

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. 1*, as to content and detail of this **Work Authorization No. _1_**.

HIDALGO COUNTY PRECINCT NO. 1:

By: _____
Hon. David Fuentes, Commissioner, Pct. 1

PART 8. ACCEPTANCE AND APPROVAL

This Work Authorization is hereby accepted, approved by Hidalgo County Commissioners' Court on _____ as indicated below and effective as of _____ day of _____, 201____.

THE ENGINEER:
Alpha Infrastructure Engineering PLLC

THE OWNER:
HIDALGO COUNTY

By: _____
Juan M. Gamez, PE / President

By: _____
Richard F. Cortez, County Judge

ATTEST:

By: _____
Arturo Guajardo Jr., County Clerk

BY: _____

Attachments:

- Exhibit A
- Exhibit B
- Exhibit C
- Exhibit D1

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 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 with the Engineer.
- (2) Payment for work performed by the **ENGINEER** and accepted by the **OWNER** in accordance with Section 6 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 that 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 Attachment "C" of this Agreement.
- (6) Attend and participate in progress meetings as required and as coordinated and conducted by the **ENGINEER**.
- (7) Assist the **ENGINEER** as required in the coordination with the USACE and the Federal Emergency Management Agency (FEMA) and any other coordinating agency or entity (*when and if applicable*).
- (8) Review and approve the Project design criteria.
- (9) Review and approve change orders as required and prepared by the **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

PROJECT/DESCRIPTION: On-Call Services for "Road and Bridge, C.I.P. and Other Projects in General"

ENGINEER shall mean Alpha Infrastructure Engineering PLLC.

STATE shall mean Texas Department of Transportation.

COUNTY shall mean Hidalgo County.

EXHIBIT B

Scope of Services to be provided by the Engineer

SECTION 2 – FEASIBILITY STUDIES

(Function Code 102)

Preliminary Design Values

The ENGINEER will work with the Owner to establish basic design concepts, project controls and general scope of Projects.

Preliminary Route Locations on Uncontrolled Mapping

The ENGINEER will evaluate various alternatives (route locations, alignment shifts, geometry) for the Projects.

Uncontrolled Mapping (w/Contours & GIS Info)

The ENGINEER will investigate the existing routes and coordinate with the Owner on establishing the best-fit alignments and mapping proposed geometry for Projects. Preliminary Location Exhibit will be developed.

Preliminary Traffic Evaluations & Trends

The ENGINEER will investigate existing traffic models and trends for the proposed Projects and adjacent roadways tying into the proposed Projects.

Preliminary Hydrologic Map

The ENGINEER will develop a Hydrologic Map for the Projects. Hydrologic Maps will be based on LIDAR and GIS information.

Preliminary ROW Requirements

The ENGINEER will research and identify affected property owners on the Projects utilizing the latest appraisal district file information from Hidalgo County Appraisal District and information from Carson Maps.

Preliminary Cost Estimates

The ENGINEER will calculate preliminary construction cost estimates for the location and geometry of the Projects.

Preliminary Environmental Analysis (for fatal flaws)

The ENGINEER will perform Preliminary Environmental Constraint Mapping to determine if any fatal flaws exist along the proposed alignment.

Project Fact Sheet with Est. Local Cost vs. Total Project Cost

The ENGINEER will produce a Project Fact Sheet providing summaries of all pertinent items in this scope of services (as required) and providing estimated local costs vs. total project costs for the Projects.

Meetings, Coordination & Support for Project Development

The ENGINEER shall provide coordination services and shall assist in meetings and workshops with TxDOT, Hidalgo County, Hidalgo County Drainage District No. 1 and Hidalgo County Irrigation Districts, and all other affected parties. The ENGINEER shall serve as representative for the Owner in coordination items. The ENGINEER shall coordinate with the Owner's staff on all Project related items.

EXHIBIT B

Scope of Services to be provided by the Engineer

SECTION 3 - ROUTE AND DESIGN STUDIES (Function Code 110)

1. Route Location Studies*
2. Level of Service Analysis
3. Traffic Evaluations and Projections
4. Develop Roadway Design Criteria
5. Preliminary Cost Estimates
6. Design Schematic
(See Section 7, page 7-1 for schematic layout requirements)
7. Preliminary Right-of-Way Requirements
8. Design Concept Conference

* 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.

EXHIBIT B

Scope of Services to be provided by the Engineer

SECTION 4

SOCIAL, ECONOMIC AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT

(Function Code 120)

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

- (1) An Environmental Assessment shall be prepared, anticipating a Categorical Exclusion.
- (2) An Environmental Assessment shall be prepared, anticipating a Finding of No Significant Impact.
- (3) An Environmental Assessment shall be prepared, anticipating the need for a Draft Environmental Impact Statement.

b. Environmental Impact Statement

- (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.
- (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.

a. A public involvement meeting(s)/hearing(s) shall be scheduled, coordinated and conducted.*

b. Technical assistance, meeting(s)/hearing(s) preparation, maintenance of contracts lists, minutes of meeting(s), exhibit preparation, and other tasks outlined by the COUNTY, shall be provided.

3. Cultural Resources

Formal consultation with the State Historic Preservation Office (SHPO) and the Texas Historical Commission (THC) will be conducted by the COUNTY.

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

- (1) File 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.
- (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.
- (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

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 provided as a Technical Report and results included in the administratively complete document.

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 provided as a Technical Report and results included in the administratively complete document for the project.

EXHIBIT B

Scope of Services to be provided by the Engineer

5. Hazardous Materials

The consultant shall perform an Initial Site Assessment (ISA) for hazardous materials impact in accordance with the American Society for Testing and Materials (ASTM) 1528.93 (Transaction Screen Process).

6. General Guidelines for Preparation of Environmental Documents

- a. The Biological Impact Evaluation Report will be prepared which will include water resources, threatened and endangered species, etc. and submitted electronically to TxDOT.
- b. All cultural resource reports (i.e. Archeological and Historical Project Coordination Requests (PCRs), background and reconnaissance surveys) will be submitted electronically to TxDOT.
- c. The draft administratively complete document will be submitted to TxDOT electronically through their FTP site.
- d. The administratively complete document will be prepared in accordance with the content and format of FHWA Technical Advisory T6640.8A and the TxDOT Administrative Code 43 TAC §2.44.
- e. The administratively complete document will be submitted to TxDOT electronically through their FTP site.
- f. Upon completion and approval of the administratively and technically complete document, the ENGINEER will provide one (1) hard copy to the Client, one (1) hardcopy to the district, and (3) hardcopies to TxDOT ENV.
- g. Exhibits in the environmental document shall be color copies and text shall be black and white.

EXHIBIT B

Scope of Services to be provided by the Engineer

SECTION 7 - ROADWAY DESIGN CONTROLS

(Function Code 160)

1. Geometric Design
 - a. Horizontal and Vertical Alignment
 - b. Schematic Layout
 - (1) The location of interchanges, main lanes, grade separations, frontage roads and ramps.
 - (2) Develop vertical and horizontal alignment of main lanes, ramps and cross roads at proposed interchanges or grade separations. Frontage road alignment data need not be shown on the schematic; however, it should be developed in sufficient detail to determine ROW needs. The degree of horizontal curves and vertical curve data, including "K" values, shall also be shown for ease of checking.
 - (3) For freeways, show the location and text of the proposed main lane guide signs. Lane lines and/or arrows indicating the number of lanes shall also be shown.
 - (4) A complete explanation of the sequence and methods of stage construction, if proposed, including the initial and ultimate proposed treatment of crossovers and ramps.
 - (5) The tentative ROW limits.
 - (a) Provide a roadway Design System (RDS) or 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.
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.

EXHIBIT B

Scope of Services to be provided by the Engineer

- 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.**
3. Exhibit for Airway/Highway Clearance Permits
4. Grading Design
- a. Refine the horizontal and vertical alignment of main lanes, frontage roads, ramps, cross roads and direct connectors based upon the approved schematic layout. Determine vertical clearances at grade separations and overpasses, taking into account the appropriate super elevation rate.
 - b. Typical Sections
 - c. Design Cross Sections
 - d. Determine Cut and Fill Quantities
 - e. Slope Stability Analysis
 - f. Embankment Foundation Stability Analysis
 - g. Embankment Settlement Analysis
5. Pavement Design
- a. Prior to initiating detailed plan preparations for a project, a preliminary investigation shall be made to determine the approximate section and pavement type to be used for the pavement structure. The Flexible Pavement Design Manual for flexible pavement, "Appendix F" of the Design Division, Operations and Procedures Manual, and the current AASHTO Guide for the Design of Pavement Structures, may be used for this purpose.
 - b. The typical section shall also reflect proposed geometric including pavement cross slopes, lane and shoulder widths, and slope rates whenever this data have not been previously shown on a schematic submission.
 - c. Traffic Data for Pavement Design by STATE
 - d. Basic Design Criteria
 - e. Life Cycle Cost Analysis(es)
 - f. Cost Data
 - g. Pavement Material Properties
 - h. 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)

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 Map
 - a. Hydrologic data/discharge determination for outfalls
2. Hydraulic Drainage Study and Documentation
 - a. Hydraulic computations and Drainage area maps showing existing conditions and proposed improvements.
 - (1) Storm water detention available within the ROW (linear ft. alongside drain ditch).
 - (2) Storm water detention required outside the ROW (as per HCDD#1)
 - (3) Culverts
 - (4) Bridge waterways
 - (5) Channels
 - (6) Storm sewers/inlets
 - (7) Pump stations
 - (8) Storm Water Management facilities
 - (9) Other
 - (a) Irrigation Canals/Siphons
 - b. Hydraulic report(s)
 - c. Federal Emergency Management Agency (FEMA) floodway requirements
 - d. Determine impact of proposed drainage plan on the following receiving stream(s)
 - (1) Hidalgo County Drainage District Outfalls
 - (2) All Irrigation District Outfalls impacted
3. Layout, Structural Design and Detailing of Drainage Features
 - a. Culverts
 - (1) New culverts
 - (2) Culvert widening and/or lengthening
 - (3) Culvert replacements
 - b. Storm sewers
 - (1) New storm sewers
 - (2) Modify existing storm sewers
 - (3) Inlets
 - (4) Manholes
 - (5) Trunk lines
 - c. Pump stations
 - d. Subsurface drainage at retaining walls
 - e. Outfall channel(s) within the ROW
 - f. Outfall channel(s) outside the ROW
 - g. Detention Pond(s) within the ROW
 - h. Detention Pond(s) outside the ROW
 - i. Summary of Quantities
 - j. Storm Water Management facilities
4. Storm Water Pollution Prevention Plan (SW3P)
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)

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
2. Summary of Small Signs Tabulation
3. Summary of Large Signs Tabulation including all Guide Signs
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
5. Traffic Signals
 - a. Development of Justification (Warrant) Data
 - (1) Location Map
Relationship of proposed installation to other traffic signals, highways, business areas and traffic generators
 - (2) Photographs as appropriate
 - (3) Accident data as appropriate
 - (4) Vehicle volumes (provided by TxDOT)
 - (a) Existing
 - (b) Estimated

EXHIBIT B

Scope of Services to be provided by the Engineer

- (c) Projected
 - (d) Pedestrian
 - (5) Traffic Survey - Count Analysis
 - (6) Recommendation based on above data
- 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)
 - (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
 - (a) Confirm power source
 - (b) Discuss route of aerial or underground interconnect cable (when applicable)

EXHIBIT B

Scope of Services to be provided by the Engineer

- (c) Adjustment of overhead utility lines
- (2) Prepare governing specifications and special provisions list
- (3) Prepare project estimate
- d. Summary of Quantities

EXHIBIT B

Scope of Services to be provided by the Engineer

SECTION 10 - MISCELLANEOUS (ROADWAY)

(Function Code 163)

1. Retaining Walls

a. Structural Details

- (1) Cast-in-Place Cantilever at _____ locations. (TxDOT Standard Retaining Wall)*
- (2) Tiedback Retaining Wall at _____ location. (TxDOT standard retaining wall)
- (3) Specialized Retaining Wall at _____ locations (Unique Design).*

b. Alternate Patented Retaining Walls at all locations. (Layouts Only)**

- (1) Mechanically Stabilized Earth
- (2) Concrete Block Wall Systems

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

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.

e. Stability Analysis (the ENGINEER shall estimate this task as part of his bid to complete the work).

f. Estimate

g. Summary of Quantities

h. Typical X-section.

i. 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.

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

EXHIBIT B

Scope of Services to be provided by the Engineer

signs, route markers, construction pavement markings, channelizing devices, portable changeable message signs, flashing arrow boards, barricades, barriers, etc.

- c. The proposed traffic control devices (stop signs, signals, flag person, etc.) at grade intersections during each construction sequence.
- d. Where detours are provided, typical cross sections shall be shown.
- e. Road construction work hours shall be developed after an investigation of the traffic volumes has been performed.

3. Illumination

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

b. Final Roadway Illumination and Electrical Circuit Layouts

- (1) Roadway layout showing pavement edges, shoulders, curbs, retaining walls, etc.
- (2) Center line with station numbering.
- (3) ROW lines.
- (4) Symbol legend. Use department standard symbols for lighting and electrical.
- (5) Culverts and other structures that present a hazard to traffic.
- (6) Location of underground utilities, if not shown on plan profile.
- (7) Location of overhead electrical lines, both crossing and parallel to ROW.
- (8) Existing sign lighting circuits and roadway illumination to remain, to be removed, to be relocated.
- (9) Existing service poles, electrical circuits, ground boxes, etc.
- (10) Contact electric utility for service pole locations, voltage characteristics.
- (11) Location of proposed sign lighting circuits and roadway illumination.
- (12) Proposed electrical circuits.
- (13) Tabulation of all quantities including proposed, existing to be relocated, existing to be removed. The layout sheet quantities and lighting summary shall be shown. Tabulations to include estimated quantity with a column for final quantities.

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.

4. Miscellaneous Drafting/Standards

- a. Erosion Control
- b. Landscape Development

5. Compute and Tabulate Quantities

6. Special Utility Details (Irrigation lines)

7. Miscellaneous Structures

- a. Type of Structure*
 - (1) Overhead Sign Bridges (O.S.B.)

EXHIBIT B

Scope of Services to be provided by the Engineer

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.

- (a) New O.S.B. structure(s)
 - (b) Structural evaluation of existing O.S.B. structure(s) that are to remain in place or to be relocated.
 - (2) High Mast Illumination Poles (HMIP)
 - (3) Traffic Signal Supports
 - (4) Conventional Illumination Poles
 - (5) Sound Barrier Walls
 - 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
 - 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
- a. Utility Agreements
 - b. Exhibits for Utility Agreements
 - c. Railroad Agreements
 - d. Railroad Exhibits
 - (1) Railroad Underpasses
 - (2) Railroad Overpasses
 - (3) Railroad Grade Crossing (Replanking)
 - (4) Railroad Grade Crossing Warning Systems (Signals)
 - (5) Other Miscellaneous Sketches for Railroads
 - e. Traffic Signal Agreements
 - f. Exhibits for Traffic Signal Agreements
9. Estimate
10. Specifications and General Notes

EXHIBIT B

Scope of Services to be provided by the Engineer

SECTION 11 - BRIDGE DESIGN (Function Code 170)

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

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

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

EXHIBIT B

Scope of Services to be provided by the Engineer

2. Preparation of Bridge Layouts (each bridge)

a. Bridge Layouts (PLAN)

- (1) Horizontal curve information or bearing of centerline.
- (2) Including horizontal, vertical, and template information of all roadways or railroads crossed.
- (3) Bearing of center line or reference line.
- (4) Skew angle(s).
- (5) Slope for header banks and approach fills.
- (6) Control stations at beginning and ending of bridge (with deck elevation), intersections, etc.
- (7) Approach pavement and crown width.
- (8) Bridge roadway width and curbs, face of rail, shoulders, or sidewalks.
- (9) Approach slab and curb returns.
- (10) Limits and type of riprap.
- (11) Proposed features under structure.
- (12) Location of profile grade line.
- (13) North arrow.
- (14) Typical bridge roadway section including preliminary proposed beam types and spacings.
- (15) Cross slope and super elevation data.
- (16) Minimum horizontal clearances when applicable.
 - (a) Dimensions to features that control clearances. (Calculate and indicate points of minimum vertical and horizontal clearances.
- (17) Location of soil core holes (station and offset), shown on layout.
- (18) Bent stations and bearings.
- (19) Retaining wall locations.
- (20) Traffic flow directional arrows.
- (21) Railing types shown.
- (22) Joint types and seal size, if used.
- (23) Beam line numbers consistent with span details.
- (24) Critical horizontal clearances (location of railroad tracks, nearby structures and utilities).
- (25) Bearings of utilities.

b. Bridge Layouts (ELEVATION)

- (1) Type of foundation.
- (2) Finished grade elevations at beginning and end of bridge.
- (3) Overall length of structure.
- (4) Length, type of spans and units.
- (5) Type of railing.
- (6) Minimum calculated vertical clearance(s).
- (7) Existing and proposed ground lines clearly marked.
- (8) Grid elevations and stations.
- (9) Bent numbers encircled.
- (10) Stationing of bridge compatible with grid stations.
- (11) Standard title.
- (12) Profile grade data.
- (13) Type of riprap.
- (14) Soil Core Hole information with penetrometer test data shall be shown on the bridge layout at correct station, elevation and scale.
- (15) Fixed/expansion condition of all bents.
- (16) Column "H" heights.
- (17) Number, size and length of foundations.

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.

EXHIBIT B

Scope of Services to be provided by the Engineer

(6) Contours for water crossing.

3. Bridge Classification Culvert, Estimate, Quantities, and Specifications (each bridge)
4. Bridge Total Quantities and Cost Estimates (each bridge)
5. Bridge Special Provisions and Specifications (each bridge)
7. Bearing seat elevations for each beam or girder. Top of cap elevations for non-beam type structures.
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.
- 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

EXHIBIT B

Scope of Services to be provided by the Engineer

layout plan view. The core hole data shall be plotted at the correct station, at the same vertical scale, and at the proper elevation unless otherwise approved by the Design Division.

- i. APPENDIX C, "GENERAL PLAN CHECKLIST", on pages C-1 thru C-5, more specifically relates various sheet types, details, summaries, standards, etc.
- j. For purposes of uniformity statewide, soil core hole data shall be shown on layouts as illustrated in the Bridges and Structures Foundation Exploration and Design Manual.
- k. Geometry and structural design errors found after acceptance of bridge plans shall be promptly corrected by the consultant at no cost to the Company.

EXHIBIT B

Scope of Services to be provided by the Engineer

SECTION 12 - CONSTRUCTION PHASE SERVICES

(Function Code 320)

CONSTRUCTION MANAGEMENT SERVICES:

The ENGINEER will provide engineering and support services for and during the construction of the Project or portions of the Project approved by the COUNTY. Specific (basic and special) services for CONSTRUCTION MANAGEMENT AND SUPPORT by the ENGINEER will include the following:

Construction Bidding:

- 1) The ENGINEER will furnish the COUNTY the necessary copies of approved plans, specifications, notices to bidders, and proposals as prepared under PS&E.
- 2) The ENGINEER will assist the COUNTY on the tabulation of bids, recommendations to the Owner as to the proper action on all bid proposals received, and the preparation of formal contract documents for the award of each construction contract.

Construction Contract Administration and Inspection:

- 1) In general, the ENGINEER will provide the management and engineering support/data required for consultation and advisement to the COUNTY and act as the COUNTY's representative as provided in the General Condition of the Construction Contract.
- 2) The ENGINEER will coordinate and conduct a pre-construction conference (if required).
- 3) Defects and Deficiencies. The ENGINEER will use his best efforts to protect the COUNTY against defects and deficiencies in the work of the Contractor. The ENGINEER will promptly notify the COUNTY of any such defect or deficiency, and take all steps possible to require the Contractor to correct the defect or deficiency.
- 4) Contractor Payment. The ENGINEER will review quantities as submitted by the Contractor and will coordinate with the COUNTY for the preparation of the monthly and final estimates for payment to the Contractor.
- 5) The ENGINEER will provide Project site inspection of the authorized construction contract as follows:
 - a) Project Engineer. The ENGINEER will provide visits by the Project Engineer or a competent representative of the ENGINEER to the site of construction for the purpose of monitoring the Contractor's progress and conformance to the construction contract plans and specifications.
 - b) Resident Engineer and/or Construction Inspector(s). The ENGINEER will furnish the services of a Resident Engineer and/or Construction Inspector(s) for on the site inspection construction to monitor/inspect the Contractor's daily progress and conformance to TxDOT's PS&E specifications.

Miscellaneous Technical Activities:

- 8) Shop Drawings. The ENGINEER will review and check all shop or working drawings furnished by the Contractor.
- 9) Control of Materials & Equipment. The ENGINEER will provide inspection of all materials and equipment furnished/used by the Contractor as follows:
 - a) Review and record all laboratory, shop and mill tests of materials and equipment for compliance with the construction contract specifications.

EXHIBIT B

Scope of Services to be provided by the Engineer

- b) Observe and/or perform Project record testing and/or independent assurance testing as outlined in the construction contract specifications.
- 10) Change Orders. When applicable the ENGINEER will prepare the engineering data, including plan sheet drawings, specifications, and estimates, for the preparation of construction contract change orders, which may be required due to actual field conditions encountered or new requirements directed by the COUNTY.
- 11) As Built Drawings. The ENGINEER will develop as built drawings to depict the work as actually constructed. The COUNTY will be furnished five (5) set of prints.

EXHIBIT B

Scope of Services to be provided by the Engineer

SECTION 14 - ADDITIONAL RESPONSIBILITIES

Coordination of Utilities

The ENGINEER shall furnish the COUNTY prints of a project layout which will be distributed by the 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.

Document and Information Exchange

Data, Plan Sheets, General Notes and/or Specifications provided to the COUNTY shall be furnished on USB flash drives, or Cloud Based Delivery System.

Proposal Time

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

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
Permanent Lighting Plans, Quantities & Standards
Bridge Layout(s)
Bridge Details

EXHIBIT B

Scope of Services to be provided by the Engineer

Retaining Wall Layout(s)

APPENDIX C - GENERAL PLAN CHECKLIST *(continued)*

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

Earthwork (Roadway & Channel) & Channel Details

Culverts

Detours

Seeding or Mulch Sod - Quantity Only

Inlet & Manholes

Sidewalks

Construction Pavement Markings

EXHIBIT B

Scope of Services to be provided by the Engineer

Driveways
Concrete Median

APPENDIX C - GENERAL PLAN CHECKLIST *(continued)*

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

Engineering Schedule Summary	Duration	2019				
		September	October	November	December	January
Management / Coordination	14 days					
PS&E	15 days					
Construction Assitance	30 Day					

Total Days to Perform Project **59**

Exhibit D-1

-Estimated Project Fee Schedule

Task and Description	Principal	Project Manager	Senior Engineer	R.P.L.S	Senior Engineering Technician	CAD Technician	Survey Crew	Clerical	Total
Hourly Rate	\$ 240.00	\$ 160.00	\$ 140.00	\$ 150.00	\$ 70.00	\$ 68.00	\$ 150.00	\$ 40.00	
A. General Management and Coordination	15	15	5		5	10		24	74
	\$ 3,600.00	\$ 2,400.00	\$ 700.00	\$ -	\$ 350.00	\$ 680.00	\$ -	\$ 960.00	\$ 8,690.00
B. PS&E									
	6	10	5		5	20		14	60
	\$ 1,440.00	\$ 1,600.00	\$ 700.00	\$ -	\$ 350.00	\$ 1,360.00	\$ -	\$ 560.00	\$ 6,010.00
C. Construction Oversight Services									
	2	2	15		5	5		5	34
	\$ 480.00	\$ 320.00	\$ 2,100.00	\$ -	\$ 350.00	\$ 340.00	\$ -	\$ 200.00	\$ 3,790.00
Total Professional Man Hour Estimate	23	27	25	0	15	35	0	43	168
Total Estimated Professional Services Fee	\$ 5,520.00	\$ 4,320.00	\$ 3,500.00	\$ -	\$ 1,050.00	\$ 2,380.00	\$ -	\$ 1,720.00	\$ 18,490.00