Monica 10-5-10
AI 23310
19.0.01(a)

# EXHIBIT "F"

**Supplemental Agreement Form**

THE STATE OF TEXAS §
§
COUNTY OF HIDALGO §

## SUPPLEMENTAL AGREEMENT NO.1 TO WORK AUTHORIZATION NO. 1 TO AGREEMENT FOR PROFESSIONAL SERVICES C-09-192A-06-08

**THIS SUPPLEMENTAL AGREEMENT** is made pursuant to the terms and conditions of Article 8 of the Agreement made by and between the **HIDALGO COUNTY**, hereinafter called the "**Owner**", and **L&G Consulting Engineers Inc,** professional engineers of Mercedes, Texas, hereinafter called the **"Engineer".**

**WITNESSETH**

**WHEREAS,** the **Owner** and the **Engineer** executed the Main Contract Agreement on the 8TH day of June, 2009 concerning professional engineering services for "FM 2221/FM 492" from (FM 681 to SH 364) (including Right – of – Way Mapping and Right – of – Way Acquisition) for Hidalgo County Precinct No. 3 hereinafter referred to as the "Project"; and, executed Work Authorization No. 1 under said agreement on the 8th day of June 2009; and,

**WHEREAS**, Work Authorization No. 1, Section Part 1 of the Agreement, Scope of Work, establishes the scope of work for the Engineer to Provide Engineering Services required for the preparation of Right – of – Way Mapping, Surveying, Right – of – Way Acquisition Services and Roadway Design for the reconstruction of FM 2221/FM 492 from FM 681 to SH 364; and,

**WHEREAS,** it has become necessary to amend EXHIBIT "D" of Work Authorization No. 1, Section Part 1 of the Agreement in an effort to comply with the Texas Department of Transportation's (TxDOT) request for completing two (2) sets of PS&E Plans for construction (reference EXHIBIT "H" – e-mail from TxDOT on 8/2/2010) thus requiring an increase in cost associated with completing two sets of Construction and Right-of-Way Plans for the following:

**Letting 9/12**

a. 0669-01-043 FM 681 (from FM 681 N. to SH 107)
b. 0862-01-047 FM 2221 (from 0.25 Miles W. of Moorefield Rd. to FM 681)

**Letting 9/13**

a. 0862-01-037 FM 2221 (from SH 364 (La Homa) to 0.25 Miles W. of Moorefield Rd.)

**WHEREAS,** three (3) Revised Right-of-Way Agreement(s) (reference EXHIBIT(S) I, J and K) have been executed for the project thus necessitating clarification to EXHIBIT "B" – SERVICES TO BE PROVIDED BY THE ENGINEER.

**WHEREAS,** it has become necessary to amend EXHIBIT "D" of Work Authorization No. 1, Section Part 1 of the Agreement in an effort to correct the Fee Schedule which erroneously added $18,283.02 identified under "Phase II – RIGHT OF WAY COSTS as part of the Engineering cost.

**NOW, THEREFORE,** premises considered, the **Owner** and the **Engineer** agree that said **Agreement is** amended as follows:

1. Section of the **Agreement,** EXHIBIT "B" – SERVICES TO BE PROVIDED BY THE ENGINEER and EXHIBIT "D" – FEE SCHEDULE, is revised to reflect the above listed modifications of this Supplemental. The original amount of Work Authorization No. 1 does not increase or decrease; therefore, the amount of Supplemental No. 1 as detailed on EXHIBIT "D" – FEE SCHEDULE is **$875,185.40.**

**IN WITNESS WHEREOF,** the Engineer and the Owner have caused this Supplemental Agreement No. 1 to be effective as of the ___day of _____, 2010.

**ENGINEER:**
**L&G CONSULTING ENGINEERS, INC.**

**BY:** _____
Jacinto Garza P.E., President

**OWNER:**
**HIDALGO COUNTY**
**BY:** _____
Rene Ramirez, County Judge

ATTACHMENTS:

Exhibit B – Services to be provided by Engineer

Exhibit D – Fee Schedule

Exhibit H – E-Mail from TxDOT 8/2/2010

Exhibit I – Right-of-Way Agreement CCSJ: 0669-01-043

Exhibit J – Right-of-Way Agreement CCSJ: 0862-01-047

Exhibit K – Right-of-Way Agreement CCSJ: 0862-01-037

## GENERAL INSTRUCTIONS

ENGINEER shall mean L&G Engineering.

STATE shall mean Texas Department of Transportation.

COUNTY shall mean Hidalgo County.

## 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: 0862-01-037, etc.

Project/Description: PS&E Design, Right-of-Way Mapping, and Acquisition Services for FM 2221

Length: Variable

Highway: FM 2221/FM 492

Limits: From FM 681 to SH 364

**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
_X_ 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)

**NOTES**

## ROUTE AND DESIGN STUDIES
(Function Code 110)

| Services Provided By: Engineer | County | | |
|---|---|---|---|
| NO | | 1. | Route Location Studies* |
| NO | | 2. | Level of Service Analysis** |
| NO | | 3. | Traffic Evaluations and Projections |
| NO | | 4. | Develop Roadway Design Criteria |
| NO | | 5. | Preliminary Cost Estimates |
| NO | | 6. | Design Schematic (See Section 7, page 7-1 for schematic layout requirements) |
| NO | | 7. | Preliminary Right-of-Way Requirements |
| NO | | 8. | Design Concept Conference |
| | | 9. | Soil Core Hole Drilling |
| NO | | | a. Pavement (See Section 7, pages 7-3 thru 7-4 for requirements) |
| NO | | | b. Retaining Walls (See Section 10, page 10-1 Thru 10-2 for requirements) |
| NO | | | c. Miscellaneous Structures (See Section 10, page 10-4 for requirements) |
| NO | | | d. Bridges (See Section 11, page 11-3 for requirements) |

* The Phase I or better survey for hazardous material should be included as a determining factor of route selection. Projects which do not require additional right of way should be considered separately from an expansion or new location.

**NOTES**
**SOCIAL, ECONOMIC AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT**
(Function Code 120)

Services Provided By:
Engineer COUNTY

1. Environmental Reports
All Environmental Reports shall be in accordance with 43 Texas Administrative Code (TAC) 2.40-2.51, Code of Federal Regulations, Title 23, Part 771 and Highway Design Operations and Procedures Manual, Part II-B.

a. Environmental Assessments

NO (1) An Environmental Assessment shall be prepared, anticipating a Categorical Exclusion.

NO (2) An Environmental Assessment shall be prepared, anticipating a Finding of No Significant Impact.

NO (3) An Environmental Assessment shall be prepared, anticipating the need for a Draft Environmental Impact Statement.

b. Environmental Impact Statement

NO (1) A Draft Environmental Impact Statement shall be prepared. After appropriate interagency and public reviews within time limits prescribed by the Code of Federal Regulations, Title 23, Part 771 and 43 Texas Administrative Code 2.40-2.51, a Final Environmental Impact Statement shall be prepared.

NO (2) A Section 4(f) Statement (Department of Transportation Act) shall be provided by the **Engineer**. The format and content of the statement is found in FHWA Technical Advisory T6640.8A.

2. Public Involvement
All public involvement procedures shall be in accordance with 43 Texas Administrative Code (TAC) 2.40-2.51, Code of Federal Regulations Title 23, Part 771 and Highway Design Operations and Procedures Manual, Part II-B.

NO a. A public involvement meeting(s)/hearing(s) shall be scheduled, coordinated and conducted.*

NO b. Technical assistance, meeting(s)/hearing(s) preparation, maintenance of contracts lists, minutes of meeting(s), exhibit preparation, and other tasks outlined by the CITY, shall be provided.

NO 3. Cultural Resources
Formal consultation with the State Historic Preservation Office (SHPO) and the Texas Historical Commission (THC) will be conducted by the CITY.

NO a. Historic Structure Studies
A records search and reconnaissance survey shall be performed, and documentation prepared regarding identification efforts, National Register eligibility and potential impacts to historic properties in accordance with the state's historic structure requirements.

b. Archeological Studies

NO (1) Files searches shall be conducted to determine if known archeological sites are present; to identify whether these sites have been listed or determined eligible for the National Register of Historic Places or have been designated State Archeological Landmarks; and to identify the need (if any) to perform additional archeological investigations.

NO (2) Archeological reconnaissance will be performed under a Texas Antiquities Permit (13 TAC 26) signed for the Sponsor by a professional archeologist with the STATE.

Services Provided By:
Engineer COUNTY

NO (3) Archeological survey shall be performed under a Texas Antiquities Permit (13 TAC 26) signed for the Sponsor by a professional archeologist with the STATE.

4. Noise and Air Quality Analyses

NO a. Noise Analysis
A noise analysis shall be prepared, including predicted noise levels and the consideration and evaluation of noise mitigation, in accordance with the STATE'S Noise Guidelines. The noise analysis or a summary of the noise analysis shall be included in the environmental document for the project.

NO b. Air Quality Analysis
An air quality analysis shall be prepared in accordance with the STATE'S Air Quality Guidelines. The air quality analysis or a summary of the air quality shall be included in the environmental document for the project.

NO 5. Ecological Investigations
A wetland survey and if necessary, a wetland delineation shall be conducted and a "wetland finding" shall be provided if necessary. As part of the environmental phase of the project, the consultant should notify the District if it is believed that a Section 404 or Section 9 permit is required, and provide the technical data to the District for application to the U.S. Army Corps of Engineers and/or the U.S. Coast Guard.

A determination should be made if there are potential federally listed endangered or threatened species that could be impacted. The District will be notified as soon as possible that Section 7 or 10 consultation may be required. Supporting data will be furnished to the district when consultation with the U.S. Fish and Wildlife Service is undertaken.

NO 6. Hazardous Materials
The consultant shall perform an Environmental Site Assessment for hazardous materials impact in accordance with the American Society for Testing and Materials (ASTM) 1528.93 (Transaction Screen Process).

NO 7. General Guidelines for Preparation of Environmental Documents

a. The environmental document prepared shall be provided on paper and on a formatted diskette that is compatible with the word processor program and equipment of the district office.
b. Three draft copies and twelve final copies of the Environmental Assessment shall be provided.
c. Ten draft copies and thirty final copies of the Draft and Final Environmental Impact Statements shall be provided.
d. The environmental document shall be prepared in accordance with the content and format of FHWA Technical Advisory T6640.8A.
e. Exhibits in the environmental document shall be limited to 297 millimeters by 420.5 millimeters (11 inches by 17 inches) where possible.

## 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 state has given the engineer written approval of the final location of the proposed ROW lines.

YES 1. Ownership Data in a .dgn file
   a. Ownership Information shall be determined (Preliminary Title Data) for a distance of 3/4 miles before and after each existing or proposed overpass.
   b. Compensable utility ownership rights on TxDOT ROW shall be researched and provided.
   c. For each drainage outfall property preliminary ROW identification will be shown.
   d. For each irrigation structure pipe.
   e. Mailing list of owners on both side of the expressway for the project limits.

YES 2. Parcel plats & Right-of-Way Map
   a. A ROW map, parcel plats and field notes shall be prepared and furnished.
   b. ROW map and field notes shall be revised as required due to changes in Highway Ownership Changes or Revised Parcel Numbering. All plats and field notes must be signed and sealed by a Registered Professional Land Surveyor (RPLS).
   c. ROW map must depict all improvements affecting ROW.

YES 3. Utility Adjustments
   a. Highway Design Data shall be furnished by the Engineer to the County and TxDOT for joint coordination with Utility Companies of the needed Utility Adjustments.

YES 4. Field Notes
   a. Field notes and plats, signed and sealed by a Registered Professional Land Surveyor, for all parcels on the ROW Map (metric and english units)
   b. Control of Access Descriptions for all parcels on Designated Controlled Access Highways.
   c. Computation Sheets for Survey Closure and Area for Each Parcel.
   d. Ground surveys and preparation of parcel maps, legal descriptions, and right of way maps.

YES 5. Survey and Stake Right-of-Way

YES 6. Records as Required by the County and TxDOT
   a. Records used to establish ownership

Services Provided By:
Engineer County

YES

7. General Guidelines for Preparation of Right-of-Way Maps
a. All procedures involving ROW maps, surveys and field notes shall be in conformance with the State's Right-of-Way, Book I and Book II, except as provided herein and in accordance with the Texas Board of Professional Land Surveying Practices Act.
b. The engineer shall be responsible for completing the title sheet as required and formatted by TxDOT and as discussed in Book II of the Right of Way Manual.
c. Preliminary and completed work shall be submitted as requested by the district.
d. The engineer shall maintain a direct line of communication and coordinate very closely with the district's design staff, through the district engineer, throughout the project.
e. (1) Minimum mathematical calculations relative to field note data are: (a) area of taking, if expressed in metric, will be carried to three decimal places or, if expressed in square feet, will be rounded to the square foot, (b) distances will be given to the nearest metric units and hundredth of a foot and (c) bearings will be carried to the nearest second. Data contained in the field notes and shown on the map shall be identical. More precise calculations may be requested by TxDOT.
(2) Calls within the body of the field notes shall be written to identify property lines and the existing and proposed ROW lines.
f. Project base line is to be drawn and stationed on the ROW map.
g. Minimum size lettering is to be 4 millimeters (5/32 inch) height for hand lettering and 140 for lettering by computer-aided design and drafting (CADD) on all ROW maps, unless otherwise authorized in writing by TxDOT.
h. As soon as property lines and parent tracts can be determined, the engineer shall submit a preliminary map for review of parcel numbers and guidance early in the development process.
i. Zip-a-tone or similar products shall not be used on map sheets.
j. All field notes and plats shall be signed, dated and sealed by a Registered Professional Land Surveyor or Licensed State Land Surveyor.
k. The ROW map sheets shall be ink or Mylar type tracing film or as otherwise authorized by TxDOT.
l. Field note data for all parcels shall be furnished on diskettes or tapes that are compatible with TxDOT.
m. THE SURVEYOR SHALL BE LIABLE FOR ALL SURVEYING MISTAKES AND SHALL BE RESPONSIBLE AT HIS SOLE EXPENSE FOR CORRECTION OF ALL ERRORS.
n. TxDOT Plan Checklist will be adhered to.

## FIELD SURVEYING AND PHOTOGRAMMETRY
(Function Code 150)

| Services Provided By: Engineer | County | |
|---|---|---|
| | | 1. Field Surveying |
| NO | YES | 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 |
| YES | YES | 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.<br>• No traverse should exceed 25 angle points. Planimetrics shall be 20 ft Lt & Rt from the proposed ROW.<br>• The unadjusted angular error should not exceed 2 seconds per angle, plus 14 seconds.<br>• 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.)<br>• The unadjusted vertical error should not exceed 0.03 foot per mile of traverse.<br>(1) Project control base lines |
| NO | | (2) Photogrammetric ground control |
| NO | | (a) Establish horizontal control |
| NO | | (b) Establish vertical control points |
| NO | | (c) Place and maintain control point targets |
| YES | NO | c. Other Field Surveying |

(1) **The limit of the Design surveys shall be 500-ft before and after the limits of the project as identified by the Project Engineer on the schematic. Recover and/or re-establish horizontal and vertical control.** Set benchmarks at 1000-ft intervals and along each outfall identified on Exhibit A & B. The BM's shall be #5 I.R. 2-ft in depth set in concrete. A H&V Book will be provided by the Engineer to the Surveyor and 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) on voided sections identified on CD provided by the engineer.

(3) Locate all visible utilities, data processing and CADD mapping (2D & 3D) including irrigation lines.

(4) Field locate cross culverts, driveway culverts, inverts, 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.

(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.

| Services Provided By: Engineer | County | |
|---|---|---|
| YES | NO | (10) Tie to existing underground and overhead utilities (location, elevation and direction)<br>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.<br>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:<br>(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.<br>(B) OUTFALLS – The surveyor will provide a complete 2D & 3D File including utilities of the outfall identified on Exhibit A and B<br><br>**Driveways and Turnouts**<br>(a) Inventory commercial entrances, public roads and side streets separately.<br>(b) Obtain centerline station. (Width at ROW, PAV'T and existing radius.<br>(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.<br>(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 - |
| YES | 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 |
| YES | NO | (19) Provide temporary signs, traffic control, flags, safety equipment, etc. |
| YES | NO | (20) Ties to existing bridges or culverts that may conflict with new construction. |
| N/A | N/A | (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. |
| YES | N/A | (22) Inventory signs, mailboxes, and driveways |
| YES | N/A | (23) Survey controlled data sheets per TxDOT guidelines. |

| Services Provided By: Engineer | County | |
|---|---|---|
| N/A | N/A | 2. Photogrammetric Products |
| | | a. Uncontrolled Photography |
| | | (1) Contact Prints |
| | | (2) Mosaics |
| | | (3) Digital ortho plots |
| | | b. Mapping |
| | | (1) Planimetric Maps |
| | | (2) Contour Maps |
| | | (3) Cross Sections |
| | | (4) Profiles |
| | | (5) Digital Terrain Models (DTM) |

## ROADWAY DESIGN CONTROLS
(Function Code 160)

Services Provided By:
Engineer COUNTY

1. Geometric Design

NO NO a. Horizontal and Vertical Alignment
NO NO b. Schematic Layout (Completed )
   (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.

| Services Provided By: Engineer | COUNTY | |
|---|---|---|
| NO | NO | 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.

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.**

| | | |
|---|---|---|
| N/A | NO | 3. Exhibit for Airway/Highway Clearance Permits |

Services Provided By:
Engineer COUNTY

4. Grading Design

YES NO 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 superelevation rate.
YES NO b. Typical Sections
YES NO c. Design Cross Sections
YES NO d. Determine Cut and Fill Quantities
YES NO e. Slope Stability Analysis
N/A N/A f. Embankment Foundation Stability Analysis
N/A N/A g. Embankment Settlement Analysis

5. Pavement Design

YES NO 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.
YES NO 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
(1) Soil Core Holes (Show cost estimate with Function Code 110)
NO NO (a) Along center line
YES NO (b) Along center line of each roadway
The location and minimum number of soil core holes required for this project are as follows: (To be determined when schematic is being completed)
YES NO (2) Identify, interpret and summarize geologic features that affect engineering design (PI, Sulfate content, % of lime)
NO NO d. Traffic Data for Pavement Design by **STATE**

YES NO e. Basic Design Criteria

YES NO f. Life Cycle Cost Analysis(es)

YES NO g. Cost Data

YES NO h. Pavement Material Properties

Services
Provided By:
Engineer COUNTY

5. Pavement Design (Continued)

YES NO i. Rehabilitation Investigations

YES NO (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.

**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**.

1. Hydrologic Studies, Discharges

| | | |
|---|---|---|
| YES | NO | a. Drainage area maps showing existing conditions and proposed improvements. |
| YES | NO | b. Hydrologic data/discharge determination |

2. Hydraulic Drainage Study and Documentation

| | | |
|---|---|---|
| | | a. Hydraulic computations |
| N/A | N/A | (1) Storm water detention available within the ROW (linear ft. along side drain ditch). |
| YES | NO | (2) Storm water detention required outside the ROW (as per HCDD#1) |
| YES | NO | (3) Culverts |
| YES | NO | (4) Bridge waterways |
| YES | NO | (5) Channels |
| YES | NO | (6) Storm sewers/inlets |
| NO | NO | (7) Pump stations |
| YES | NO | (8) Storm Water Management facilities |
| YES | N/A | (9) Other |
| | | (a) Irrigation Canals/Siphons |
| | | (b) |
| NO | NO | b. Hydraulic report(s) |
| YES | N/A | c. Federal Emergency Management Agency (FEMA) floodway requirements |
| YES | N/A | 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 |

Services

| Provided By: Engineer | COUNTY | | |
|---|---|---|---|
| | | 3. | Layout, Structural Design and Detailing of Drainage Features |
| | | a. | Culverts |
| YES | NO | | (1) New culverts |
| YES | NO | | (2) Culvert widening and/or lengthening |
| YES | NO | | (3) Culvert replacements |
| | | b. | Storm sewers |
| YES | NO | | (1) New storm sewers |
| YES | NO | | (2) Modify existing storm sewers |
| YES | NO | | (3) Inlets |
| YES | NO | | (4) Manholes |
| YES | NO | | (5) Trunk lines |
| | | c. | Pump stations |
| NO | NO | | (1) |
| YES | NO | d. | Subsurface drainage at retaining walls |
| YES | N/A | e. | Outfall channel(s) within the ROW |
| YES | NO | f. | Outfall channel(s) outside the ROW |
| NO | NO | g. | Detention Pond(s) within the ROW |
| NO | NO | h. | Detention Pond(s) outside the ROW |
| YES | NO | i. | Summary of Quantities |
| NO | NO | j. | Storm Water Management facilities |
| YES | NO | 4. | Storm Water Pollution Prevention Plan (SW3P) |
| NO | NO | 5. | Scour Evaluation - Waterway Structures Only (to be completed by Bridge Engineer under FC 170). |

## SIGNING, MARKINGS AND SIGNALIZATION
(Function Code 162)

Services Provided By:
Engineer COUNTY

YES NO 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
   (11) Quantities of existing pavement markings to be removed
   (12) 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

YES NO 2. Summary of Small Signs Tabulation

YES NO 3. Summary of Large Signs Tabulation including all Guide Signs

YES NO 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

| Services Provided By: Engineer | COUNTY | |
|---|---|---|
| | | 5. Traffic Signals |
| | | a. Development of Justification (Warrant) Data |
| YES | NO | (1) Location Map<br>Relationship of proposed installation to other traffic signals, highways, business areas and traffic generators |
| YES | NO | (2) Photographs as appropriate |
| YES | NO | (3) Accident data as appropriate |
| | | (4) Vehicle volumes (provided by TxDOT) |
| YES | NO | (a) Existing |
| YES | NO | (b) Estimated |
| YES | NO | (c) Projected |
| YES | NO | (d) Pedestrian |
| YES | NO | (5) Traffic Survey - Count Analysis |
| YES | NO | (6) Recommendation based on above data |
| YES | NO | b. Layout |
| | | (1) Title Sheet (when applicable) |
| | | (a) Describe the location |
| | | (b) Type of installation |
| | | (c) Area map with project limits for each location |
| | | (d) Index of sheets |
| | | (e) Space for official signatures |
| | | (2) Estimate and quantity sheet (when applicable) |
| | | (a) List of all bid items |
| | | (b) Bid item quantities |
| | | (c) Specification item number |
| | | (d) Paid item description and unit of measure |
| | | (3) Basis of estimate sheet (list of materials) |
| | | (4) General notes and specification data sheet |
| | | (5) Condition diagram |
| | | (a) Highway and intersection design features |
| | | (b) Roadside development |
| | | (c) Traffic control including illumination |
| | | (6) Plan sheet(s) |
| | | (a) Existing traffic control that will remain (signs and markings) |
| | | (b) Existing utilities |
| | | (c) Proposed highway improvements |
| | | (d) Proposed installation |
| | | (e) Proposed additional traffic controls |
| | | (f) When applicable, proposed conduit for Railroad interconnect with standard details for runs under tracks. |
| | | (g) Proposed illumination attached to signal poles. |
| | | (7) Notes for plan layout |
| | | (8) Elevation sheet(s) (span wire design) |

Services Provided By:
Engineer COUNTY

5. Traffic Signals (Continued)

(9) Phase sequence diagram(s)

(a) Signal locations
(b) Signal indications
(c) Phase diagram
(d) Signal sequence table
(e) Flashing operation (normal and emergency)
(f) Preemption operation (when applicable)
(g) Interval timing, cycle length and offset

(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

YES NO (a) Confirm power source
YES NO (b) Discuss route of aerial or underground interconnect cable (when applicable)
YES NO (c) Adjustment of overhead utility lines
YES NO (2) Prepare governing specifications and special provisions list
YES NO (3) Prepare project estimate

YES NO d. Summary of Quantities

## MISCELLANEOUS (ROADWAY)
(Function Code 163)

| Services Provided By: Engineer | COUNTY | |
|---|---|---|
| | | 1. Retaining Walls |
| | | a. Structural Details |
| NO | NO | (1) Cast-in-Place Cantilever at _____ locations. (TxDOT Standard Retaining Wall)* |
| NO | NO | (2) Tiedback Retaining Wall at _____ location. (TxDOT standard retaining wall) |
| NO | NO | (3) Specialized Retaining Wall at _____ locations (Unique Design).* |
| | | b. Alternate Patented Retaining Walls at _all_ locations. (Layouts Only)** |
| NO | NO | (1) Mechanically Stabilized Earth |
| NO | NO | (2) Concrete Block Wall Systems |
| NO | NO | (3) |
| NO | NO | c. Retaining Wall Layout (PLAN) |
| | | (1) Designation of reference line |
| | | (2) Beginning and ending retaining wall stations |
| | | (3) Station of each retaining wall joint*** |
| | | (4) Offset from reference line |
| | | (5) Horizontal curve data |
| | | (6) Number of retaining wall panels and lengths*** |
| | | (7) Total length of wall |
| | | (8) Indicate face of wall |
| | | (9) All wall dimensions and alignment relations (alignment data as necessary) |
| | | (10) Soil core hole locations |
| NO | NO | d. Retaining Wall Layout (ELEVATION) |
| | | (1) Top of wall elevations at each joint*** or intervals**** |
| | | (2) Existing and finished ground line elevations |
| | | (3) Height of stem at each joint*** |
| | | (4) Wall panel designations*** |
| | | (5) Top of footing elevations*** |
| | | (6) Limits of measurement for payment**** |
| | | (7) Type, limits and anchorage details of railing (If applicable) |
| | | (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. |
| NO | NO | e. Foundation Studies (Show cost estimate with Function Code 110) |
| NO | NO | 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. |
| NO | NO | f. Stability Analysis (the Engineer shall estimate this task as part of his bid to complete the work). |
| NO | NO | g. Estimate |
| NO | NO | h. Summary of Quantities |
| NO | NO | i. Typical X-section. |

Services Provided By:
Engineer COUNTY

1. Retaining Walls (continued)

YES

j. General Guidelines for Retaining Walls
   (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.**
   (2) The ground water level should be observed at the water strike.
   (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.
   (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.

YES NO 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:

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, flagperson, 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.

| Services Provided By: Engineer | COUNTY | |
|---|---|---|

3. Illumination

YES N/A a. Preliminary Roadway Illumination Layout and Circuit Layout

(1) For projects involving freeway to freeway or other types of directional interchanges and projects including left-hand ramps or connections, provide the following:

(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

YES NO b. Final Roadway Illumination and Electrical Circuit Layouts

(1) Roadway layout showing pavement edges and 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.

YES 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.

| Services Provided By: Engineer | COUNTY | | |
|---|---|---|---|
| | | 4. | Miscellaneous Drafting/Standards |
| YES | NO | a. | Erosion Control |
| NO | NO | b. | Landscape Development |
| YES | NO | 5. | Compute and Tabulate Quantities |
| NO | NO | 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. |
| NO | NO | (a) | New O.S.B. structure(s) |
| NO | NO | (b) | Structural evaluation of existing O.S.B. structure(s) that are to remain in place or to be relocated. |
| NO | NO | (2) | High Mast Illumination Poles (HMIP) |
| YES | NO | (3) | Traffic Signal Supports |
| NO | NO | (4) | Conventional Illumination Poles |
| NO | NO | (5) | Sound Barrier Walls |
| YES | NO | 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 |
| YES | NO | 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 |
| YES | NO | a. | Utility Agreements |
| YES | NO | b. | Exhibits for Utility Agreements |
| N/A | NO | c. | Railroad Agreements |
| | | d. | Railroad Exhibits |
| N/A | N/A | (1) | Railroad Underpasses |
| N/A | N/A | (2) | Railroad Overpasses |
| N/A | N/A | (3) | Railroad Grade Crossing (Replanking) |
| N/A | N/A | (4) | Railroad Grade Crossing Warning Systems (Signals) |
| N/A | N/A | (5) | Other Miscellaneous Sketches for Railroads |
| NO | NO | e. | Traffic Signal Agreements |
| NO | NO | f. | Exhibits for Traffic Signal Agreements |
| YES | NO | 9. | Estimate |
| YES | NO | 10. | Specifications and General Notes |

**BRIDGE DESIGN**
(Function Code 170)

| Services Provided By: Engineer | COUNTY | | NUMBER REQUIRED |
|---|---|---|---|
| | | 1. Preparation of Structural Details | |
| | | a. New Structure(s) | |
| NO | NO | (1) Underpass(es) | _____ |
| NO | NO | (2) Overpass(es) | _____ |
| N/A | N/A | (3) Main Lanes | _____ |
| N/A | NA | (4) Direct Connector(s) | _____ |
| N/A | N/A | (5) Ramp Bridge(s) | _____ |
| NO | N/A | (6) Waterway Structure(s)** | _____ |
| N/A | N/A | (7) Pedestrian Structure(s) | _____ |
| N/A | N/A | (8) Utility Structure(s) | _____ |
| N/A | N/A | (9) Railroad Underpass(es) | _____ |
| N/A | N/A | (10) Railroad Overpass(es) | _____ |
| N/A | N/A | 11) Bridge Classification Culvert(s)** | |
| N/A | N/A | (11) Alternate Structural Designs | _____ |
| N/A | N/A | (12) Alternate Foundation Design | |
| | | Total New Structures = | _____ |
| | | b. Existing Structure(s) | _____ |
| NO | NO | (1) Bridge Widening, Rehabilitation and/or Modification of Existing Structure(s) | _____ |
| NO | NO | (2) Bridge Replacement | _____ |
| NO | NO | (3) Raising Bridge Elevation | _____ |
| NO | NO | (4) Bridge Classification Culvert(s) Widening and/or Modification of Existing Structures(s) | _____ |
| N/A | N/A | (5) Railroad Overpass(es) | _____ |
| N/A | N/A | (6) Railroad Underpass(es) | _____ |
| N/A | N/A | (7) | _____ |
| | | Total Existing Structures = | 0 |

* 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.

| Services Provided By: Engineer | COUNTY | |
|---|---|---|
| NO | NO | 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 superelevation 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.

Services
Provided By:
Engineer COUNTY

2. Preparation of Bridge Layouts (each bridge) (Continued)

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.

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.

YES NO 3. Bridge Classification Culvert, Estimate, Quantities, and Specifications (each bridge)

YES NO 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).

YES NO 5. Bridge Total Quantities and Cost Estimates (each bridge)

YES NO 6. Bridge Special Provisions and Specifications (each bridge)

YES NO 7. Bearing seat elevations for each beam or girder. Top of cap elevations for non-beam type structures.

Services
Provided By:
Engineer COUNTY

YES 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.

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.

## *FC 600* – ACQUISITION PROVIDER SERVICES

(Services to be provided by L&G Engineering)

### 1) Project Administration

a) Negotiation of Scope of Services for Work Authorization
   i) Acquisition Provider will visit project site with City personnel if necessary.

b) Project Presence at L&G Consultant Office Headquarters
   i) Full Project Office
      (1) No Joint Use of City or TxDOT facilities
      (2) Open during normal City and State work hours
      (3) Personnel available to answer questions
      (4) Availability of Project Files
      (5) At least one office staff member is required to be a current commissioned notary public.

c) Overhead Costs
   i) Administrative costs

d) Communication
   i) Provide monthly progress reports with invoice.
   ii) Participate in project review meetings as determined by the City.
   iii) Prepare initial property owner contact list for use by the City in distribution of Acquisition Provider introduction letters.

e) File Management
   i) Project and parcel files will be kept in the City's Office, if necessary. Working files will be kept in the Acquisition Provider's project administrative office, but documents generated or received by the Acquisition Provider will be forwarded to the City office as they are generated or received by the Acquisition Provider, if necessary.
   ii) Prepare payment transmittal request utilizing standard payment submissions forms with supporting documentation.
   iii) Maintain records of all payments including check number, amount, and date paid, etc.
   iv) Provide copies of all incoming and outgoing correspondence as generated if requested by City at provider conference.
   v) Maintain copies of all correspondence and contacts with property owners.

### 2) Title Services

a) Secure preliminary title commitments from the Title Company that will be providing title insurance. Cost of preliminary title commitments will be paid by the Acquisition Provider (if requested by the title company) and will be included in the Acquisition Provider's scope of work for payment.

b) Secure title commitments updates in accord with insurance rules and requirements for parcel payment submissions. Cost of title commitment updates will be paid by the Acquisition Provider (if requested by the title company) and will be included in the Acquisition Provider's scope of work.

c) Secure title insurance for all parcels acquired, insuring acceptable title to City of Mission. Written approval by the City required for any exception.