpose of utility adjustments and project location. |
| | | (7) Profile and cross section intersecting streets for ties into project (500-ft. beyond the proposed ROW per schematic and 20-ft wider than the existing ROW of intersecting street). Reference missing voids as per CD provided by the Engineer. |
| | | (8) Cross section irrigation crossings for a distance of 20-ft beyond the proposed ROW at 100-ft intervals in a DTM file. Provide a complete description of irrigation appurtances as identified by the engineer sample layout. |
| | | (9) Tie Horizontally and Vertically the existing storm drain system that lies within the existing proposed ROW including the elevation of the outfall of said recovered existing storm drain systems. |
| <u>YES</u> | <u>NO</u> | (10) Tie to existing underground and overhead utilities (location, elevation and direction)
<u>Horizontally</u> – the surveyor shall call the 1-800 number for the utilities to be marked on the ground as well as any city water and sewer lines. He shall tie all visible utility crossings with name, address and Phone #'s of utility companies. The engineer will coordinate with the utility companies and jointly the Surveyor and the Engineer will identify which utilities were missed and need to be tied down.
<u>Vertically</u> – The engineer shall identify all utilities that are potential conflicts and that need to be tied vertically. The engineer will advise the surveyor in writing of the needed vertical ties and the surveyor will tie the lines vertically once the surveyor has coordinated the exposure and provide the information to the engineer. |
| <u>YES</u> | <u>NO</u> | (11) Additional Field Surveying as shown below:
(A) <u>IRRIGATION LINES</u> – The surveyor will meet with the engineer before he ties down any irrigation lines. The Engineer will provide him the existing Irrigation District Maps and the A&M Data of existing irrigation lines that are identified of record. He will follow the sample given to him by the engineer and tie the structures horizontally and vertically and provide Field Books to the engineer.
(B) <u>OUTFALLS</u> – The surveyor will provide a complete 2D & 3D File including utilities of the outfall identified on the Hydrologic Map. |
| | | <u>Driveways and Turnouts</u>
(a) Inventory commercial entrances, public roads and side streets separately.
(b) Obtain centerline station. (Width at ROW, PAV'T and existing radius.
(c) Inventory by type (dirt, caliche, gravel or paved). If paved, indicate condition in terms of no patches, has patches or has potholes. Obtain width at R.O.W. line.
(e) Obtain elevations at both edges of the driveway or turnout in line with the side drain. |
| <u>NO</u> | <u>NO</u> | (12) ROW staking (Existing and Proposed @ 1,000 ft. stations PC's PT's and Angle points as per ROW Map) |
| <u>NO</u> | <u>NO</u> | (13) Soil core hole staking - |
| <u>NO</u> | <u>NO</u> | (14) Determine changes in topography from voids and outdated maps due to development, erosion, etc. |
| <u>YES</u> | <u>NO</u> | (15) Profiles of existing drainage facilities |
| <u>NO</u> | <u>NO</u> | (16) Measurement of hydraulic opening under existing bridges |
| <u>YES</u> | <u>NO</u> | (17) Obtain elevations of manholes and valves of utilities |
| <u>YES</u> | <u>NO</u> | (18) Provide temporary signs, traffic control, flags, safety equipment, etc. |
| <u>YES</u> | <u>NO</u> | (19) Ties to existing bridges or culverts that may conflict with new construction. |
| <u>N/A</u> | <u>N/A</u> | (20) Bridge widening top of deck and/or top of cap elevations at the Profile Grade Line (PGL) and the edges of slab at bent locations. |
| <u>YES</u> | <u>N/A</u> | (21) Inventory signs, mailboxes, and driveways |
| <u>YES</u> | <u>N/A</u> | (22) Survey controlled data sheets per TxDOT guidelines. |
| <u>YES</u> | <u>N/A</u> | (23) Recover and/or re-establish the existing center line and existing Right-of-Way. Have said existing centerline approved by the Engineer. Provide a digital computer dump of both. |
| <u>YES</u> | <u>N/A</u> | (24) Coordinate with the Engineer to set the existing centerline stationing. |

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services
Provided By:
SURVEYOR County

- | | | |
|------------|------------|---|
| <u>N/A</u> | <u>N/A</u> | <ul style="list-style-type: none">2. Photogrammetric Products<ul style="list-style-type: none">a. Uncontrolled Photography<ul style="list-style-type: none">(1) Contact Prints(2) Mosaics(3) Digital ortho plotsb. Mapping<ul style="list-style-type: none">(1) Planimetric Maps(2) Contour Maps(3) Cross Sections(4) Profiles(5) Digital Terrain Models (DTM) |
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EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

ADDITIONAL RESPONSIBILITIES

A. TRAFFIC CONTROL:

The SURVEYOR shall control traffic in and near surveying operations adequately to comply with provisions of the latest edition of the TxDOT Manual on Uniform Traffic Control Devices – Part VI and the latest edition of the Occupational Safety Manual both of which can be found on the TxDOT internet site.

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

B. INVOICING:

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

C. EASEMENTS, LETTERS OF PERMISSION, ETC.

The SURVEYOR shall be responsible for delineating easements. The SURVEYOR will be responsible for securing the necessary legal instruments and obtaining all Right-of-Entries (ROEs).

D. MEETINGS:

The ENGINEER shall setup the necessary meetings with the SURVEYOR in order to assure all field information is provided on-time and products are delivered in accordance with TxDOT's specifications. SURVEYOR must attend all meetings involving data provided if requested by ENGINEER.

E. PROJECT MANAGER/SURVEYOR COMMUNICATION:

The SURVEYOR shall designate one Texas Registered Professional Land Surveyor (RPLS) to be responsible throughout the project for project surveying coordination and all communications, including billing, with the ENGINEER.

F. OFFICE LOCATION:

The SURVEYOR will perform the services to be provided under this agreement out of a local office and have a crew available to perform requested tasks within 24 hours of request. The coordinating SURVEYOR's Project Manager (RPLS) shall be accessible at all times and working from the local office.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

SECTION 6 - ROADWAY DESIGN CONTROLS
(Function Code 160)

Services
Provided By:
ENGINEER COUNTY

YES
N/A

N/A
N/A

1. Geometric Design
 - a. Horizontal and Vertical Alignment
 - b. Schematic Layout
 - (1) The location of interchanges, main lanes, grade separations, frontage roads and ramps.
 - (2) Develop vertical and horizontal alignment of main lanes, ramps and cross roads at proposed interchanges or grade separations. Frontage road alignment data need not be shown on the schematic; however, it should be developed in sufficient detail to determine ROW needs. The degree of horizontal curves and vertical curve data, including "K" values, shall also be shown for ease of checking.
 - (3) For freeways, show the location and text of the proposed main lane guide signs. Lane lines and/or arrows indicating the number of lanes shall also be shown.
 - (4) A complete explanation of the sequence and methods of stage construction, if proposed, including the initial and ultimate proposed treatment of crossovers and ramps.
 - (5) The tentative ROW limits.
 - (a) Provide a roadway Design System (RDS) or (GEOPAK) computer tape of the preliminary earthwork to verify ROW requirements.
 - (b) Provide a graphics file containing the approved schematic.
 - (6) The geometric (pavement cross slopes, lane and shoulder widths, slope rates for fills and cuts) of the typical sections of proposed highway main lanes, ramps, frontage roads, and cross roads.
 - (7) The current and projected traffic volumes as provided by the TxDOT (20 year traffic projection, unless otherwise determined by the District Engineer).
 - (8) The control of access lines if Interstate or designated under House Bill 179.
 - (9) Direction of traffic flow on all roadways.
 - (10) Location and width of median openings for highway without access control.
 - (11) The geometric of speed change (acceleration, deceleration, climbing) lanes.

N/A

N/A

2. General Guidelines for Project Development
 - a. Prior to preparing detailed plans for a proposed project, a preliminary schematic layout shall be prepared which indicates the general geometric features and location requirements peculiar to the project. An uncontrolled aerial mosaic will be provided for this use. Four copies of the schematic layout shall be submitted through the district to the Design Division for approval and subsequent coordination with the Federal Highway Administration (FHWA) where applicable. The layout shall be submitted for two-lane arterial highway projects on new locations and for all multi-lane highway projects. **No geometric design is to be performed until the COUNTY has given the engineer written approval of the preliminary schematic layout.**
 - b. All geometric design shall be in conformance with the State's Design Division, Operations and Procedures Manual, except where variances are permitted in writing by the STATE.
 - c. The schematic layout shall include basic information which is necessary for the proper review and evaluation including the items listed above in the checklist for schematic layout.
 - d. Handling of traffic during construction shall be a consideration in the development of preliminary designs.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services Provided By:		
<u>ENGINEER</u>	<u>COUNTY</u>	
<u>N/A</u>	<u>N/A</u>	2. General Guidelines for Project Development (<i>continued</i>)
		<ul style="list-style-type: none"> e. Upon approval of the schematic layout by Design Division (FHWA on Federal-aid projects), it shall be the basis for an exhibit at any required public hearing prior to final development of the project. If there are any changes to the schematic after the Design Division and FHWA approval and before the public hearing, four copies of the revised schematic, as displayed at the hearing, shall be submitted either prior to or accompanying the public hearing data. If there are no changes in the schematic as displayed at the hearing, only photographs of the schematic and other displays shall be submitted with the public hearing data. f. For all freeway construction projects, these schematics shall show the location and text of the proposed main lane guide signs. A schematic layout shall be submitted through the district to the Traffic Operations Division, Traffic Safety Section for approval and subsequent coordination with the FHWA. All signing shall be in conformance with the Texas MUTCD. g. On complex projects, informal contact through the district with the Design Division and FHWA personnel is encouraged with regard to development of preliminary design prior to official schematic submission. h. The engineer shall furnish a project tape that is compatible with the STATE's computer system, a project listing, and a cross section plot showing the original design sections containing the earthwork input and original cross sections for the project. Accuracy of the earthwork design is of utmost importance since it is the basis for contractor payments and construction staking.
<u>N/A</u>	<u>N/A</u>	3. Exhibit for Airway/Highway Clearance Permits
<u>YES</u>	<u>N/A</u>	4. Grading Design
		<ul style="list-style-type: none"> a. Refine the horizontal and vertical alignment of main lanes, frontage roads, ramps, cross roads and direct connectors based upon the approved schematic layout. Determine vertical clearances at grade separations and overpasses, taking into account the appropriate super elevation rate. b. Typical Sections c. Design Cross Sections d. Determine Cut and Fill Quantities e. Slope Stability Analysis f. Embankment Foundation Stability Analysis g. Embankment Settlement Analysis
<u>YES</u>	<u>N/A</u>	5. Pavement Design
		<ul style="list-style-type: none"> a. Prior to initiating detailed plan preparations for a project, a preliminary investigation shall be made to determine the approximate section and pavement type to be used for the pavement structure. The Flexible Pavement Design Manual for flexible pavement, "Appendix F" of the Design Division, Operations and Procedures Manual, and the current AASHTO Guide for the Design of Pavement Structures, may be used for this purpose. b. The typical section shall also reflect proposed geometric including pavement cross slopes, lane and shoulder widths, and slope rates whenever this data have not been previously shown on a schematic submission. c. Embankment and Subgrade <ul style="list-style-type: none"> (1) Soil Core Holes (Show cost estimate with Function Code 110) <ul style="list-style-type: none"> (a) Along center line (b) Along center line of each roadway
<u>N/A</u>	<u>N/A</u>	
<u>N/A</u>	<u>N/A</u>	
		The location and minimum number of soil core holes required for this project are as follows: (To be determined when schematic is being completed)

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services
 Provided By:
ENGINEER COUNTY

- | | |
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| <p><u>YES</u> <u>N/A</u></p> <p><u>NO</u> <u>N/A</u></p> <p><u>YES</u> <u>N/A</u></p> <p><u>YES</u> <u>N/A</u></p> <p><u>YES</u> <u>N/A</u></p> <p><u>NO</u> <u>N/A</u></p> <p><u>NO</u> <u>N/A</u></p> | <p>5. Pavement Design (<i>continued</i>)</p> <p>c. Embankment and Subgrade (<i>continued</i>)
 (2) Identify, interpret and summarize geologic features that affect engineering design (PI, Sulfate content, % of lime)</p> <p>d. Traffic Data for Pavement Design by STATE</p> <p>e. Basic Design Criteria</p> <p>f. Life Cycle Cost Analysis(es)</p> <p>g. Cost Data</p> <p>h. Pavement Material Properties</p> <p>i. Rehabilitation Investigations
 (1) Core Hole Survey (Show cost estimate with Function Code 110)
 (a) Determine type and depth of existing material, pavement, etc. The Engineer will determine whether to salvage ACP and FLEXBASE as well as their properties and provide this information to TxDOT.</p> |
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EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

SECTION 7 - DRAINAGE
(Function Code 161)

Services
Provided By:
ENGINEER COUNTY

All hydraulic design shall be in accordance with the TxDOT's Hydraulic Manual, except where variances are permitted in writing by the COUNTY.

<u>N/A</u>	<u>N/A</u>	1. Hydrologic Studies, Discharges
<u>N/A</u>	<u>N/A</u>	a. Drainage area maps showing existing conditions and proposed improvements.
		b. Hydrologic data/discharge determination
		2. Hydraulic Drainage Study and Documentation
<u>NO</u>	<u>N/A</u>	a. Hydraulic computations
		(1) Storm water detention available within the ROW (linear ft. along side drain ditch).
<u>NO</u>	<u>N/A</u>	(2) Storm water detention required outside the ROW (as per HCDD#1)
<u>NO</u>	<u>N/A</u>	(3) Culverts
<u>NO</u>	<u>N/A</u>	(4) Bridge waterways
<u>NO</u>	<u>N/A</u>	(5) Channels
<u>NO</u>	<u>N/A</u>	(6) Storm sewers/inlets
<u>NO</u>	<u>N/A</u>	(7) Pump stations
<u>NO</u>	<u>N/A</u>	(8) Storm Water Management facilities
<u>NO</u>	<u>N/A</u>	(9) Other
		(a) Irrigation Canals/Siphons
<u>NO</u>	<u>N/A</u>	b. Hydraulic report(s)
<u>NO</u>	<u>N/A</u>	c. Federal Emergency Management Agency (FEMA) floodway requirements
<u>NO</u>	<u>N/A</u>	d. Determine impact of proposed drainage plan on the following receiving stream(s)
		(1) Hidalgo County Drainage District Outfalls
		(2) All Irrigation District Outfalls impacted
		3. Layout, Structural Design and Detailing of Drainage Features
		a. Culverts
<u>YES</u>	<u>N/A</u>	(1) New culverts
<u>YES</u>	<u>N/A</u>	(2) Culvert widening and/or lengthening
<u>YES</u>	<u>N/A</u>	(3) Culvert replacements
		b. Storm sewers
<u>YES</u>	<u>N/A</u>	(1) New storm sewers
<u>YES</u>	<u>N/A</u>	(2) Modify existing storm sewers
<u>YES</u>	<u>N/A</u>	(3) Inlets
<u>YES</u>	<u>N/A</u>	(4) Manholes
<u>YES</u>	<u>N/A</u>	(5) Trunk lines
<u>NO</u>	<u>N/A</u>	c. Pump stations
<u>NO</u>	<u>N/A</u>	d. Subsurface drainage at retaining walls
<u>NO</u>	<u>N/A</u>	e. Outfall channel(s) within the ROW
<u>YES</u>	<u>N/A</u>	f. Outfall channel(s) outside the ROW
<u>NO</u>	<u>N/A</u>	g. Detention Pond(s) within the ROW
<u>NO</u>	<u>N/A</u>	h. Detention Pond(s) outside the ROW
<u>YES</u>	<u>N/A</u>	i. Summary of Quantities
<u>YES</u>	<u>N/A</u>	j. Storm Water Management facilities
<u>YES</u>	<u>N/A</u>	4. Storm Water Pollution Prevention Plan (SW3P)
<u>NO</u>	<u>N/A</u>	5. Scour Evaluation - Waterway Structures only (to be completed by Bridge Engineer under FC 170.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

SECTION 8 - SIGNING, MARKINGS AND SIGNALIZATION
(Function Code 162)

Services
Provided By:
ENGINEER COUNTY

To be provided by Sub-Consultant: ETSI

- | | | |
|------------|------------|---|
| <u>YES</u> | <u>N/A</u> | 1. Signing and Markings Layout |
| | | a. Requirements (Separate Layout) |
| | | (1) Roadway layout |
| | | (2) Center line with station numbering |
| | | (3) ROW lines |
| | | (4) Culverts and other structures that present a hazard to traffic |
| | | (5) Location of utilities, if not shown on plan and profile |
| | | (6) Existing signs to remain, to be removed, to be relocated |
| | | (7) Proposed signs (illustrated and numbered) |
| | | (8) Existing overhead sign bridges to remain, to be revised, removed or relocated |
| | | (9) Proposed overhead sign bridges indicating location by plan layout (electrical details need not be shown on this layout) |
| | | (10) Proposed markings (illustrated and quantified) which include pavement markings, object markings and delineation |
| | | (12) Quantities of existing pavement markings to be removed |
| | | (13) Proposed delineators and object markers |
| | | b. For projects involving freeway to freeway or other types of directional interchanges, projects including left-hand ramps or connections, the following information must be provided: |
| | | (1) The location of interchanges, main lanes, grade separations, frontage roads and ramps |
| | | (2) complete explanation of the sequence and methods of stage construction, where applicable, which would include the initial and ultimate proposed treatment of crossovers and ramps |
| | | (3) The number of lanes in each section of proposed highway and the location of changes in numbers of lanes |
| | | (4) The projected traffic volumes as provided by the STATE (20 year traffic projection, unless otherwise determined by the District Engineer) |
| | | (5) Tentative ROW limits |
| | | (6) Direction of traffic flow on all roadways |
| | | (7) Main lane, ramp, frontage road, and necessary cross road profiles at proposed interchanges or grade separations |
| <u>YES</u> | <u>N/A</u> | 2. Summary of Small Signs Tabulation |
| <u>YES</u> | <u>N/A</u> | 3. Summary of Large Signs Tabulation including all Guide Signs |
| <u>YES</u> | <u>N/A</u> | 4. Sign Detail Sheets |
| | | a. All signs except route markers |
| | | b. Design details for large guide signs |
| | | c. Dimensions of letters, shields, borders, corner radii etc. |
| | | d. Designation of shields attached to guide signs |
| | | e. Designation of arrow used on exit direction signs |

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services
 Provided By:
ENGINEER COUNTY

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| <p><u>YES</u> <u>N/A</u></p> <p><u>YES</u> <u>N/A</u></p> <p><u>YES</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>YES</u> <u>N/A</u></p> <p><u>YES</u> <u>N/A</u></p> <p><u>YES</u> <u>N/A</u></p> | <p>5. Traffic Signals</p> <p>a. Development of Justification (Warrant) Data</p> <p>(1) Location Map
 Relationship of proposed installation to other traffic signals, highways, business areas and traffic generators</p> <p>(2) Photographs as appropriate</p> <p>(3) Accident data as appropriate</p> <p>(4) Vehicle volumes (provided by TxDOT)</p> <p>(a) Existing</p> <p>(b) Estimated</p> <p>(c) Projected</p> <p>(d) Pedestrian</p> <p>(5) Traffic Survey - Count Analysis</p> <p>(6) Recommendation based on above data</p> <p>b. Layout</p> <p>(1) Title Sheet (when applicable)</p> <p>(a) Describe the location</p> <p>(b) Type of installation</p> <p>(c) Area map with project limits for each location</p> <p>(d) Index of sheets</p> <p>(e) Space for official signatures</p> <p>(2) Estimate and quantity sheet (when applicable)</p> <p>(a) List of all bid items</p> <p>(b) Bid item quantities</p> <p>(c) Specification item number</p> <p>(d) Paid item description and unit of measure</p> <p>(3) Basis of estimate sheet (list of materials)</p> <p>(4) General notes and specification data sheet</p> <p>(5) Condition diagram</p> <p>(a) Highway and intersection design features</p> <p>(b) Roadside development</p> <p>(c) Traffic control including illumination</p> <p>(6) Plan sheet(s)</p> <p>(a) Existing traffic control that will remain (signs and markings)</p> <p>(b) Existing utilities</p> <p>(c) Proposed highway improvements</p> <p>(d) Proposed installation</p> <p>(e) Proposed additional traffic controls</p> <p>(f) When applicable, proposed conduit for Railroad interconnect with standard details for runs under tracks.</p> <p>(g) Proposed illumination attached to signal poles.</p> <p>(7) Notes for plan layout</p> <p>(8) Elevation sheet(s) (span wire design)</p> <p>(9) Phase sequence diagram(s)</p> <p>(a) Signal locations</p> <p>(b) Signal indications</p> <p>(c) Phase diagram</p> <p>(d) Signal sequence table</p> <p>(e) Flashing operation (normal and emergency)</p> <p>(f) Preemption operation (when applicable)</p> <p>(g) Interval timing, cycle length and offset</p> |
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EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services
 Provided By:
ENGINEER COUNTY

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| <u>YES</u> | <u>N/A</u> | 5. Traffic Signals (<i>continued</i>)
b. Layout (<i>continued</i>)

(10) Construction detail sheets(s)
(a) Poles (TxDOT standard sheets)
(b) Detectors
(c) Pull Box and conduit layout
(d) Controller Foundation standard sheet
(11) Marking details (when applicable)
(12) Barricade and warning sign standard sheet and any special details for work zone traffic control for special conditions
(13) Aerial or underground interconnect details (when applicable) |
| <u>YES</u> | <u>N/A</u> | c. General Requirements
(1) Contact local utility company
(a) Confirm power source
(b) Discuss route of aerial or underground interconnect cable (when applicable)
(c) Adjustment of overhead utility lines
(2) Prepare governing specifications and special provisions list
(3) Prepare project estimate |
| <u>YES</u> | <u>N/A</u> | |
| <u>N/A</u> | <u>N/A</u> | |
| <u>YES</u> | <u>N/A</u> | |
| <u>YES</u> | <u>N/A</u> | |
| <u>YES</u> | <u>N/A</u> | d. Summary of Quantities |

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

SECTION 9 - MISCELLANEOUS (ROADWAY)
(Function Code 163)

Services
Provided By:
ENGINEER COUNTY

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|---|---|
| <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> <p><u>N/A</u> <u>N/A</u></p> | <p>1. Retaining Walls</p> <p>a. Structural Details</p> <p>(1) Cast-in-Place Cantilever at _____ locations. (TxDOT Standard Retaining Wall)*</p> <p>(2) Tiedback Retaining Wall at _____ location. (TxDOT standard retaining wall)</p> <p>(3) Specialized Retaining Wall at _____ locations (Unique Design).*</p> <p>b. Alternate Patented Retaining Walls at all locations. (Layouts Only)**</p> <p>(1) Mechanically Stabilized Earth</p> <p>(2) Concrete Block Wall Systems</p> <p>c. Retaining Wall Layout (PLAN)</p> <p>(1) Designation of reference line</p> <p>(2) Beginning and ending retaining wall stations</p> <p>(3) Station of each retaining wall joint***</p> <p>(4) Offset from reference line</p> <p>(5) Horizontal curve data</p> <p>(6) Number of retaining wall panels and lengths***</p> <p>(7) Total length of wall</p> <p>(8) Indicate face of wall</p> <p>(9) All wall dimensions and alignment relations (alignment data as necessary)</p> <p>(10) Soil core hole locations</p> <p>d. Retaining Wall Layout (ELEVATION)</p> <p>(1) Top of wall elevations at each joint or intervals***</p> <p>(2) Existing and finished ground line elevations</p> <p>(3) Height of stem at each joint***</p> <p>(4) Wall panel designations***</p> <p>(5) Top of footing elevations***</p> <p>(6) Limits of measurement for payment****</p> <p>(7) Type, limits and anchorage details of railing (If applicable)</p> <p>(8) Top and bottom of wall profiles and soil core hole data plotted at correct station and elevation. The plot shall be at the same scale as the wall profile. Ground water elevations and the observation date shall be shown.</p> <p>e. Foundation Studies (Show cost estimate with Function Code 110)</p> <p>(1) The soil core holes shall be obtained at approximately 200 foot intervals along retaining wall alignments. The core holes shall extend 25 feet below the footing elevation.</p> <p>f. Stability Analysis (the ENGINEER shall estimate this task as part of his bid to complete the work).</p> <p>g. Estimate</p> <p>h. Summary of Quantities</p> <p>i. Typical X-section.</p> <p>j. General Guidelines for Retaining Walls</p> <p>(1) The ENGINEER shall make final design calculations and final detail drawings in accordance with standard requirements of the Texas Department of Transportation. The designer and checker shall check all calculations and initial each page.</p> <p>(2) The ground water level should be observed at the water strike.</p> <p>(3) For purposes of uniformity statewide, soil core hole data shall be shown on layouts as illustrated in the Bridges and Structures Foundation Exploration and Design Manual.</p> <p>(4) Foundation exploration shall conform to the requirements set forth in Administrative Circular No. 25-84, Administrative Circular 33-87 and Administrative Circular No. 25-92.</p> |
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Services

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Provided By:
ENGINEER COUNTY

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| <u>YES</u> | <u>N/A</u> | <p>2. Traffic Control Plan, Detours and Sequence of Construction
 Traffic Control Plans (TCP) are required for all projects. A detailed TCP shall be developed when traffic handling during construction involves complications for which a feasible solution is not covered by the Texas MUTCD or the current Barricade and Construction (BC) Standards. The following items are required on all Traffic Control Plan Layouts:</p> <ol style="list-style-type: none"> a. The sequence of construction and method of handling traffic during each phase. b. The existing and proposed traffic control devices that will be used to handle traffic during each construction sequence. Include signals, regulatory signs, warning signs, construction warning signs, guide signs, route markers, construction pavement markings, channelizing devices, portable changeable message signs, flashing arrow boards, barricades, barriers, etc. c. The proposed traffic control devices (stop signs, signals, flag person, etc.) at grade intersections during each construction sequence. d. Where detours are provided, typical cross sections shall be shown. e. Road construction work hours shall be developed after an investigation of the traffic volumes has been performed. |
| <u>N/A</u> | <u>N/A</u> | <p>3. Illumination</p> <ol style="list-style-type: none"> a. Preliminary Roadway Illumination Layout and Circuit Layout <ol style="list-style-type: none"> (1) For projects involving freeway to freeway or other types of directional interchanges and projects including left-hand ramps or connections, provide the following: <ol style="list-style-type: none"> (a) The location of interchanges, main lanes, grade separations, frontage roads and ramps (b) A complete explanation of the sequence and methods of stage construction, where applicable, which would include the initial and ultimate proposed treatment of crossovers and ramps (c) The number of lanes in each section of proposed highway and the location of changes in the number of lanes (d) The projected traffic volumes as provided by the STATE (20 year traffic projection unless otherwise determined by the district engineer) (e) Tentative ROW limits (f) Direction of traffic flow on all roadways (g) Main lane, ramp, frontage road, and necessary cross road profiles at proposed interchanges or grade separations b. Final Roadway Illumination and Electrical Circuit Layouts <ol style="list-style-type: none"> (1) Roadway layout showing pavement edges, shoulders, curbs, retaining walls, etc. (2) Center line with station numbering. (3) ROW lines. (4) Symbol legend. Use department standard symbols for lighting and electrical. (5) Culverts and other structures that present a hazard to traffic. (6) Location of underground utilities, if not shown on plan profile. (7) Location of overhead electrical lines, both crossing and parallel to ROW. (8) Existing sign lighting circuits and roadway illumination to remain, to be removed, to be relocated. (9) Existing service poles, electrical circuits, ground boxes, etc. (10) Contact electric utility for service pole locations, voltage characteristics. (11) Location of proposed sign lighting circuits and roadway illumination. (12) Proposed electrical circuits. (13) Tabulation of all quantities including proposed, existing to be relocated, existing to be removed. The layout sheet quantities and lighting summary shall be shown. Tabulations to include estimated quantity with a column for final quantities. |
| <u>N/A</u> | <u>N/A</u> | |

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services
 Provided By:
ENGINEER COUNTY

<u>N/A</u>	<u>N/A</u>	3. Illumination (<i>continued</i>) c. General Guidelines for Illumination (If applicable) The ENGINEER shall submit to the COUNTY, well in advance of PS&E due date, the roadway illumination and electrical circuit layout sheets for review by the STATE. Two copies of the layout sheets are to be submitted. One copy will be returned to the Engineer showing corrections that are to be made by the ENGINEER. When final plan submission is made, the ENGINEER shall provide a written statement regarding completion of the corrections.
<u>YES</u>	<u>N/A</u>	4. Miscellaneous Drafting/Standards
<u>N/A</u>	<u>N/A</u>	a. Erosion Control b. Landscape Development
<u>YES</u>	<u>N/A</u>	5. Compute and Tabulate Quantities
<u>YES</u>	<u>N/A</u>	6. Special Utility Details (Irrigation lines)
		7. Miscellaneous Structures
		a. Type of Structure*
		(1) Overhead Sign Bridges (O.S.B.) Modifications or special O.S.B. designs shall be prepared using the same design assumptions that are used for the standard O.S.B. structures.
<u>N/A</u>	<u>N/A</u>	(a) New O.S.B. structure(s)
<u>N/A</u>	<u>N/A</u>	(b) Structural evaluation of existing O.S.B. structure(s) that are to remain in place or to be relocated.
<u>N/A</u>	<u>N/A</u>	(2) High Mast Illumination Poles (HMIP)
<u>N/A</u>	<u>N/A</u>	(3) Traffic Signal Supports
<u>N/A</u>	<u>N/A</u>	(4) Conventional Illumination Poles
<u>N/A</u>	<u>N/A</u>	(5) Sound Barrier Walls
<u>N/A</u>	<u>N/A</u>	b. Checklist for Layouts
		(1) Reference appropriate O.S.B. standard
		(2) Drilled shaft size and length
		(3) Soil strength used for design {indicate basis and boring(s) used}
		(4) Design height
		(5) Tower heights
		(6) Leg spacings
		(7) Design wind speed
<u>N/A</u>	<u>N/A</u>	c. Foundation Studies (Show cost estimate with Function Code 110) The soils exploration requirements for miscellaneous structures on this project are as follows: (To be provided by the Engineer on an as-needed basis)
		8. Agreements
<u>N/A</u>	<u>N/A</u>	a. Utility Agreements
<u>N/A</u>	<u>N/A</u>	b. Exhibits for Utility Agreements
<u>N/A</u>	<u>N/A</u>	c. Railroad Agreements
		d. Railroad Exhibits
<u>N/A</u>	<u>N/A</u>	(1) Railroad Underpasses
<u>N/A</u>	<u>N/A</u>	(2) Railroad Overpasses
<u>N/A</u>	<u>N/A</u>	(3) Railroad Grade Crossing (Replanking)
<u>N/A</u>	<u>N/A</u>	(4) Railroad Grade Crossing Warning Systems (Signals)
<u>N/A</u>	<u>N/A</u>	(5) Other Miscellaneous Sketches for Railroads
<u>N/A</u>	<u>N/A</u>	e. Traffic Signal Agreements
<u>N/A</u>	<u>N/A</u>	f. Exhibits for Traffic Signal Agreements
<u>N/A</u>	<u>N/A</u>	9. Estimate
<u>N/A</u>	<u>N/A</u>	10. Specifications and General Notes

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

SECTION 10 - BRIDGE DESIGN
(Function Code 170)

Services
Provided By:
ENGINEER COUNTY

			<u>NUMBER REQUIRED</u>
		1. Preparation of Structural Details	
		a. New Structure(s)	
<u>N/A</u>	<u>N/A</u>	(1) Underpass(es)	_____
<u>N/A</u>	<u>N/A</u>	(2) Overpass(es)	_____
<u>N/A</u>	<u>N/A</u>	(3) Main Lanes	_____
<u>N/A</u>	<u>N/A</u>	(4) Direct Connector(s)	_____
<u>N/A</u>	<u>N/A</u>	(5) Ramp Bridge(s)	_____
<u>N/A</u>	<u>N/A</u>	(6) Waterway Structure(s)**	_____
<u>N/A</u>	<u>N/A</u>	(7) Pedestrian Structure(s)	_____
<u>N/A</u>	<u>N/A</u>	(8) Utility Structure(s)	_____
<u>N/A</u>	<u>N/A</u>	(9) Railroad Underpass(es)	_____
<u>N/A</u>	<u>N/A</u>	(10) Railroad Overpass(es)	_____
<u>N/A</u>	<u>N/A</u>	(11) Bridge Classification Culvert(s)**	_____
<u>N/A</u>	<u>N/A</u>	(11) Alternate Structural Designs	_____
<u>N/A</u>	<u>N/A</u>	(12) Alternate Foundation Design	_____
		Total New Structures =	_____
		b. Existing Structure(s)	
<u>N/A</u>	<u>N/A</u>	(1) Bridge Widening, Rehabilitation and/or Modification of Existing Structure(s)	_____
<u>N/A</u>	<u>N/A</u>	(2) Bridge Replacement	_____
<u>N/A</u>	<u>N/A</u>	(3) Raising Bridge Elevation	_____
<u>N/A</u>	<u>N/A</u>	(4) Bridge Classification Culvert(s) Widening and/or Modification of Existing Structures(s)	_____
<u>N/A</u>	<u>N/A</u>	(5) Railroad Overpass(es)	_____
<u>N/A</u>	<u>N/A</u>	(6) Railroad Underpass(es)	_____
		Total Existing Structures =	_____

* Countour plots of bridge gores are required for projects involving ramps within the main bridge in order to ensure project transition. The Template data and vertical alignment necessary to generate the contour plots are also required.

** In the early stages of a project, it sometimes cannot be determined whether a Waterway Bridge Structure or a Bridge Classification Culvert (20' minimum length) will be required. Therefore, the ENGINEER should be aware that either of these two types of bridges may be reclassified later in the project for the other type when more information is known that would dictate a change in structure classification.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services
Provided By:
ENGINEER COUNTY

- N/A N/A 2. Preparation of Bridge Layouts (each bridge)
- a. Bridge Layouts (PLAN)
- (1) Horizontal curve information or bearing of centerline.
 - (2) Including horizontal, vertical, and template information of all roadways or railroads crossed.
 - (3) Bearing of center line or reference line.
 - (4) Skew angle(s).
 - (5) Slope for header banks and approach fills.
 - (6) Control stations at beginning and ending of bridge (with deck elevation), intersections, etc.
 - (7) Approach pavement and crown width.
 - (8) Bridge roadway width and curbs, face of rail, shoulders, or sidewalks.
 - (9) Approach slab and curb returns.
 - (10) Limits and type of riprap.
 - (11) Proposed features under structure.
 - (12) Location of profile grade line.
 - (13) North arrow.
 - (14) Typical bridge roadway section including preliminary proposed beam types and spacings.
 - (15) Cross slope and super elevation data.
 - (16) Minimum horizontal clearances when applicable.
 - (a) Dimensions to features that control clearances. (Calculate and indicate points of minimum vertical and horizontal clearances.
 - (17) Location of soil core holes (station and offset), shown on layout.
 - (18) Bent stations and bearings.
 - (19) Retaining wall locations.
 - (20) Traffic flow directional arrows.
 - (21) Railing types shown.
 - (22) Joint types and seal size, if used.
 - (23) Beam line numbers consistent with span details.
 - (24) Critical horizontal clearances (location of railroad tracks, nearby structures and utilities).
 - (25) Bearings of utilities.
- b. Bridge Layouts (ELEVATION)
- (1) Type of foundation.
 - (2) Finished grade elevations at beginning and end of bridge.
 - (3) Overall length of structure.
 - (4) Length, type of spans and units.
 - (5) Type of railing.
 - (6) Minimum calculated vertical clearance(s).
 - (7) Existing and proposed ground lines clearly marked.
 - (8) Grid elevations and stations.
 - (9) Bent numbers encircled.
 - (10) Stationing of bridge compatible with grid stations.
 - (11) Standard title.
 - (12) Profile grade data.
 - (13) Type of riprap.
 - (14) Soil Core Hole information with penetrometer test data shall be shown on the bridge layout at correct station, elevation and scale.
 - (15) Fixed/expansion condition of all bents.
 - (16) Column "H" heights.
 - (17) Number, size and length of foundations.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services
 Provided By:
ENGINEER COUNTY

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| <u>N/A</u> | <u>N/A</u> | 2. Preparation of Bridge Layouts (each bridge) <i>(continued)</i>
c. Additional layout requirements for waterway structures and bridge classification culverts.
(1) Design and 100-year peak discharges.
(2) Design and 100-year high water (HW) (Recorded HW and date if available)
(3) Natural and through-bridge velocities for design and 100-year floods.
(4) Calculated backwater for design and 100-year floods.
(5) Direction of flow for waterway crossings.
(6) Contours for water crossing. |
| <u>N/A</u>
<u>N/A</u> | <u>N/A</u>
<u>N/A</u> | 3. Bridge Classification Culvert, Estimate, Quantities, and Specifications (each bridge)
4. Foundation Studies (Show cost estimate with Function Code 110)
The minimum number of soil core holes shall be obtained in accordance with Section 1-301 of the Bridges and Structures Foundation Exploration and Design Manual. Soil core holes shall be obtained at approximately (300 foot) intervals along bridge alignments. Texas cone penetrometer (TCP) tests shall be conducted in all soil types encountered at a maximum of (10 foot) intervals. If single column bents with single drilled shafts are planned, TCP values should be taken at close intervals in the upper (15 feet). |
| <u>N/A</u>
<u>N/A</u>
<u>N/A</u> | <u>N/A</u>
<u>N/A</u>
<u>N/A</u> | 5. Bridge Total Quantities and Cost Estimates (each bridge)
6. Bridge Special Provisions and Specifications (each bridge)
7. Bearing seat elevations for each beam or girder. Top of cap elevations for non-beam type structures. |
| <u>N/A</u> | <u>N/A</u> | 8. General Guidelines for Bridge Design
a. The ENGINEER shall prepare a bridge layout of each bridge structure for Company's review and approval. The bridge layout shall be in conformance with the Bridges and Structures, Operation and Planning Manual and the Bridges and Structures, Detailing Manual. Soil core hole data is not required for submission of the preliminary bridge layout. No bridge design work is to be performed until the COUNTY has given the engineer written approval of the preliminary bridge layout. |

Several months may be required, after the preliminary bridge layout is submitted, for the district to obtain approval and/or permits from the following:

- TxDOT Design Division, when applicable:
 - Railroad Companies
 - FHWA
 - U.S. Army Corps of Engineers
 - U.S. Coast Guard
 - Bureau of Reclamation
 - Texas Parks and Wildlife
 - Others

Therefore, the bridge layout should be submitted at the earliest possible date and the ENGINEER's design schedule should reflect this.

- b. All bridge superstructure and substructure design will be reviewed by the Design Division for purposes of verifying structural integrity and optimization of design.
- c. The final bridge layout shall be in conformance with the Bridges and Structures, Operation and Planning Manual and the Bridges and Structures Detailing Manual.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Services
Provided By:
ENGINEER COUNTY

8. General Guidelines for Bridge Design (*continued*)

- d. The ENGINEER shall make final design calculations and final detail drawings in accordance with standard requirements of the Texas Department of Transportation. All bridge design shall be in conformance with the Texas Department of Transportation Bridges and Structures Operation and Planning Manual, the current American Association of State Highway and Transportation Officials or American Railway Engineers Association Specifications for railway structures, Standard Specifications for Highway Bridges, including applicable interim specifications, and the Bridges and Structures, Foundation Exploration and Design Manual. The ENGINEER shall furnish design calculations to the Design Division. **The designer and checker shall check all calculations and initial each page.**
- e. Structural steel or prestressed concrete shop drawings, form work drawings and false work drawings are not part of the design requirements. However, contract plans shall be in sufficient detail to permit the preparation of complete shop details for fabrication and erection.
- f. Elements of the bridge (abutments, bents, slabs, etc.) shall be detailed to a metric scale of 1:20 (1/2 inch equals one foot architect scale) or 1:50 (1/4 inch equals one foot architect scale) to provide clear legible drawings when the drawings are reduced. Lettering shall be a minimum size of 4 millimeters (5/32 inch) height for hand lettering and 140 for lettering by computer-aided design and drafting (CADD).
- g. Standard drawings for beams, diaframs, railings, armor joints, riprap, etc., shall be furnished to the ENGINEER upon request. These standards shall not be redrawn by the ENGINEER nor shall his title block be transferred to the standard drawings. Modifications to the standards, if necessary, shall be clearly identified and designated by "MOD" in the standard title. Specific special drawings prepared by the ENGINEER shall not be identified as standards.
- h. Bridge layout sheets shall have the same vertical and horizontal scale. Usually a metric scale of 1:100 (1 inch = 10 feet) or 1:200 (1 inch = 20 feet) is used. Sections of existing and proposed structures usually have a metric scale of 1:50 (1 inch = 5 feet). Soil core holes shall be positioned and labeled on the bridge layout plan view. The core hole data shall be plotted at the correct station, at the same vertical scale, and at the proper elevation unless otherwise approved by the Design Division.
- i. APPENDIX C, "GENERAL PLAN CHECKLIST", on pages C-1 thru C-5, more specifically relates various sheet types, details, summaries, standards, etc.
- j. For purposes of uniformity statewide, soil core hole data shall be shown on layouts as illustrated in the Bridges and Structures Foundation Exploration and Design Manual.
- k. Geometry and structural design errors found after acceptance of bridge plans shall be promptly corrected by the consultant at no cost to the Company.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

SECTION 13
ADDITIONAL RESONSIBILITIES

Easements, Letters of Permission, Etc.

The ENGINEER shall be responsible for delineating easements. The ENGINEER will be responsible for securing the necessary legal instruments.

Coordination of Utilities

The ENGINEER shall furnish the COUNTY prints of a project layout which will be distributed by ENGINEER to various utility companies to determine which utilities are in the limits of the project. These shall be preliminary layouts. Upon completion of the preliminary drainage plans and U&D sheets, the ENGINEER shall distribute to the various utility companies and request return. Upon return of these prints, the ENGINEER will schedule a meeting with the various utility companies to discuss potential conflicts and conformance with the State's Utility Accommodation Policy. The ENGINEER is responsible for coordination with the various utility companies for exposing potential conflicts and field ties to uncover utilities in potential conflict areas.

Meetings

Meetings will be held with the FHWA, State Officials, local governments, property owners, utility owners, railroad companies, other consulting firms, etc., as needed or required by the COUNTY. The ENGINEER shall coordinate through the COUNTY for the development of this project with any local entity having jurisdiction or interest in the project (i.e., city, county, etc).

Specifications, Special Provisions, Special Specifications

Use the State's standard specifications or previously approved special provisions and/or special specifications. If a special provision and/or special specification is developed for this project, it shall be in the State's format and incorporate references to approved State test procedures.

Project Manager/Engineer Communication

The ENGINEER shall designate one Texas Registered Professional Engineer to be responsible throughout the project for project management and all communications, including billing, with the COUNTY's Director. Any replacements to the ENGINEER's designated Project Manager/Engineer must be approved by the COUNTY.

Engineering documents produced for the department's engineering projects shall be signed, sealed and dated or CADD sealed in accordance with Administrative Order No. 5-89 and Administrative Circular No. 26-91.

Design Responsibilities

The ENGINEER is responsible for design errors and/or omissions that become evident before, during or after construction of the project. The ENGINEER's responsibility for all questions arising from design errors and/or omissions will be determined by the COUNTY and all decisions shall be final and binding. This would include, but not necessarily be limited to:

1. All design errors and/or omissions resulting in additional design work to correct the errors and/or omissions.
2. Preparation of design documents and detail drawings necessary for a field change due to design errors and/or omissions.
3. Revision of original tracings to the extent required for a field change due to design errors and/or omissions.

The ENGINEER shall promptly make necessary revisions or corrections resulting from the ENGINEER's errors, omissions or negligent acts without additional compensation. Acceptance of the work by the COUNTY will not relieve the ENGINEER of the responsibility for subsequent correction of any such errors or omissions or for clarification of any ambiguities.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

Document and Information Exchange

Data, Plan Sheets, General Notes and/or Specifications provided to the COUNTY shall be furnished on 8GB USB flash drives. Each 8 GB flash drive shall have a file titled Table of Contents. The Table of Contents shall indicate the locations of files within the directory structure of the documentation.

General Notes and specifications shall be provided in MS Office 2007 format. Plan sheets shall be provided in Microstation DGN or GEOPAK GPK format. PDF copies of plan sheets shall also be provided.

Two copies of the documentation shall be provided to the COUNTY.

If required, the ENGINEER shall provide to the COUNTY, a CD that contains all the plan sheets for the project. The graphics tape shall be compatible with the COUNTY's computer system.

CD Tape Required (YES or NO): YES

Proposal Time

The time indicated in the proposal and the contract shall include time necessary for reviews, approval, etc.

Office Location

The ENGINEER will perform the services to be provided under this agreement out of their office or offices listed below:

<u>Service</u>	<u>Office Location</u>
PS&E	Mission Office
Schematic	Mission Office
Environmental Document	Mercedes Office

The work effort will be managed out of the _____ Mercedes _____
(City)

office located at 2100 West Expressway 83 _____,
(Address)

Mercedes _____, Texas _____
(City) (State)

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

APPENDIX A - PLAN SHEET SEQUENCE PROCEDURE

1. Title Sheet
Detailed Index of Sheets
2. Typical Sections
3. General Notes and Specifications Data
4. Estimate and Quantity Sheets
5. Storm Water Pollution Prevention Plan (SW3P) Sheets
6. Traffic Control Plans
 - a. Sequence of Construction Layouts
 - b. Detour Plan/Profile/Typical Sections/Quantities
7. Roadway Layouts
 - a. Roadway Plan/Profile Sheets
 - b. Intersection Plan/Profile Sheets
 - c. Intersection Layouts
 - d. Alignment Layouts/Data
 - e. Ramp Layouts/Profiles
 - f. Connection Roads/U-turns Layouts/Profile
8. Roadway Details
 - a. Concrete Pavement Details/Standards
 - b. Concrete Pavement Terminal Anchorage Details/Standards
 - c. Bridge Approach Details/Standards
 - d. Bridge Terminal Anchorage Details/Standards
 - e. Roadway/Median Barrier Details/Standards
 - f. Curb Details
 - g. Driveway Details/Typical Sections/Standards
9. Signing Layouts and Marking Layouts
10. Traffic Signal Layouts
11. Lighting Layouts
12. Illumination Detail Standards (HMID, HMIF, HMIP, RID)
13. Utility Layouts/Profiles
14. Drainage Area Maps and Hydraulic Data
 - a. General Drainage Area Maps
 - b. Stage-Discharge Curves
 - c. Main Cross-Drainage Culvert/Bridge Hydraulic Data
 - d. Drainage Area Maps/Culverts/Storm Sewer
 - e. Hydraulic Data/Culverts/Inlets/Storm Sewer/Pumps
15. Detailed Drainage Plans
 - a. Drainage Plan/Profile Sheets (Storm Sewer Plan/Profile Sheets)
 - b. Channel Plan/Profiles/Typical Sections
 - c. Box Culvert Plan/Profile
 - d. Pipe Sewer/Culvert Cross Sections

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

APPENDIX A - PLAN SHEET SEQUENCE PROCEDURE (Continued)

16. Drainage Structural Details/Standards
 - a. Inlet Details/Standards
 - b. Manhole Details/Standards
 - c. Junction Box Details/Standards
 - d. Safety End Treatment Details/Standards
 - e. Box Culvert Details/Standards
 - f. Culvert Wingwall Details/Standards
 - g. Excavation-Backfill Diaphragms
 - h. Riprap Details/Standards
 - i. Temporary Pollution and Erosion Control Details

17. Pumphouse Layouts

18. Pumphouse Details

19. Pumphouse Standard Details

20. Bridge Layouts/Profile/Typical Sections*

21. Bridge Details*
 - a. Summary of Bridge Quantities
 - b. Abutments
 - c. Interior Bents
 - d. Spans
 - e. Special details for the specific bridge

22. Bridge Standard Details*

23. Bridge Railing Standards

24. Retaining Wall Layouts/Profiles**

25. Retaining Wall Details**

26. Retaining Wall Standard Details**

27. Guard Fence/Standards and Signal Pole Standards

28. Signal/Electrical Details/Standards and Signal Pole Standards

29. Signing/Markers/Striping Details/Standards

30. Barricade/Construction/Beacon Standards

31. Miscellaneous Standards
 - a. Chain Link Fence Standards
 - b. Bridge End Detail/Standards
 - c. Roadway Clearance Details/Standards
 - e. Attenuator Standards

NOTE: Variations of these plan sheet sequence guidelines may be permitted if approved in writing by the County.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

APPENDIX B - PLAN PREPARATION PROCEDURES

1. **Title Sheet**
The ENGINEER shall be responsible for completing the title sheet as required and formatted by the STATE and as discussed in Part V of the Highway Design, Operations and Procedures Manual. Refer to Section K - Plans, 1 - Title Sheets, page 5-24, for the procedure to be used regarding all plans prepared by the ENGINEER.
2. **Project Layout**
The project layout shall clearly depict the entire project as it is proposed and will usually be drawn at a scale of 1 inch=100 feet or 1 inch=200 feet, depending on the size of the project.
3. **Typical Sections**
See Part IV of the Highway Design, Operations and Procedures Manual.
4. **Sequence of Work Sheets (Traffic Control Plan)**
Clarity and completeness should be the rule to follow in preparing these sheets, with particular attention given to location of construction signs and barricades, lane widths, protection of drop offs, etc. For a reference guide use the Texas Department of Transportation, Texas Manual on Uniform Traffic Control Devices. Usual scale of 1 inch=100 feet and/or 1 inch=50 feet for special locations. A narrative sequence shall be included in the special provisions for the project. Staging of structural elements shall be considered. Provisions for drainage shall be considered, included and indicated during all stages of construction operations.
5. **Removal Item Sheets**
These sheets indicate removal of existing facilities necessary to the proposed construction. (1 inch=40 feet) (use same scale as plan/profile sheets).
6. **Summary Sheets**
Summary Sheets are required to indicate type, quantity and/or location of work for individual items of the proposed project.
7. **Alignment Layout Sheets**
These sheets indicate the horizontal alignment with curve data and coordinates usually tabulated thereon. On some projects, depending on size, this information may be included on the plan profile sheets. Usual scale (1 inch=100 feet) or (1 inch=40 feet).
8. **Plan Profile Sheet**
Clarity and completeness should be the rule to follow in preparation of these sheets. Usual scale (1 inch=40 feet or 1 inch=50 feet) or (1 inch=20 feet), depending on project complexity.
9. **Drainage Area Maps**
Usual scale (1 inch=100 feet) and/or (1 inch=200 feet) supplemented by large scale area maps as necessary.
10. **Drainage Plan Profile Sheets**
These sheets may be required on some projects to clearly depict location of inlets, storm sewer lines, and profile of storm sewer lines and laterals. Usual scale (1 inch=40 feet or 1 inch=50 feet) or (1 inch=20 feet). Storm sewer design does include redesign of storm sewers imposed by utility constraints developing after initial reviews by the STATE and consequential redesign and adjustments.
11. **Runoff, Inlet, Storm Sewer and Culvert Sheets**
Use standard sheets.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

APPENDIX B - PLAN PREPARATION PROCEDURES (Continued)

12. Culvert Cross Sections and Details
District standard reproducible sheets can be furnished (one each) to the ENGINEER for modification of special designs.
13. Manhole and Inlet Details
District standard reproducible sheets can be furnished (one each) to the ENGINEER.
14. Miscellaneous Detail
Curb, Sidewalk, Driveways, etc.
15. Intersection Details
16. Marking Layouts and/or Details
Layouts of the entire project with markings depicted thereon. Usual scale 1:500 (1 inch=40 feet or 1 inch=50 feet). On some projects typical details might suffice.
17. Structural Details
Bridge layout sheets shall have the same horizontal and vertical scale. Usually (1 inch = 10 feet) (1 inch = 20 feet). Sections of existing and proposed structures usually have a scale of (1 inch = 5 feet). Elements of the bridge (abutments, bents, slabs, etc.) shall be detailed to a (1/2 inch = 1 foot) or (1/4 inch equals 1 foot) architect scale to provide clear legible drawings when reduced. Letters shall be a minimum size of 4 millimeters (5/32 inch) height for hand lettering and 140 for lettering by computer-aided design and drafting (CADD).
18. Overhead Sign Bridge Layouts
A maximum of four structures may be shown on each layout sheet. The reference to the appropriate overhead sign bridge (OSB) standard and the following requirements shall be shown on the layout:
 - (1) Drilled shaft size and length
 - (2) Soil strength used for design {indicate basis and boring(s) used}
 - (3) Design height
 - (4) Tower height
 - (5) Leg spacings and
 - (6) Design wind speed.

The wind speed design map need not be included in the project plans. Designation of tower member size and anchor bolt size shall not be shown. For OSBs which require special design, the design shall be in accordance with the AASHTO sign specifications (see Item 22 of References on page 49) and to the same loading requirements as for normal standard structures. Structures (special or standard) which will have changeable message signs shall be analyzed by the ENGINEER.

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

APPENDIX C - GENERAL PLAN CHECKLIST

Services
 Provided By:
ENGINEER COUNTY

—	—	Title Sheet
—	—	Project Layout
—	—	Sequence of Work
—	—	Detour Layouts & Profiles
—	—	Construction Pavement Markings
—	—	Signing & Barricades
—	—	Construction Sign & Beacons
—	—	Typical Sections
—	—	Shaping & Finishing Sections
—	—	Slopes Adjacent to Shoulders
—	—	Estimate & Quantities
—	—	General Notes & Specification Data
—	—	Grading Summary
—	—	Miscellaneous Summaries (See following "SUMMARIES" heading)
—	—	Horizontal Curve Data & Alignment Layouts
—	—	Drainage Summaries
—	—	Structure Summaries
—	—	Erosion Control Summary & Details
—	—	Plan/Profile Sheets
—	—	Erosion Control Summary & Details
—	—	Pavement Contours
—	—	Superelevation Transition (If Required)
—	—	Grading Contours
—	—	Guard Fence Layouts
—	—	Storm Water Pollution Prevention Plans (SW3P)
—	—	Drainage Area Maps
—	—	Hydraulic Data
—	—	Drainage Sheets
—	—	Bridge Hydrology Sheets
—	—	Inlet & Manhole Details
—	—	Utility Support Details
—	—	Culvert Cross Sections & Details
—	—	Special Culvert Designs
—	—	Special Drainage Details
—	—	Chain Link Fence Locations
—	—	Ramp Details Sheet
—	—	Removal Item Sheet - Including detours (Shown in detour summary, No payment for removal; subsidiary to construction detours)
—	—	Pavement Details
—	—	Pavement Standard Modification for Concrete Shoulder
—	—	Concrete Pavement Continuously Reinforced (CPCR)
—	—	Concrete Pavement Contraction Design (CPCD)
—	—	Concrete Pavement Details - Jointed Reinforced (Steel Bars) (CPJR)
—	—	Bridge Approach Slab Details
—	—	Vehicle Attenuator Details
—	—	Miscellaneous Details
—	—	Wheelchair Ramps
—	—	Pavement Marking Details
—	—	Modified Standards
—	—	List of Standards
—	—	Permanent Signing Plans & Quantities

EXHIBIT "B"
SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER

APPENDIX C - GENERAL PLAN CHECKLIST (*continued*)

Services Provided By:		
<u>ENGINEER</u>	<u>COUNTY</u>	
___	___	Permanent Lighting Plans, Quantities & Standards
___	___	Bridge Layout(s)
___	___	Bridge Details
___	___	Retaining Wall Layout(s)
___	___	Retaining Wall Details
___	___	Pumphouse Details
___	___	Underdrain Details (Retaining Walls)
___	___	Culvert Standards
___	___	Soil Profile
___	___	Temporary Traffic Signals
___	___	Design Cross Sections
___	___	Estimate
___	___	List of Standard Specification, Special Provisions & Special Specifications
___	___	Detour Special Provisions (If Required)
___	___	Construction Time Estimate
___	___	Critical Path Method (CPM)
___	___	Unit Price Documentation
Miscellaneous		
___	___	Conduit Requirements
___	___	Traffic signal Requirements
Summaries		(ALL BELOW YES FOR ENGINEER AND NO FOR COUNTY UNLESS NOTED OTHERWISE)
___	___	Salvaging and Placing Topsoil
___	___	Prepare ROW
___	___	Remove Old Structures
___	___	Scarify Existing Pavement
___	___	Remove Old Concrete Curb of Curb and Gutter (C&G)
___	___	Remove Old Concrete Pavement
___	___	Remove Old Concrete Riprap
___	___	Remove Metal Beam Guard Fence
___	___	Galvanized steel Beam Guard Fence (12Ga) (GSBGF)
___	___	Temporary Guard Fence (TEMPGF)
___	___	Summary of Concrete Flumes
___	___	Curbs
___	___	Adjust Manholes & Inlets
___	___	Underdrains
___	___	Base and Pavement
___	___	Large Structure
___	___	Concrete Riprap (RR8 & RR9)
___	___	Temporary Portable Concrete Barrier (PCBR)
___	___	Concrete Traffic Barrier
___	___	Vehicle Attenuator
___	___	Guard Rail Energy Absorbing Terminal (Great System)
___	___	Pavement Markings & Blast Cleaning (Thermoplastic)
___	___	Retaining Walls
___	___	Large Structure Summaries
___	___	Small Structure Summaries

EXHIBIT "D-1"
ESTIMATED PROJECT FEE SCHEDULE
MILE 3 PROJECT

ROADWAY PROJECT:	MILE 3 PROJECT		
LIMITS SECTION 1:	FR: TOM GILL ROAD EAST TO FM 492		
LIMITS SECTION 2 :	FR: TOM GILL ROAD TO FM 2221		
EXISTING ROADWAY SECTION:	40' -- Rural		
EXISTING ROW WIDTH:	80 Varies and New Location		
PROPOSED ROADWAY SECTION:	4-lane urban for Section 1		
PROPOSED ROW WIDTH:	2-lane rural for Section 2		
ESTIMATED CONSTRUCTION COST Mile 3 SECTION 1...(@ \$4 mil per mile).....	\$14,000,000.00		
ESTIMATED CONSTRUCTION COST Mile 3 SECTION 2.....(@ \$2.3 mil per mile).....	\$5,750,000.00		
CURRENT AUTHORIZED CONSTRUCTION FUNDS BY THE HCMPO	\$9,889,615.00		
LENGTH Mile 3 SECTION 1 :	3.5 Miles		
LENGTH Mile 3 SECTION 2	2.5 Miles		
	ESTIMATED % LOCAL COST	TOTAL COST	LOCAL COST
ESTIMATED PROJECT COSTS			
WORK AUTHORIZATION NO. 1			
MILE 3 SECTION I & II (FROM FM 2221 EAST TO FM 492)			
PHASE I - EA, PUBLIC INVOLVEMENT, SCHEMATIC, HYDROLOGIC DESIGN			
Environmental Assessment with TxDOT	100%	\$ 160,000.00	\$ 160,000.00
Public Involvement for Environmental Assessment and 1 Public Meeting	100%	\$ 57,600.00	\$ 57,600.00
Archeological and Historical Research	100%	\$ 65,000.00	\$ 65,000.00
Engineering Technical Support at Public Mtgs with Layouts etc	100%	\$ 31,500.00	\$ 31,500.00
Schematic	100%	\$ 309,600.00	\$ 309,600.00
Hydrological Map	100%	\$ 45,000.00	\$ 45,000.00
Office Surveys for Schematic (Preliminary Ownership Identification and Property Rights)	100%	\$ 40,000.00	\$ 40,000.00
Preliminary Compensable Utility Management Identification on Schematic	100%	\$ 70,000.00	\$ 70,000.00
Update Schematic based on comments as provided by TxDOT/FHWA for schematic and EA update w/FHV	100%	\$ 30,000.00	\$ 30,000.00
Engineering Technical Support at Public Hearing with Layouts etc.	100%	\$ 22,500.00	\$ 22,500.00
Public Involvement for 1 Public Hearing	100%	\$ 21,600.00	\$ 21,600.00
Soil-Geotechnical of existing Subgrade & Pavement	100%	\$ 20,000.00	\$ 20,000.00
SUB-TOTAL		\$ 872,800.00	\$ 872,800.00
WORK AUTHORIZATION NO. 2			
MILE 3 SECTION I (FROM TOM GILL ROAD EAST TO FM 492)			
PHASE II- PS&E			
Field Surveys for Design and Construction	100%	\$ 182,400.00	\$ 182,400.00
PS&E Development (Based on actual construction estimate)	100%	\$ 980,000.00	\$ 980,000.00
Engineering Fee to create 1 set of plans and submit through TxDOT	100%	\$ 66,000.00	\$ 66,000.00
PS&E Development for OUTFALL(S)	100%	HCDD#1	HCDD#1
Signal Design	100%	\$ 120,000.00	\$ 120,000.00
SUB-TOTAL		\$ 1,348,400.00	\$ 1,348,400.00
WORK AUTHORIZATION NO. 3			
MILE 3 SECTION I (FROM TOM GILL ROAD EAST TO FM 492)			
PHASE III- ROWMap, ROW Acquisition & Compensable Utilities			
Permitted Utilities Coordination	100%	\$ 90,000.00	\$ 90,000.00
ROW Map (ESTIMATED 30 PARCELS)	100%	\$ 114,000.00	\$ 114,000.00
Right-of-Way Costs - Acq Services @ (est. 30 Parcels @ \$13,800/Parcel Avg.)	100%	\$ 414,000.00	\$ 414,000.00
Estimated County Attorney Costs for Condemnation (\$15,000/Parcel based on 20% total of parcels)	100%	\$ 90,000.00	\$ 90,000.00
Compensable Utility Management Oversight (1-person for 10 months)	100%	\$ 180,000.00	\$ 180,000.00
Roadway Right-of-Way Costs - (80/20)	20%	\$ 706,754.00	\$ 141,350.80
COMPENSABLE UTILITY COSTS (4 HIGH PRESSURE GASLINES FOR BUDGET PURPOSES)	20%	\$ 480,000.00	\$ 96,000.00
TxDOT Review Cost	100%	\$ 148,350.00	\$ 148,350.00
PHASE III- CONSTRUCTION OVERSIGHT			
ROADWAY CONSTRUCTION COST (96.6/3.4)	3.4%	\$ 9,889,615.00	\$ 336,246.91
TxDOT Construction Inspection (96.6/3.4)	3.4%	\$ 1,137,305.73	\$ 38,668.39
L&G Construction Management (18 Months)	100%	\$ 162,000.00	\$ 162,000.00
SUB-TOTAL		\$ 13,412,024.73	\$ 1,810,616.10
TOTAL		\$ 15,633,224.73	\$ 4,031,816.10

Work Authorization No. 1 SECTION I & II	FY 13	\$ 872,800.00	ISSUED
Work Authorization No. 2 SECTION I (ONLY)	FY 15	\$ 1,348,400.00	NOT ISSUED
Work Authorization No. 3 SECTION I (ONLY)	FY 16	\$ 960,000.00	NOT ISSUED

TOTAL ESTIMATED COUNTY COST: \$ 4,031,816.10 25.79%

TOTAL ESTIMATED PROJECT COST: \$ 15,633,224.73

COUNTY COSTS NOT INCLUDED IN WORK AUTHORIZATIONS \$ 850,616.10

EXHIBIT D-2
ESTIMATED MAN-HOUR BREAKDOWN
LINE 3 PROJECT
 (from Tom Ga Road TO FM 492)

WORK AUTHORIZATION NO. 2	MANHOURS													TOTAL LINE ITEM COST	
	Senior Project Manager	Senior Engineer	Senior Environmental Scientist / Specialist	Project Engineer	Design Engineer	ROW Administrator	EIT	Senior Engineer Tech	Environmental Scientist / Specialist	Engineer Tech	CADD Operator / GIS/Mapyt	Admin / Clerk	Budget		TOTAL HOURS
CONTRACT RATE	215.40	167.89	136.21	123.54	114.04	107.70	82.36	79.19	79.19	78.02	64.52	57.02	50.89		
PHASE II - PS&E DEVELOPMENT															
1 Field Surveys for Design and Construction by Sub-Consultant R.O.W.S.S.				200	82						30	16		430	\$ 123,465.00
2 L&G Field Surveys for Design and Construction and Management of Sub-Consultant (R.O.W.S.S.)				1050	2040		1600			1800	3877	151	122	10930	\$ 990,092.22
3 PS&E Development (Pavement Design, Plan & Profile, Utility & Drainage, Traffic Control Plans, Signing & Striping, Erosion Control, etc.)		300	180							130	501	70		818	\$ 63,000.02
4 Engineering Fee to create 15 sets of plans and submit through TxDOT (1 set - 30%, 1 set - 60%, 1 set - 90%, 9 sets - 85%, 3 sets - 100%)		50			65									0	\$ 115,667.28
5 PS&E Development for OUTFALL(S) (HDD#1)														0	\$ -
6 Signal Design by Sub-Consultant - ETSI				4	9						14	20		54	\$ 4,344.50
7 L&G Signal Design and Management of Sub-Consultant (ETSI)		2													\$ -
SUB-TOTAL	444	0	180	1319	2122	0	1900	0	0	1930	4222	257	122	12176	\$ 239,002.28
															\$ 1,083,373.64

Subtotal Manhour Fee with Sub-Consultant Costs: \$ 1,348,407.92

* Total Project Fee: \$ 1,348,400.00

*Rounded Figure

**EXHIBIT D-3
FEE SCHEDULE**

R.O.W. Surveying Services, LLC.

A	B	C	D	E	F	G	H	I	J	
1	Highway: Mile 3 Extension Project									
2	County: Hidalgo County, Texas									
3	From: FM 492 to Approx 1500' West of Tom Gil Rd									
4	FM 492 - South approx. 1850' S from Mile 3									
5	Description of Work: Design Survey									
6										
7	TASK AND DESCRIPTION	Survey		Survey	4-man	3-man	2-man	Admin/	Total	Cost
8	FC 150 Field Surveying	PM	RPLS	Technician	Survey Crew	Survey Crew	Survey Crew	Clerical	Hours	
9	HOURLY RATE	\$124.00	\$125.00	\$82.00	\$175.00	\$155.00	\$130.00	\$50.00		
12	PHASE 1 - FC 150 Field Surveying (Control Hz & Vt)									
13	A. Primary Project Control									
14	a. Establish Primary Control	6	10	6	0	24	0	0	46	\$ 6,206.00
15	B. Secondary Project Control									
16	a. Set additional secondary control points as needed	4	10	18	0	36	0	0	68	\$ 8,802.00
17	b. Horizontal values established with RTK or VRS	0	0	4	0	0	30	0	34	\$ 4,228.00
18	c. Vertical values established with digital level	4	0	12	0	0	44	0	60	\$ 7,200.00
19	Subtotal Hours	14	20	40	0	60	74	0	208	
20	Subtotal Cost - Phase 1	\$1,736.00	\$2,500.00	\$3,280.00	\$0.00	\$9,300.00	\$9,620.00	\$0.00		\$26,436.00
21	PHASE 2 - DTM Topography and Cross sections									
22	C. Setting Benchmarks									
23	1. Setting Benchmarks @ 1000'(ft) intervals	0	0	0	0	56	0	0	56	\$ 8,680.00
24	2. Topographic & Crosssections	0	16	48	0	130	0	0	194	\$ 26,086.00
25	3. Locate Visible Utilities	0	0	0	0	30	0	0	30	\$ 4,650.00
26	a. Utilities	0	0	12	0	0	0	0	12	\$ 984.00
27	4. Cross Culverts, Driveway Culverts, Inverts	0	0	8	0	8	0	0	16	\$ 1,896.00
28	5. Right of Entry, ROW Research, Appraisal Dist. Records	4	20	8	0	0	0	27	59	\$ 5,002.00
29	6. Proposed Centerline on Existing Pavement Pre-Construction for Utilities	2	4	0	0	0	32	0	38	\$ 4,908.00
30	7. Profile and Cross section Intersecting Streets	0	0	8	0	56	0	0	64	\$ 9,336.00
31	8. Irrigation Crossings	0	0	8	0	30	0	0	38	\$ 5,306.00
32	9. Existing Storm Drain H&V	0	0	8	0	8	0	0	16	\$ 1,896.00
33	10. Tie Existing Underground and Overhead Utilities Coordinate with Engineer	4	12	0	0	12	0	0	28	\$ 3,856.00
34	11. Additional Field Surveying									
35	a. Irrigation Lines	4	12	8	0	0	0	0	24	\$ 2,652.00
36	b. Outfalls	2	1	16	0	8	0	0	27	\$ 2,925.00
37	c. Driveways and Turnouts	0	0	8	0	12	0	0	20	\$ 2,516.00
38	15. Profiles of Existing Drainage Facilities	0	0	8	0	0	0	0	8	\$ 656.00
39	17. Obtain Elevations of Manholes and Valves of Utilities	0	0	4	0	4	0	0	8	\$ 948.00
40	18. Provide temp. signs, traffic control, flags, safety equip., etc.	0	0	0	0	4	0	0	4	\$ 620.00
41	19. Ties to Existing Bridges or Culverts that may be in conflict with new construction	0	0	4	0	8	0	0	12	\$ 1,568.00
42	21. Inventory Signs, mailboxes, and driveways	0	0	4	0	4	0	0	8	\$ 948.00
43	22. Survey Control Data Sheets per TxDOT	0	2	2	0	0	0	0	4	\$ 414.00
44	23. Recover and Establish Existing CL and ROW	0	8	8	0	8	0	0	24	\$ 2,896.00
45	24. Coordinate with the Engineer for Existing CL Stationing	2	8	0	0	0	0	0	10	\$ 1,248.00
46	Subtotal Hours	18	83	162	0	378	32	27	700	
47	Subtotal Cost - Phase 2	\$2,232.00	\$10,375.00	\$13,284.00	\$0.00	\$58,590.00	\$4,160.00	\$1,350.00		\$ 89,991.00
48	PHASE 3 - FINAL REPORT & DELIVERABLES									
49	A. CADD file (2D & 3D) for limits of project	0	0	12	0	0	0	0	12	\$ 984.00
50	B. Final Report and Deliverables	16	0	0	0	0	0	6	22	\$ 2,284.00
51	Subtotal Hours	16	0	12	0	0	0	6	34	
52	Subtotal Cost - Phase 3	\$1,984.00	\$0.00	\$984.00	\$0.00	\$0.00	\$0.00	\$300.00		\$ 3,268.00
53	PROJECT MANAGEMENT & OVERSIGHT									
54	A. Meeting & Coordination w/ Engineers	20	0	0	0	0	0	1	21	\$ 2,530.00
55	B. QC/QA Survey	10	0	0	0	0	0	0	10	\$ 1,240.00
56	Subtotal Hours	30	0	0	0	0	0	1	31	
57	Subtotal Cost - PM & Oversight	\$3,720.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$50.00		\$ 3,770.00
58										
59	Total Fee FC 150	\$9,672.00	\$12,875.00	\$17,548.00	\$0.00	\$67,890.00	\$13,780.00	\$1,700.00	973	\$123,465.00
60										
61	Grand Total FC 150									\$123,465.00

Exhibit D-4 "FEE SCHEDULE" CATEGORY A - TRAFFIC SIGNAL DESIGN

Mile 3 Road - From FM 2221 to FM 492

Ergonomic Transportation Solutions, Inc.

TRAFFIC SIGNAL DESIGN			MANHOURS					Total
			No. of sheets (estimated)	Project Manager	Senior Transp. Engineer	Transportation Engineer	CADD Designer	
TASK								
1	General Notes	n/a	2	4	4		2	12
2	Basis of Estimate	1	6	12	16	12		46
3	Condition Diagram	6	13	22	30	22		87
4	Proposed Signal/Flashing Beacon Layouts	6	48	80	112	64		304
5	Signal Phasing and Timing	6	12	6	14			32
6	Electrical Schedules	6	16	28	60			104
7	Int..Signs, Pav.Markings, Curb Ramps	n/a	6	16	24			46
8	Standard Sheets List	14	4	8	8			20
9	Specifications List and Cost Estimate	n/a	6	12	14	8		40
10	Coordination & Meetings	n/a	12					12
11	Temporary Traffic Signal Design	3	16	18	24	24		82
	Subtotal	42	141	206	306	130	2	785

Total Sheets/Labor Hours	42	141	206	306	130	2	785
Contract Rates		\$ 58.00	\$ 36.70	\$ 31.80	\$ 23.00	\$ 19.00	
Direct Salary Cost		\$ 8,178.00	\$ 7,560.20	\$ 9,730.80	\$ 2,990.00	\$ 38.00	\$ 28,497.00
Overhead Multiplier	165.260%	\$ 13,514.96	\$ 12,493.99	\$ 16,081.12	\$ 4,941.27	\$ 62.80	\$ 47,094.14
Fixed Fee	12.50%	\$ 2,711.62	\$ 2,506.77	\$ 3,226.49	\$ 991.41	\$ 12.60	\$ 9,448.89
Total Labor Costs		\$ 24,404.58	\$ 22,560.96	\$ 29,038.41	\$ 8,922.68	\$ 113.40	\$ 85,040.03

Ergonomic Transportation Solutions, Inc. Expenses

EXPENSES

Travel (airfare, lodging, mileage or car rental)	\$ 550.00
Total Expenses	\$ 550.00

ETSI Total Cost \$ 85,590.03

| Exhibit D-4 "FEE SCHEDULE" CATEGORY B - TRAFFIC SIGNAL WARRANT STUDIES
Mile 3 Road - From FM 2221 to FM 492

Ergonomic Transportation Solutions, Inc.

TRAFFIC SIGNAL WARRANT STUDIES		MANHOURS						Total
		No. of sheets (estimated)	Project Manager	Senior Transp. Engineer	Transportation Engineer	CADD Designer	Administrative Assistant	
TASK								
1	Conduct Field Investigations	n/a		2	16	16		34
2	Assess Collected Data	n/a		4	12			16
3	Accident Analysis	n/a		2	8	12		22
4	Collision Diagrams	n/a		1	4	16		21
5	Intersection Exhibits	n/a	2	16	16			34
6	Signal Warrant Analysis	n/a	4	28	36	16		84
7	Photo Album	n/a			6		22	28
8	Recommendations	n/a	8					8
9	Warrant Study Report	n/a	2	16	28	16	12	74
Subtotal			16	69	126	76	34	321

Total Sheets/Labor Hours		16	69	126	76	34	321
Contract Rates		\$ 58.00	\$ 36.70	\$ 31.80	\$ 23.00	\$ 19.00	
Direct Salary Cost		\$ 928.00	\$ 2,532.30	\$ 4,006.80	\$ 1,748.00	\$ 646.00	\$ 9,861.10
Overhead Multiplier	165.260%	\$ 1,533.61	\$ 4,184.88	\$ 6,621.64	\$ 2,888.74	\$ 1,067.58	\$ 16,296.45
Fixed Fee	12.50%	\$ 307.70	\$ 839.65	\$ 1,328.55	\$ 579.59	\$ 214.20	\$ 3,269.69
Total Labor Costs		\$ 2,769.31	\$ 7,556.83	\$ 11,956.99	\$ 5,216.34	\$ 1,927.78	\$ 29,427.25

Ergonomic Transportation Solutions, Inc. Expenses

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EXPENSES

Travel (airfare, lodging, mileage or car rental) \$ 550.00

Total Expenses \$ 550.00

ETSI Total Cost \$ 29,977.25