

June 14, 2018

The Honorable Joseph Palacios  
Commissioner, Hidalgo County Pct. No. 4  
1051 N. Doolittle Road  
McAllen, Texas 78541

**RE: Bus 281/SH 107 Roadway & Drainage Improvements Project**  
**Contract: C-16-199-07-19**  
**Work Authorization No. 2**  
**Limits: From Bus 281-W to US 281 (I 69C)**

Dear Commissioner Palacios:

As discussed, attached in duplicate for your review and approval is Work Authorization No. 2 to provide PS&E, Field Surveys and ROW Map for the Phase II engineering services of the Bus 281/SH 107 Drainage and Roadway Improvements project at Courthouse Square and Outfall.

Work Auth. No. 2 is in the amount of \$2,257,854.00. The scope of work consists of the PS&E, Field Surveys and Right-of-Way Map. The following is the funding breakdown for L&G Engineering and our Sub-Consultants proposed fees associated with this Work Authorization.

• L&G Engineering ( <i>PRIME</i> ) .....	\$ 1,811,827.91
• ROW Surveying Services, LLC. ( <i>SUB-CONSULTANT</i> ) .....	\$ 138,283.00
• ETSI ( <i>SUB-CONSULTANT</i> ) .....	\$ <u>307,743.09</u>
	<b>TOTAL \$ 2,257,854.00</b>

Attached you will find the following:

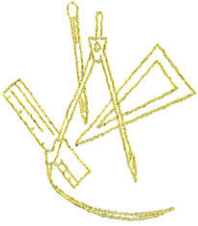
- 1.) Two (2) signed originals of Work Authorization No. 2 with the following attachments:
  - Project Location Map
  - Exhibit A "Services to be provided by the Owner"
  - Exhibit B "Services to be provided by the Engineer"
  - Exhibit C "Work Schedule"
  - Exhibit D-1 "Estimated Man-hour Breakdown" and attachments

Should you have any questions regarding this submittal, do not hesitate to call me at (956) 585-1909.

Sincerely,

Robert Macheska, P.E.  
Project Manager

Attachments



June 14, 2018

Hon. Joseph Palacios  
**Attn: Maria "Lulu" Mayorga – Executive Assistant**  
Hidalgo County Precinct No. 4  
1051 N. Doolittle Road  
Edinburg, Texas 78541

**RE: Subcontracting Notice for Bus 281/SH 107 Roadway & Drainage Improvements  
C-16-199-07-19  
Limits: from Bus 281-W to US 281 (I 69C)**

Dear Commissioner Palacios:

We would like to inform you of the subcontractors that we will be using on the Bus 281/SH 107 Roadway & Drainage Improvements Project ~ Work Authorization #2. Please coordinate with your Purchasing Department for Commissioner's Court approval of this notification. These subcontractors will be providing Surveying and Traffic Signal Services for the above referenced project.

**Subcontractor:**

Surveyor:

*Mr. Julio Cerda, P.E.  
R.O.W. Surveying Services, LLC.  
900 S. Stewart Road, Ste. 13  
Mission, Texas 78572  
Phone (956)-424-3335*

Traffic Signals:

*Mr. Harry Simeonidis, P.E.  
Ergonomic Transportation Solutions, Inc.  
11500 Northwest Freeway, Suite 491  
Houston, Texas 77092  
Phone (713) 956-9601*

Should you have any questions, please feel free to give me a call at 956-585-1909.

Sincerely,

Robert Macheska, P.E., C.F.M.  
Project Manager

cc: Hidalgo County Auditor's Office

**HIDALGO COUNTY**  
**Professional Engineering Services**  
**Contract # C-16-199-07-19**  
**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 PS&E, Field Surveys and ROW Map associated with the Bus 281 /SH 107 Roadway and Drainage Improvements Project.

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 \$2,257,854.00. This amount is based upon the costs outlined in the Estimated Cost Proposal attached hereto as *EXHIBIT "D-1" - 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. \_\_\_\_\_

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. 4, Commissioner Joseph Palacios as to the content and detail of this Work Authorization No. 2.

**HIDALGO COUNTY  
COMMISSIONER PRECINCT NO. 4**

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**

**THE OWNER:  
HIDALGO COUNTY**

\_\_\_\_\_  
By: Jacinto Garza, P.E.  
President

\_\_\_\_\_  
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 - Estimated Man-hour Breakdown

EXHIBIT "A"  
SCOPE OF SERVICES TO BE PROVIDED BY THE OWNER

---

The following provides an outline of the services to be provided by the **Owner** in the development of the proposed roadway and drainage improvements to Bus 281/SH 107 from the Bus 281-W to US 281 (I 69C) in Hidalgo County hereinafter denoted as the **Project**.

**GENERAL:**

The **Owner** will provide to the **Engineer** the following:

- 1) Provide the authorization to proceed with services through coordination with the project consulting and design Engineer.
- 2) Payment for work performed by the **Engineer** and accepted by the **Owner** in accordance with Article 5 of the Agreement.
- 3) Assistance to the **Engineer**, as necessary, to obtain the required data and information from other local, regional, State and Federal agencies the **Engineer** cannot easily obtain.
- 4) Provide any available relevant data the **Owner** may have on file concerning the **Project**.
- 5) Provide timely review and decisions in response to the **Engineer's** request for information and/or required submittals and deliverables, in order for the **Engineer** to maintain the agreed upon work schedule prepared in accordance with Exhibit "C" attached to this Work Authorization.
- 6) Attend and participate in progress meetings as required and as coordinated and conducted by **Engineer**.

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

---

**SECTION I - 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: PS&E, Design Surveying, Traffic Signal Warrants & Design, Geotechnical Testing & Permitted Utility Coordination for the Bus 281/SH 107 Road project.

LENGTH: 2.6 Miles

HIGHWAY: Bus 281 & SH 107

LIMITS: From Bus 281-W to US 281 (I 69C)

**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 - RIGHT-OF-WAY DATA**  
(Function Code 130)

Services  
Provided By:  
ENGINEER COUNTY

**NOTE:** No work involving right-of-way (ROW) data is to be performed until the COUNTY has given the ENGINEER written approval of the final location of the proposed ROW lines as approved by TxDOT.

- |            |           |   |
|------------|-----------|---|
| <u>YES</u> | <u>NO</u> | 1. Ownership Data in a .dgn file<br>a. The entire project limits.<br>b. Compensable utility ownership that has property rights on ROW shall be researched and provided.<br>c. For each drainage outfall property<br>d. For each irrigation structure pipe.  |
| <u>YES</u> | <u>NO</u> | 2. Parcel plats & Right-of-Way Map<br>a. A ROW map, parcel plats and field notes shall be prepared and furnished.<br>b. All plats and field notes must be signed and sealed by a Registered Professional Land Surveyor (RPLS).<br>c. ROW map must depict all improvements affecting ROW.  |
| <u>YES</u> | <u>NO</u> | 3. Utilities (Compensable)<br>a. Property ownership with recording information shall be shown on ROW Map and Parcel Plats with distance ties to property corners in an effort to locate utility.  |
| <u>YES</u> | <u>NO</u> | 4. Field Notes<br>a. Field notes and plats, signed and sealed by a Registered Professional Land Surveyor, for all parcels on the ROW Map<br>b. Computation Sheets for Survey Closure and Area for Each Parcel.<br>c. Ground surveys and preparation of parcel maps, legal descriptions, and right of way maps.  |
| <u>YES</u> | <u>NO</u> | 5. Survey and Stake Right-of-Way  |
| <u>YES</u> | <u>NO</u> | 6. Records as Required by the County and State<br>a. Records used to establish ownership  |
| <u>YES</u> | <u>NO</u> | 7. General Guidelines for Preparation of Right-of-Way Maps<br><i>(Sample ROW Maps and Parcel Plats and field notes attached)</i><br><b>GENERAL SPECIFICATIONS</b><br>a. All data submitted by the surveyor will be legible, organized and well documented.<br>b. The surveyor shall provide temporary signs and shall control traffic near surveying operations adequately to comply with provisions of the MUTCD; a copy of which the Surveyor acknowledges has been furnished to him. All signs, flags, and safety equipment are to be provided by the surveyor.<br>c. Permission to enter private property for surveying (Right-Of-Entry) shall be the sole responsibility of the surveyor.<br>d. The surveyor will be held responsible for the correctness of his services. The surveyor will be responsible for the completion of his services.<br>e. The surveyor will be required to complete the attached "Right-of-Way Map Checklist" and submit along with the completed R.O.W. map. All requirements of attached R.O.W. map checklist must be complete, accurate and also considered to be essential and is a part of this contract. |

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

---

**PROJECT SPECIFIC SCOPE OF SERVICES**

FC 130 – RIGHT-OF-WAY DATA – Abstract analysis, development of ROW Map sheets including parcel plats and field notes with Metes & Bounds field descriptions, and Title Commitments.

FC 150 – FIELD SURVEYING FOR PARCEL MAPPING – Recover horizontal & vertical control, locate and field tie existing ROW and boundary corners. Update topography, and reestablish corners for ROW map revisions.

**SURVEYING SCOPE OF SERVICES FOR PARCEL MAPPING**

FC 130 – RIGHT-OF-WAY DATA

Right-of-Way Documents - The SURVEYOR will utilize State examples and provide the following:

**GENERAL**

- a. Abstracting: The SURVEYOR will determine Ownership Data.
- b. Prepare individual parcel maps and field notes as needed to properly describe the right-of-way the State is to acquire.
- c. All procedures involving right-of-way maps will be in accordance with the STATE'S Right-of-Way Book I and Book II, the State's local operating procedures and according to the Texas Board of Professional Land Surveying Practices Act.
- d. All required documents will be in English units.
- e. The SURVEYOR will monument all corners with a 5/8 inch iron rod with a Surveyor's plastic cap on all parcel boundary corners.
- f. The SURVEYOR will provide to the STATE a copy of Instruments of Record.
- g. The SURVEYOR will attach graphics files compatible with the latest version of Micro-Station graphics software.
- h. The SURVEYOR will attach documents or text files compatible with the latest version of Word software.

**PARCEL PLATS**

- a. A parcel plat will be prepared for each parcel of land to be acquired. The STATE has developed standard formats for parcel plats, copies of which the SURVEYOR will request and secure for all purposes
- b. Parcel boundary lines will be delineated with appropriate bearings, distances, and curve data.
- c. Private property lines will be delineated with appropriate bearings, distances, and curve data to the extent necessary to describe the individual parcels of land to be acquired.
- d. League lines and survey lines will be shown and identified by name and abstract number.
- e. A north arrow will be shown on each sheet and, if possible, in the upper right hand corner.
- f. Monumentation set or found will be shown and described as to material and size.
- g. A station and offset will be shown for each PC, PT, and angle point in the proposed right-of-way lines and the existing right-of-way lines in areas of no proposed acquisition.
- h. Intersecting streets will be shown and identified by name and right-of-way width.
- i. A parent tract inset will be shown for each parent tract.
- j. A note will be included on each map sheet stating the basis of bearings, coordinates, and datum used.
- k. Appropriate notes will be included on the title sheet stating the following:
  - a. Month(s) and year abstracting was performed upon which the map is based.
  - b. Month(s) and year field surveys were conducted upon which the map is based.
  - c. Month and year map was completed by the SURVEYOR.

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

---

- l. The right-of-way account number and R.O.W. CSJ if available will be shown on each parcel map sheet.
- m. All parcel maps should be 8-1/2" x 11" signed and sealed by a Registered Professional Land Surveyor and note referencing legal description.
- n. The acreage of the part taken should be shown to three decimal places, rounded.

**FIELD NOTE DESCRIPTIONS**

A field note description will be prepared for each parcel of land to be acquired. Field note descriptions will include, but need not be limited to, the following:

- a. The field note description will begin with a general description that will include, as a minimum:
  - (1) State, county, and city within which the proposed parcel of land to be acquired is located.
  - (2) A reference to unrecorded and recorded subdivisions by name, lot, block, and recording data to the extent applicable.
  - (3) A reference, by name, to the grantor and grantee, date, and recording data of the most current instrument(s) of conveyance describing the parent tract.
- b. The field note description will continue with a metes and bounds description that will include, as a minimum:
  - (1) A point of commencing (outside property corner).
  - (2) A point of beginning on proposed R.O.W. line.
  - (3) A series of courses, identified by number and proceeding in a clockwise direction, describing the perimeter of the parcel of land to be acquired, and delineated with appropriate bearings, distances, and curve data.
  - (4) A description (8-1/2" x 11") of all monumentation set or found to include, as a minimum, size and material.
  - (5) All field note descriptions will be signed and sealed by a Registered Professional Land Surveyor.
  - (6) Note referencing parcel plat.



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

---

- Roadways
- Survey, county, and city limit lines shown and labeled
- Improvements shown and labeled (*see below*)
- Monumentation i.e. P.C., P.T., Break Points
- North arrow
- Scale
- Property lines
- Property descriptions i.e., lot, block, tract, subdivision, etc...
- Identify existing and proposed access denial locations (*if applicable*)

**PROPOSED INFORMATION**

- Type II Monumentation i.e. P.C., P.T., Break Points and 1500' intervals
- Survey and R.O.W. lines
- Basis of bearings
- Parcel bearings and distances correspond with traverse sheet
- Outside ties ( P.O.C.) corresponds with field notes
- Point of beginning (P.O.B.) established on proposed R.O.W. line
- Parcel tied to baseline
- Baseline information shown i.e. Stationing, bearings, curve data, etc...
- Conveyance information shown in tables i.e. parcel number, grantors name, amount of take, remainder etc...
- Math checked on remainder

**IMPROVEMENTS**

- Improvements bisected or within 25' of proposed R.O.W. line are shown on map with stationing and distance from proposed R.O.W. line. Buildings are labeled and dimensioned.
- Off-premise outdoor advertising signs within proposed R.O.W. are shown and labeled.

**UTILITIES**

- All utilities within or crossing existing and proposed right of way are shown and labeled as to size, easement or fee width, and recording data of instrument.
- Location of underground storage tanks and/or filler caps are shown and labeled

**\* DO NOT SEAL MAP**

**FIELD NOTES HEADING**

- County
- Highway
- Parcel number
- R.O.W. CSJ
- Construction CSJ

**GENERAL DESCRIPTION OR "PREAMBLE"**

- Area of parcel to be acquired is shown in acreage (0.000) for rural land and/or square feet (to nearest whole sq. ft.) for urban land or smaller parcels

**PARENT TRACT DATA IS SHOWN**

- Size of parent tract
- Survey data or lot, block, and subdivision
- Name of last recorded seller and buyer
- Date, volume and page or document number of last recorded conveyance
- Records and county of last recorded conveyance

**BEGINNING DESCRIPTION**

- Point of commencement is on outside tie and is described accurately by bearings and distances as it leads to the point of beginning.
- Point of beginning is on proposed R.O.W. line

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

---

**PARTICULAR DESCRIPTION**

- Traverse calls are clockwise sequence
- Bearings and distances correspond exactly with map, parcel sketch, and traverse sheet
- Bearings are to nearest whole second and distances are to the nearest one-hundredth of a foot
- Calls are numbered
- Denial of access shall be described from beginning to end (*if applicable*)

**CLOSING DESCRIPTION**

- Last call leads back to P.O.B.
- Restates area of parcel
- Establishes taking in existing road R.O.W. (*if applicable*)
- Legal description is referenced to Plat
- Sealed and signed
- Include an access clause whether access is permitted or denied (*if applicable*)

**PARCEL SKETCH**

- Shows P.O.B. and P.O.C.
- All data corresponds exactly with Map and Field Notes
- Sheet size is no larger than 8 1/2" x 11"
- Plat closely matches example provided
- Plat referenced to legal description
- Sealed and signed
- Include an access clause whether access is permitted or denied (*if applicable*)
- Existing utility lines and easements (deed reference, if available);

**TRAVERSE SHEET**

- Computations show area to be acquired in sq. ft. or acres, whichever is applicable
- Computations show area that is existing road R.O.W. (*if applicable*)
- Traverse calls are in clockwise sequence
- Error of closure meets the following:
  - Secondary rural .0003
  - Primary rural - secondary urban .0002
  - Urban or industrial .00013

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

---

**SECTION 6 - FIELD SURVEYING AND PHOTOGRAMMETRY**  
(Function Code 150)

Services  
Provided By:  
ENGINEER COUNTY

- |   |  |
|---|--|
| <p><u>YES</u>      <u>NO</u></p>  | <p>1. Field Surveying</p> <p>a. Primary Project Control – 3 to 5 miles spacing<br/> Precision shall be 1 part in 20,000 or better, unless otherwise directed by the District Engineer.<br/> (1) Establish horizontal control points<br/> (2) Establish vertical control points</p> <p style="text-align: center;">NOTE: ALL BEARING AND DISTANCE SHALL BE BASED ON THE STATE PLANE COORDINATE SYSTEM NAD 1983, SOUTH ZONE.</p> <p style="text-align: center;">ALL DISTANCES AND COORDINATES SHALL BE SURFACE AND MAY BE CONVERTED TO GRID BY MULTIPLYING BY A COMBINED SCALE FACTOR OF 0.999960</p>  |
| <p><u>YES</u>      <u>NO</u></p>  | <p>b. Secondary Project Control – Surveyor shall recover and/or reset H&amp;V Control Points as provided by the Engineer and create Survey Data Sheets for inclusion in the Project Plans.</p> <ul style="list-style-type: none"> <li>• No traverse should exceed 25 angle points. Planimetrics shall be 20 ft Lt &amp; Rt from the proposed ROW as per the schematic provided by the Engineer.</li> <li>• The unadjusted angular error should not exceed 2 seconds per angle, plus 14 seconds.</li> <li>• 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.)</li> <li>• The unadjusted vertical error should not exceed 0.03 foot per mile of traverse.</li> </ul> <p>(1) Project control base lines</p>  |
| <p><u>NO</u>      <u>NO</u><br/> <u>NO</u>      <u>NO</u><br/> <u>NO</u>      <u>NO</u><br/> <u>NO</u>      <u>NO</u></p> | <p>(2) Photogrammetric ground control</p> <p>(a) Establish horizontal control</p> <p>(b) Establish vertical control points</p> <p>(c) Place and maintain control point targets</p>   |
| <p><u>YES</u>      <u>NO</u></p>  | <p>c. Other Field Surveying</p> <p>(1) <b>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.</b> Set benchmarks at 1000-ft intervals along the project proposed right-of-way. Provide x, y, z for each Benchmark. 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. <b>The surveyor shall provide an H&amp;V Book (a Sample shall be provided by the Engineer to the Surveyor).</b> The Surveyor will provide a 3-pt reference sketch with ties to the BMs for inclusion the existing H&amp;V Control Book. Establish benchmark circuit throughout the project with a tolerance of 0.03'/ft per mile error vertically.</p> <p>(2) Complete topographic and cross section survey, data processing, and CADD mapping (2D &amp; 3D) for the limits of the project.</p> <p>(3) Locate all visible utilities, data processing and CADD mapping (2D &amp; 3D) including irrigation lines. Follow sample provided by the Engineer.</p> <p>(4) Field locate cross culverts, driveway culverts, inverts, irrigation lines, within the project limits, data processing and CADD mapping (2D &amp; 3D).</p> <p>(5) Right of Entry, Right of Way Research, and Appraisal District Records is the responsibility of the Surveyor.</p> |

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

---

Services  
 Provided By:  
ENGINEER COUNTY

YES      NO

- c. Other Field Surveying (*continued*)
- (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.

YES      NO

- (10) Tie to existing underground and overhead utilities (location, elevation and direction)  
Horizontally – 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.  
Vertically – 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.

YES      NO

- (11) Additional Field Surveying as shown below:
  - (a) IRRIGATION LINES – 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) OUTFALLS – The surveyor will provide a complete 2D & 3D File including utilities of the outfall identified on the Hydrologic Map.

- (12) Driveways and Turnouts
  - (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.
  - (d) Obtain width at R.O.W. line.
  - (e) Obtain elevations at both edges of the driveway or turnout in line with the side drain.

YES      NO

- (13) ROW staking (Existing and Proposed @ 1,000 ft. stations PC's PT's and Angle points as per ROW Map)

NO      NO

- (14) Soil core hole staking.

NO      NO

- (15) Determine changes in topography from voids and outdated maps due to development, erosion, etc.

YES      NO

- (16) Profiles of existing drainage facilities.

NO      NO

- (17) Measurement of hydraulic opening under existing bridges.

YES      NO

- (18) Obtain elevations of manholes and valves of utilities

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

---

Services  
 Provided By:  
ENGINEER   COUNTY

- |  |   |
|--|---|
| <u>YES</u> <u>NO</u><br><u>YES</u> <u>NO</u><br><u>NO</u> <u>NO</u><br><br><u>YES</u> <u>NO</u><br><u>YES</u> <u>NO</u><br><br><u>NO</u> <u>NO</u> | <ul style="list-style-type: none"> <li>c. Other Field Surveying (<i>continued</i>)           <ul style="list-style-type: none"> <li>(19) Provide temporary signs, traffic control, flags, safety equipment, etc.</li> <li>(20) Ties to existing bridges or culverts that may conflict with new construction.</li> <li>(21) 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.</li> <li>(22) Inventory signs, mailboxes, and driveways</li> <li>(23) Survey controlled data sheets per TxDOT guidelines.</li> </ul> </li> <br/> <li>2. Photogrammetric Products           <ul style="list-style-type: none"> <li>a. Uncontrolled Photography               <ul style="list-style-type: none"> <li>(1) Contact Prints</li> <li>(2) Mosaics</li> <li>(3) Digital ortho plots</li> </ul> </li> <li>b. Mapping               <ul style="list-style-type: none"> <li>(1) Planimetric Maps</li> <li>(2) Contour Maps</li> <li>(3) Cross Sections</li> <li>(4) Profiles</li> <li>(5) Digital Terrain Models (DTM)</li> </ul> </li> </ul> </li> </ul> |
|--|---|

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

---

SECTION 7 - ROADWAY DESIGN CONTROLS  
(Function Code 160)

Services  
Provided By:  
ENGINEER COUNTY

- |            |           |  |
|------------|-----------|--|
| <u>YES</u> | <u>NO</u> | 1. Geometric Design  |
| <u>NO</u>  | <u>NO</u> | 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.   |
| <u>YES</u> | <u>NO</u> | 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. <b>No geometric design is to be performed until the COUNTY has given the engineer written approval of the preliminary schematic layout.</b> |
|            |           | 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:  
ENGINEER COUNTY

- |            |           |  |
|------------|-----------|--|
| <u>YES</u> | <u>NO</u> | 2. General Guidelines for Project Development ( <i>continued</i> )   |
|            |           | <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>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.</li> <li>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. <b>Accuracy of the earthwork design is of utmost importance since it is the basis for contractor payments and construction staking.</b></li> </ul> |
| <u>NO</u>  | <u>NO</u> | 3. Exhibit for Airway/Highway Clearance Permits  |
| <u>YES</u> | <u>NO</u> | 4. Grading Design  |
|            |           | <ul style="list-style-type: none"> <li>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.</li> <li>b. Typical Sections</li> <li>c. Design Cross Sections</li> <li>d. Determine Cut and Fill Quantities</li> <li>e. Slope Stability Analysis</li> <li>f. Embankment Foundation Stability Analysis</li> <li>g. Embankment Settlement Analysis</li> </ul>   |
| <u>YES</u> | <u>NO</u> |  |
| <u>YES</u> | <u>NO</u> |  |
| <u>YES</u> | <u>NO</u> |  |
| <u>NO</u>  | <u>NO</u> |  |
| <u>NO</u>  | <u>NO</u> |  |
| <u>NO</u>  | <u>NO</u> |  |
| <u>NO</u>  | <u>NO</u> | 5. Pavement Design   |
|            |           | <ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>c. Embankment and Subgrade <ul style="list-style-type: none"> <li>(1) Soil Core Holes (Show cost estimate with Function Code 110) <ul style="list-style-type: none"> <li>(a) Along center line</li> <li>(b) Along center line of each roadway</li> </ul> <p>The location and minimum number of soil core holes required for this project are as follows: (To be determined when schematic is being completed)</p> </li> </ul> </li> </ul>   |
| <u>NO</u>  | <u>NO</u> |  |
| <u>NO</u>  | <u>NO</u> |  |



**EXHIBIT “B”**  
**SCOPE OF SERVICES TO BE PROVIDED BY THE ENGINEER**

---

This procedure will be used to aid in the classifying of the soil and to provide information on the potential vertical rise and contraction of the soil. Test data furnished will include Liquid Limit, Plasticity Index, and Linear Shrinkage test results.

Gradation (-200) (ASTM D1140 or Tex-111-E)

This procedure will be used to aid in the classifying of the soil. A No. 200 sieve will be used to distinguish fine grained material as well as for cohesive soils.

Lab. Determination of Moisture in Soils (ASTM D2216 or Tex-103-E)

This procedure will aid in determining the in-situ moisture of the soil to be able to evaluate the potential vertical rise and contraction of the soil.

Sulfate Content of Soil (ASTM C1580 or Tex-145-E)

This procedure will identify the soluble sulfate content of soil by using the colorimetric method. The results of this procedure are typically utilized to determine whether or not a subgrade material can be lime treated for stabilization or if other methods of stabilization will need to be proposed. The presence of extreme amounts of soluble sulfates will exclude lime treatment as a stabilization option. Additionally, high presence of sulfates in soils can mark a necessity for the use of Sulfate Resistant Concrete (> than 1000 ppm).

Lime Series Testing (Tex-121-E)

This procedure involves establishing a relationship between plasticity of soils, percentage lime and pH through the addition of hydrated lime at predetermined proportions. Results of this test will determine the required percent lime treatment for pavement subgrade.

**III. Geotechnical Engineering Services**

The engineer will utilize information gathered from the field and laboratory testing to generate Geotechnical Engineering results and analyses for the Project. The findings and conclusions derived from the results and analyses will be presented in a written engineering report and provided to the Engineer (three (3) copies). The report will include a boring location plan, boring logs with laboratory classification of recovered soil samples at the boring locations and subsurface water conditions encountered. The report will provide analyses and/or engineering recommendations as follows:

<b>Pavement Analysis &amp; Design Report</b>
Review and Evaluate Existing Pavement Structure
Evaluate Subgrade and Determine Subgrade Modulus
Analyze Soil Stabilization Measures (Lime Series, Sulfate, PI, etc.)
Research Traffic and PMIS Data (FWD) for Pavement Design Model
Flexible Pavement Design Based on FPS 21 (w/ Triaxial Check)
Develop Pavement Material Recommendations
Geotechnical Report incl Pave Design Sections & Recs. - Pavement
Meetings/Coordination

The report will provide general comments and applicable recommendations regarding construction methods, sequences, and potential difficulties that may arise during overall construction as it relates to the soil aspects of this project. This information may serve to guide both geometric modeling and foundation selection and design as well as provide assistance in the preparation of specifications for the project.

- (2) Identify, interpret and summarize geologic features that affect engineering design (PI, Sulfate content, % of lime)
- d. Traffic Data for Pavement Design by STATE
- e. Basic Design Criteria
- f. Life Cycle Cost Analysis(es)
- g. Cost Data

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

---

- h. Pavement Material Properties
- 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.

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

---

**SECTION 8 - 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>NO</u>  | <u>NO</u> | 1. Hydrologic Map<br>a. Hydrologic data/discharge determination for outfalls  |
| <u>YES</u> | <u>NO</u> | 2. Hydraulic Drainage Study and Documentation<br>a. Hydraulic computations and Drainage area maps showing existing conditions and proposed improvements.<br>(1) Storm water detention available within the ROW (linear ft. along side drain ditch). |
| <u>NO</u>  | <u>NO</u> | (2) Storm water detention required outside the ROW (as per HCDD#1)  |
| <u>YES</u> | <u>NO</u> | (3) Culverts  |
| <u>NO</u>  | <u>NO</u> | (4) Bridge waterways  |
| <u>YES</u> | <u>NO</u> | (5) Channels  |
| <u>YES</u> | <u>NO</u> | (6) Storm sewers/inlets   |
| <u>NO</u>  | <u>NO</u> | (7) Pump stations   |
| <u>NO</u>  | <u>NO</u> | (8) Storm Water Management facilities   |
| <u>YES</u> | <u>NO</u> | (9) Other<br>(a) Irrigation Canals/Siphons  |
| <u>NO</u>  | <u>NO</u> | b. Hydraulic report(s)  |
| <u>NO</u>  | <u>NO</u> | c. Federal Emergency Management Agency (FEMA) floodway requirements   |
| <u>YES</u> | <u>NO</u> | d. Determine impact of proposed drainage plan on the following receiving stream(s)<br>(1) Hidalgo County Drainage District Outfalls<br>(2) All Irrigation District Outfalls impacted  |
| <u>YES</u> | <u>NO</u> | 3. Layout, Structural Design and Detailing of Drainage Features<br>a. Culverts<br>(1) New culverts  |
| <u>YES</u> | <u>NO</u> | (2) Culvert widening and/or lengthening   |
| <u>YES</u> | <u>NO</u> | (3) Culvert replacements  |
| <u>YES</u> | <u>NO</u> | b. Storm sewers<br>(1) New storm sewers   |
| <u>YES</u> | <u>NO</u> | (2) Modify existing storm sewers  |
| <u>YES</u> | <u>NO</u> | (3) Inlets  |
| <u>YES</u> | <u>NO</u> | (4) Manholes  |
| <u>YES</u> | <u>NO</u> | (5) Trunk lines   |
| <u>NO</u>  | <u>NO</u> | c. Pump stations  |
| <u>YES</u> | <u>NO</u> | d. Subsurface drainage at retaining walls   |
| <u>YES</u> | <u>NO</u> | e. Outfall channel(s) within the ROW  |
| <u>NO</u>  | <u>NO</u> | f. Outfall channel(s) outside the ROW   |
| <u>NO</u>  | <u>NO</u> | g. Detention Pond(s) within the ROW   |
| <u>NO</u>  | <u>NO</u> | h. Detention Pond(s) outside the ROW  |
| <u>YES</u> | <u>NO</u> | i. Summary of Quantities  |
| <u>NO</u>  | <u>NO</u> | j. Storm Water Management facilities  |
| <u>YES</u> | <u>NO</u> | 4. Storm Water Pollution Prevention Plan (SW3P)   |
| <u>NO</u>  | <u>NO</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 9 - SIGNING, MARKINGS AND SIGNALIZATION**  
(Function Code 162)

Services  
Provided By:  
ENGINEER COUNTY

- | <u>YES</u> | <u>NO</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>NO</u> | 2. Summary of Small Signs Tabulation  |
| <u>YES</u> | <u>NO</u> | 3. Summary of Large Signs Tabulation including all Guide Signs  |
| <u>YES</u> | <u>NO</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

- |  |   |
|--|---|
| <p><u>YES</u>      <u>NO</u></p> <p><u>YES</u>      <u>NO</u></p> <p><u>NO</u>        <u>NO</u></p> <p><u>NO</u>        <u>NO</u></p> <p><u>NO</u>        <u>NO</u></p> <p><u>NO</u>        <u>NO</u></p> <p><u>YES</u>      <u>NO</u></p> <p><u>YES</u>      <u>NO</u></p> <p><u>YES</u>      <u>NO</u></p> | <p>5. Traffic Signals</p> <p>a. Development of Justification (Warrant) Data</p> <p>(1) Location Map<br/>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 style="padding-left: 20px;">(a) Existing</p> <p style="padding-left: 20px;">(b) Estimated</p> <p style="padding-left: 20px;">(c) Projected</p> <p style="padding-left: 20px;">(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 style="padding-left: 20px;">(a) Describe the location</p> <p style="padding-left: 20px;">(b) Type of installation</p> <p style="padding-left: 20px;">(c) Area map with project limits for each location</p> <p style="padding-left: 20px;">(d) Index of sheets</p> <p style="padding-left: 20px;">(e) Space for official signatures</p> <p>(2) Estimate and quantity sheet (when applicable)</p> <p style="padding-left: 20px;">(a) List of all bid items</p> <p style="padding-left: 20px;">(b) Bid item quantities</p> <p style="padding-left: 20px;">(c) Specification item number</p> <p style="padding-left: 20px;">(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 style="padding-left: 20px;">(a) Highway and intersection design features</p> <p style="padding-left: 20px;">(b) Roadside development</p> <p style="padding-left: 20px;">(c) Traffic control including illumination</p> <p>(6) Plan sheet(s)</p> <p style="padding-left: 20px;">(a) Existing traffic control that will remain (signs and markings)</p> <p style="padding-left: 20px;">(b) Existing utilities</p> <p style="padding-left: 20px;">(c) Proposed highway improvements</p> <p style="padding-left: 20px;">(d) Proposed installation</p> <p style="padding-left: 20px;">(e) Proposed additional traffic controls</p> <p style="padding-left: 20px;">(f) When applicable, proposed conduit for Railroad interconnect with standard details for runs under tracks.</p> <p style="padding-left: 20px;">(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 style="padding-left: 20px;">(a) Signal locations</p> <p style="padding-left: 20px;">(b) Signal indications</p> <p style="padding-left: 20px;">(c) Phase diagram</p> <p style="padding-left: 20px;">(d) Signal sequence table</p> <p style="padding-left: 20px;">(e) Flashing operation (normal and emergency)</p> <p style="padding-left: 20px;">(f) Preemption operation (when applicable)</p> <p style="padding-left: 20px;">(g) Interval timing, cycle length and offset</p> |
|--|---|

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

---

Services  
Provided By:  
ENGINEER COUNTY

- |            |           |   |
|------------|-----------|---|
| <u>YES</u> | <u>NO</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)   |
|            |           | c. General Requirements   |
|            |           | (1) Contact local utility company   |
| <u>YES</u> | <u>NO</u> | (a) Confirm power source  |
| <u>YES</u> | <u>NO</u> | (b) Discuss route of aerial or underground interconnect cable (when applicable)   |
| <u>YES</u> | <u>NO</u> | (c) Adjustment of overhead utility lines  |
| <u>YES</u> | <u>NO</u> | (2) Prepare governing specifications and special provisions list  |
| <u>YES</u> | <u>NO</u> | (3) Prepare project estimate  |
| <u>YES</u> | <u>NO</u> | d. Summary of Quantities  |

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

---

**SECTION 10 - MISCELLANEOUS (ROADWAY)**  
(Function Code 163)

Services  
Provided By:  
ENGINEER COUNTY

- |  |  |
|--|--|
| <p><u>NO</u>      <u>NO</u></p> <p><u>NO</u>      <u>NO</u></p> <p><u>NO</u>      <u>NO</u></p><br><p><u>NO</u>      <u>NO</u></p> <p><u>NO</u>      <u>NO</u></p> <p><u>NO</u>      <u>NO</u></p><br><p><u>NO</u>      <u>NO</u></p><br><p><u>NO</u>      <u>NO</u></p> <p><u>NO</u>      <u>NO</u></p> <p><u>NO</u>      <u>NO</u></p> <p><u>NO</u>      <u>NO</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. <b>The designer and checker shall check all calculations and initial each page.</b></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> |
|--|--|

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

---

Services Provided By:		
<u>ENGINEER</u>	<u>COUNTY</u>	
<u>YES</u>	<u>NO</u>	
		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: <ol style="list-style-type: none"> <li>a. The sequence of construction and method of handling traffic during each phase.</li> <li>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.</li> <li>c. The proposed traffic control devices (stop signs, signals, flag person, etc.) at grade intersections during each construction sequence.</li> <li>d. Where detours are provided, typical cross sections shall be shown.</li> <li>e. Road construction work hours shall be developed after an investigation of the traffic volumes has been performed.</li> </ol>
<u>YES</u>	<u>NO</u>	3. Illumination <ol style="list-style-type: none"> <li>a. Preliminary Roadway Illumination Layout and Circuit Layout <ol style="list-style-type: none"> <li>(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"> <li>(a) The location of interchanges, main lanes, grade separations, frontage roads and ramps</li> <li>(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</li> <li>(c) The number of lanes in each section of proposed highway and the location of changes in the number of lanes</li> <li>(d) The projected traffic volumes as provided by the STATE (20 year traffic projection unless otherwise determined by the district engineer)</li> <li>(e) Tentative ROW limits</li> <li>(f) Direction of traffic flow on all roadways</li> <li>(g) Main lane, ramp, frontage road, and necessary cross road profiles at proposed interchanges or grade separations</li> </ol> </li> </ol> </li> <li>b. Final Roadway Illumination and Electrical Circuit Layouts <ol style="list-style-type: none"> <li>(1) Roadway layout showing pavement edges, shoulders, curbs, retaining walls, etc.</li> <li>(2) Center line with station numbering.</li> <li>(3) ROW lines.</li> <li>(4) Symbol legend. Use department standard symbols for lighting and electrical.</li> <li>(5) Culverts and other structures that present a hazard to traffic.</li> <li>(6) Location of underground utilities, if not shown on plan profile.</li> <li>(7) Location of overhead electrical lines, both crossing and parallel to ROW.</li> <li>(8) Existing sign lighting circuits and roadway illumination to remain, to be removed, to be relocated.</li> <li>(9) Existing service poles, electrical circuits, ground boxes, etc.</li> <li>(10) Contact electric utility for service pole locations, voltage characteristics.</li> <li>(11) Location of proposed sign lighting circuits and roadway illumination.</li> <li>(12) Proposed electrical circuits.</li> <li>(13) Tabulation of all quantities including proposed, existing to be relocated, existing to be removed. The layout sheet quantities and lighting summary shall be</li> </ol> </li> </ol>
<u>YES</u>	<u>NO</u>	

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

---

shown. Tabulations to include estimated quantity with a column for final quantities.

Services Provided By:		
<u>ENGINEER</u>	<u>COUNTY</u>	
<u>YES</u>	<u>NO</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>NO</u>	4. Miscellaneous Drafting/Standards
<u>YES</u>	<u>NO</u>	a. Erosion Control
<u>YES</u>	<u>NO</u>	b. Landscape Development
<u>YES</u>	<u>NO</u>	5. Compute and Tabulate Quantities
<u>YES</u>	<u>NO</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>NO</u>	<u>NO</u>	(a) New O.S.B. structure(s)
<u>NO</u>	<u>NO</u>	(b) Structural evaluation of existing O.S.B. structure(s) that are to remain in place or to be relocated.
<u>NO</u>	<u>NO</u>	(2) High Mast Illumination Poles (HMIP)
<u>NO</u>	<u>NO</u>	(3) Traffic Signal Supports
<u>NO</u>	<u>NO</u>	(4) Conventional Illumination Poles
<u>NO</u>	<u>NO</u>	(5) Sound Barrier Walls
<u>NO</u>	<u>NO</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>NO</u>	<u>NO</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>YES</u>	<u>NO</u>	a. Utility Agreements
<u>YES</u>	<u>NO</u>	b. Exhibits for Utility Agreements
<u>NO</u>	<u>NO</u>	c. Railroad Agreements
		d. Railroad Exhibits
<u>NO</u>	<u>NO</u>	(1) Railroad Underpasses
<u>NO</u>	<u>NO</u>	(2) Railroad Overpasses
<u>NO</u>	<u>NO</u>	(3) Railroad Grade Crossing (Replanking)
<u>NO</u>	<u>NO</u>	(4) Railroad Grade Crossing Warning Systems (Signals)
<u>NO</u>	<u>NO</u>	(5) Other Miscellaneous Sketches for Railroads
<u>NO</u>	<u>NO</u>	e. Traffic Signal Agreements

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

---

<u>NO</u>	<u>NO</u>	f. Exhibits for Traffic Signal Agreements
<u>YES</u>	<u>NO</u>	9. Estimate
<u>YES</u>	<u>NO</u>	10. Specifications and General Notes

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

---

**SECTION 14 - 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>
ROW Mapping	Mission Office
PS&E	Mission 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

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)*

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**

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

---

APPENDIX C - GENERAL PLAN CHECKLIST *(continued)*

**Summaries**

Earthwork (Roadway & Channel) & Channel Details

Culverts

Detours

Seeding or Mulch Sod - Quantity Only

Inlet & Manholes

Sidewalks

Construction Pavement Markings

Driveways

Concrete Median

Storm Sewers

Head Walls & Safety End Treatments

Curb Openings

Manholes

Chain Link Fence, Remove & Replace Chain Link Fence

Remove & Relay Reinforced Concrete Pipe (RCP) or Pipe Sewer



**EXHIBIT D-1**  
ESTIMATED MAN-HOUR BREAKDOWN

Bus 281/SH 107 Roadway Drainage Improvements Project  
from Bus 281-W to US 281 (I 69 C)

	MANHOURS								Sub-Contract Amounts / ROW COST	TOTAL LINE ITEM COST
	Senior Project Manager	Senior Engineer	Project Engineer	GeoTechnical Engineer	Senior Engineering Technician	CADD Operator/GIS Analyst	Admin / Clerical	TOTAL HOURS		
<b>CONTRACT RATE</b>	198.10	164.14	121.69	90.56	84.9	62.26	56.60			
<b>WORK AUTHORIZATION NO. 2</b>										
<b>PHASE II - PS&amp;E, FIELD SURVEYS &amp; ROW MAP</b>										
1	Coordination and Management of Subconsultant for ROW Map, Field & Design Survey									
1a	165	145	82		75.85			468		\$ 72,905.05
2	PS&E Development Roadway & Outfall									
3	700	1400	2800	800	4536	4800	160.17	15196	\$ 138,283.00	\$ -
3a	40	80	210		90	0	33.04	453		\$ 56,121.16
4	Illumination Design Support ~ Coordination and Management of Subconsultant for Illumination Design									
4a	30	70	105.642		0	0	0	206	\$ 170,878.85	\$ -
5	Pavement Markings Design Support ~ Coordination and Management of Subconsultant for Pavement Markings Design									
5a	20	40	51.9346		0	0	0	112	\$ 81,711.70	\$ -
6	Geotechnical Testing for TxDOT									
7	80	110	190	419.34				799	\$ 55,152.54	\$ -
	48	90	129		160	199.75		627		\$ 66,000.09
<b>SUB-TOTAL</b>	<b>918</b>	<b>1935</b>	<b>3568.5766</b>	<b>1219.341</b>	<b>4861.85</b>	<b>4999.754</b>	<b>193.21</b>	<b>17861</b>	<b>\$ 446,026.09</b>	<b>\$ 1,811,828.24</b>

Sub-Total Manhours Fee with Subconsultant Fee:	\$	2,257,854.33
<b>* TOTAL PROJECT FEE:</b>	<b>\$</b>	<b>2,257,854.00</b>

\* Rounded Figure

**Exhibit "D"**  
**BUDGET**  
**LUMP SUM RATE BASIS OF PAYMENT**

Work Authorization No. 2

Highway: S.H. 107 County: Hidalgo County, Texas Limits: COURTHOUSE SQUARE TO HWY 281/ EXISTING OUTFALL AT SH 107 TO RAUL LONGORIA Description of Work: ROW Map and Design Survey										
<b>R.O.W. Surveying Services, L.L.C.</b>										
TASK AND DESCRIPTION	Survey PM	RPLS	Survey Technician	4-man Survey Crew	3-man Survey Crew	2-man Survey Crew	SUE/per unit	Admin/ Clerical	Total Hours	Cost
FC 130 ROW Map / FC 150 Field Surveying	HOURLY RATE									
<b>PHASE 1 - FC 130 (ROW MAP) Lump Sum per Parcel</b>										
A. ROW Map, Parcel Description, Metes and Bounds Description, and Title Reports (11 parcels @ \$3,500.00/parcel)										
FC 130 Subtotal Cost - Phase 1										\$ 38,500.00
<b>PHASE 1 - FC 150 Field Surveying (Control Hz &amp; Vt)</b>										
A. Primary Project Control										
a. Establish Primary Control										
B. Secondary Project Control	0	1	2	0	10	0	0	0	13	\$ 1,839.00
a. Set additional secondary control points as needed	0	1	8	0	8	0	0	0	17	\$ 2,021.00
b. Horizontal values established with RTK or VRS	0	1	8	0	8	0	0	0	17	\$ 2,021.00
c. Vertical values established with digital level	0	1	2	0	0	16	0	0	19	\$ 2,369.00
Subtotal Hours	0	4	20	0	26	16	0	0	66	
Subtotal Cost - Phase 1	\$0.00	\$500.00	\$1,640.00	\$0.00	\$4,030.00	\$2,080.00	\$0.00	\$0.00		\$ 8,250.00
<b>PHASE 2 - DTM Topography and Cross sections (Total Length including side streets, Drain, and Irrigation Crossings=2.6 miles)</b>										
C. Setting Benchmarks										
1. Setting Benchmarks @ 1000'(ft) intervals	0	0	0	0	24	0	0	0	24	\$ 3,720.00
2. Topographic & Crosssections	0	0	16	0	24	0	0	0	40	\$ 5,032.00
3. Locate Visible Utilities	0	0	16	0	24	0	0	0	40	\$ 5,032.00
4. Cross Culverts, Driveway Culverts, Inverts	0	0	8	0	24	0	0	0	32	\$ 4,376.00
5. Right of Entry, ROW Research, Appraisal Dist. Records	0	1	8	0	0	0	0	10	19	\$ 1,281.00
6. Proposed Centerline on Existing Pavement Pre-Construction for Utilities	2	1	16	0	16	0	0	0	35	\$ 4,165.00
7. Profile and Cross section Intersecting Streets	0	0	8	0	16	0	0	0	24	\$ 3,136.00
8. Irrigation Crossings	0	0	8	0	8	0	0	0	16	\$ 1,896.00
9. Existing Storm Drain H&V	0	0	8	0	16	0	0	0	24	\$ 3,136.00
10. Tie Existing Underground and Overhead Utilities Coordinate with Engineer (No SUE)	2	1	8	0	16	0	0	0	27	\$ 3,509.00
11. Additional Field Surveying										
a. Irrigation Lines	2	1	8	0	8	0	0	0	19	\$ 2,269.00
b. Outfalls	2	1	8	0	8	0	0	0	19	\$ 2,269.00
c. Driveways and Turnouts	0	0	8	0	16	0	0	0	24	\$ 3,136.00
15. Profiles of Existing Drainage Facilities	0	0	8	0	8	0	0	0	16	\$ 1,896.00
17. Obtain Elevations of Manholes and Valves of Utilities	0	0	8	0	8	0	0	0	16	\$ 1,896.00
18. Provide temp. signs, traffic control, flags, safety equip. etc.	0	0	0	0	16	0	0	0	16	\$ 1,896.00
19. Ties to Existing Bridges or Culverts that may be in conflict with new construction	0	0	8	0	16	0	0	0	24	\$ 3,136.00
21. Inventory Signs, mailboxes, and driveways	0	0	8	0	16	0	0	0	24	\$ 3,136.00
22. Survey Control Data Sheets per TxDOT	0	4	8	0	0	0	0	0	12	\$ 1,156.00
23. Recover and Establish Existing CL and ROW	0	0	0	0	0	0	0	0	0	\$ -
24. Coordinate with the Engineer for Existing CL Stationing	2	2	0	0	0	0	0	0	0	\$ -
25. Right of Way Restaking (Pre Construction)	0	2	8	0	16	0	0	0	4	\$ 498.00
26. SUE Level A Data Sheets	0	8	16	0	0	0	0	0	26	\$ 3,386.00
Subtotal Hours	10	21	184	0	280	0	0	10	505	
Subtotal Cost - Phase 2	\$1,240.00	\$2,625.00	\$15,088.00	\$0.00	\$43,400.00	\$0.00	\$0.00	\$500.00		\$ 62,853.00
<b>PHASE 3- SUBSURFACE UTILITY ENGINEERING</b>										
1. Hydro Excavation SUE Level A (20 holes at \$500 each)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$10,000.00	\$0.00	\$0.00	\$ 10,000.00
Total Cost-Phase 3	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$10,000.00	\$0.00	\$0.00	\$ 10,000.00
<b>PHASE 4- FINAL REPORT &amp; DELIVERABLES</b>										
A. CADD file (2D & 3D) for limits of project										
B. Final Report and Deliverables										
	0	0	40	0	0	0	0	0	40	\$ 3,280.00
	8	16	40	0	0	0	0	2	66	\$ 6,372.00
Subtotal Hours	8	16	80	0	0	0	0	2	106	
Subtotal Cost - Phase 4	\$992.00	\$2,000.00	\$6,560.00	\$0.00	\$0.00	\$0.00	\$0.00	\$100.00		\$ 9,652.00
<b>PROJECT MANAGEMENT &amp; OVERSIGHT</b>										
A. Meeting & Coordination w/ Engineers										
B. QC/QA Survey										
	5	10	0	0	0	0	0	2	17	\$ 1,970.00
	10	10	24	0	0	0	0	2	46	\$ 4,558.00
Subtotal Hours	15	20	24	0	0	0	0	4	64	
Subtotal Cost - PM & Oversight	\$1,860.00	\$2,500.00	\$1,968.00	\$0.00	\$0.00	\$0.00	\$0.00	\$200.00		\$6,528.00
<b>Total Fee FC 150</b>	<b>\$4,092.00</b>	<b>\$7,625.00</b>	<b>\$25,256.00</b>	<b>\$0.00</b>	<b>\$47,430.00</b>	<b>\$2,080.00</b>	<b>\$12,500.00</b>	<b>\$800.00</b>	<b>0</b>	<b>\$99,783.00</b>
<b>Total Fee FC 130 &amp; FC 150</b>										<b>\$138,283.00</b>











