DANNENBAUM ENGINEERING CORPORATION
LAREDO OFFICE:
8610 MCPHERSON, SUITE 130 LAREDO, TEXAS 78040 (956)712-9817 OFFICE (956)712-9857 FAX

October 19, 2017

Webb County
1620 Santa Ursula, 2nd Floor
Laredo, Texas 78040

Attn: ***Luis Perez Garcia, P.E.***
Webb County Engineer

Ref: ***Supplemental Agreement No. 9 to Main Contract - (TxDOT CSJ 0086-14-058) is Engineering Services Related to the Development of PS&E for the Extension of Loop 20, Jacaman Overpass (Sta. 257+42.91 to Sta. 257+42.91) including associated offsite detention ponds and Del Mar Overpass (Sta. 319+65.24 to Sta 362+56.18) as well as Prepare the Warrant Studies and Illumination Studies From International Blvd. to US 59 (Sta. 115+85.40 to Sta. 484+35)***

Subj: ***Supplemental Agreement No. 9 to Main Contract (Updated)***

Dear Mr. Perez Garcia,

Please find attached herewith: three (3) partially executed copies of Supplemental Agreement No. 9 to Main Contract for Engineering Services for the above referenced project, each bearing an original signature. This replaces the one sent on 08/08/2017 reflecting the changes after final negotiations with the County on September 22, 2017 and 10/12/2017 Meeting with TxDOT as well as 10/16/2017 MPO Meeting. This Supplemental No. 9 is adding Work Authorization No. 3 for engineering services to Develop PS&E for the Extension of Loop 20, Jacaman & Del Mar Overpasses - Including Associated Off-Site Detention Ponds as well as warrant and illumination studies from International Blvd. to US 59 for TxDOT CSJ: 0086-14-058. This Supplemental Agreement No. 9 to the Main Contract is being increased by Work Authorization No. 3 totaling **$3,358,680.08** increasing the total Main Contract to **$6,430,312.93.**

Please execute each of the three (3) copies of Supplemental Agreement No. 9 to Main Contract using blue ink. Thereafter, please retain one (1) original for your files, transmit one (1) original to TxDOT, and return one (1) original to our office for our records.

Provided below in Attachment E-2 in this Supplemental No. 9 to Main Contract are the justifications for the man-hours for the disciplines of the work required to provide services for the development of Proposed Work Authorization No. 3.

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Should you have any questions or require further information regarding this matter, please contact me at your earliest convenience by telephone at (956) 682-3677 or by email at Louis.jones@dannenbaum.com.

Sincerely,

Louis H. Jones, P.E.
Principal

cc:	File No. 4688-01	Dannenbaum Engineering Corporation
	Richard D. Seitz, P.E.	Dannenbaum Engineering Corporation
	Nathaniel Olivarez, P.E.	Dannenbaum Engineering Corporation
	Cynthia M. Luera	Dannenbaum Engineering Corporation

Letter Inclusions: 1. Three (3) partially executed copies of Supplemental Agreement No. 9 to the Main Contract for Engineering Services for the above referenced project, each bearing an original signature.

CONTRACT FOR ENGINEERING SERVICES
SUPPLEMENTAL AGREEMENT NO. 9 to the MAIN CONTRACT

THIS SUPPLEMENTAL AGREEMENT to The Main Contract for Engineering Services is made by and between the County of Webb, a subdivision of the State of Texas, hereinafter called "County" and Dannenbaum Engineering Corporation, having its principal business address at 8610 McPherson Road, Laredo, Texas 78045 hereinafter called "Engineer," for the purpose of contracting for engineering services.

BACKGROUND

The County and the Engineer executed a Contract on August 2013 for engineering services generally described as preliminary engineering, including the preparation of schematics, environmental documents and right of way parcel maps, to support a possible future design/build project, and if design/build is not chosen as the preferred method of project delivery, then the County may amend the Contract to include the addition of Engineering Services/Fee for reduction of Frontage Road.

The Contract was amended by Supplemental Agreements 1, 2, 3, 4, 5, 6, 7 and 8 to reflect revisions to the Scope of Services to be provided by the Engineer.

AGREEMENT

The County and the Engineer agree that the Contract is amended as follows:

ARTICLE 1. SCOPE OF SERVICES.

The original scope of services in the Main Contract is amended by this Supplemental Agreement No. 9 to include:

ARTICLE 2. CONTRACT PERIOD.

This Supplemental Agreement No. 9 to the Main Contract becomes effective when fully executed by all parties hereto and it shall terminate at the close of business on **August 1, 2020** unless the contract period is: (1) modified by written supplemental agreement prior to the date of termination as set forth in Attachment A, General Provisions, Article 6, Supplemental Agreements; (2) extended due to a work suspension as provided for in Attachment A, Article 3, Paragraph C; or (3) otherwise terminated in accordance with Attachment A, General Provisions, Article 15, Termination. Any work performed or cost incurred before or after the contract period shall be ineligible for reimbursement.

ARTICLE 3. COMPENSATION.

Maximum Amount Payable. The current Maximum Amount Payable under the Main Contract including Supplemental 1 thru 8 of Main Contract is **$3,071,632.85** is hereby modified by this Supplemental Agreement No. 9 to Main Contract to **$6,430,312.93** an increase of **$3,358,680.08** for Work Authorization No. 3 as outlined in Attachment E-2. These attachments are made a part of this Supplemental No. 9 to the Main Contract.

All other provisions of the Main Contract are unchanged and remain in full force and effect.

IN WITNESS WHEREOF, this Supplemental Agreement is executed in duplicate counterparts and hereby accepted and acknowledged below.

THE ENGINEER	**THE COUNTY**
(Signature)	(Signature)
Louis H. Jones Jr. PE (Printed Name)	(Printed Name)
Principal (Title)	(Title)
10-19-2017 (Date)	(Date)

LIST OF ATTACHMENTS:

Attachment B	Services To Be Provided By the County (Rev 10-19-2017) (Added by CSJ: 0086-14-058)
Attachment C	Services To Be Provided By the Engineer (Rev 10-19-2017) For Work Authorization No. 3; (CSJ: 0086-14-058)
Attachment E	Summary of Detailed Fee Schedule – Phases II, III Supporting Lump Sum Calculations – SA No. 9 to Main Contract Develop PS&E for the Extension of Loop 20, Jacaman Overpass (Sta. 219+25.62 to Sta. 257+42.91) and & Del Mar Overpass (Sta. 319+65.24 to Sta. 362+56.18) - Including Associated Off-Site Detention Ponds And Warrant and Illumination Studies From US 59 to International Blvd. (Sta. 115+85.40 to Sta. 484+35)
Attachment E-2	Detailed Fee Schedule – Phase II, III Supporting Lump Sum Calculations – SA No. 9 to Main Contract Phase IIA – Traffic Warrant Study Illumination Study Special Services US 59 to International (Sta. 115-85.40 to STA 484+35)
Attachment F	Work Schedule (Rev 10-19-2017)

ATTACHMENT B

Services to Be Provided by the County

ATTACHMENT B

SERVICES TO BE PROVIDED BY THE COUNTY

1. The County shall provide prompt review of all submittals; process monthly invoices and review monthly progress reports within ten (10) days of receiving such documents.

2. The County shall contact TxDOT Laredo with three (3) business days of receiving request from Engineer on any required information or documents from TxDOT.

3. The County Engineer will provide the Engineer with all available existing information on the Projects from TxDOT or other available sources.

4. The County, through TxDOT, will be responsible for preparing, holding and documenting the Value Engineering Study with Engineer's Staff only. Based on One Day attendance by Project Manager; Deputy Project Manager and Senior Engineer.

DESIGN SCHEMATICS
Provide hard copy of the approved schematic developed by Kellogg Brown & Root (KBR) – 1Large format roll.

Provide hard copy of 90% schematic developed by Parson Brinkerhoff of Americas (PB America) – 1 Large format roll.

VALUE ENGINEERING REPORT – hard copy dated November 2007, Electronic in pdf format contained in CD along with construction plans (as builts).

ENVIRONMENTAL DOCUMENT – None available.

HYDRAULIC STUDIES

PAVEMENT DESIGN REPORT – Provided by TxDOT

PRELIMINARY CONSTRUCTION ESTIMATE- Provided for information only.

DSR PRELIMINARY – Provided for information only.

TRAFFIC STUDY – Provided by TxDOT and/or TTI

TRAFFIC DATA – Provided by TxDOT and/or TTI

CROSS SECTION FILES

UTILITY DATA – The State does not up-date schematic utility data.

CONSTRUCTION PLANS (All Microstation working files for original plans and As-Builts contained on CD)

- Existing Loop 20 from Sta. 554+00 to just North of Loop 20/US 59 Overpass
- Existing plans on any modification to Loop 20 or crossing roadways from Sta. 554+00 to just North of Loop 20/US 59 Overpass

SURVEYING DATA:

ALL EXISTING TOPOGRAPHIC SURVEY
Geopak DTM files
Geopak TIN files
Geopak DAT files
Microstation 2d CADD files
Microstation 3d CADD files
Existing ROW in 2d Microstation CADD files
XYZ text files of survey data
Existing Survey Control Monumentation in PDF Format
2007 Webb CADD Aerial Mosicac in ECW format @ 1 ft. pixel resolution

Note:
The survey data began provided by the State, DOES NOT reflect current site conditions. Topographic survey will required to be updated prior to final schematic development. See section IV. FIELD SURVEYING AND PHOTOGRAMMETRY for other information needed.

ALL SURVEY CONTROL
The survey control for this project was set back in 2003
Please check control points before use
Note that some of these points may have been disturbed and/or destroyed, therefore the coordinates and elevations shown might not be valid

ALL HYDRAULIC DATA
County will provide (obtained from TxDOT) all working files of drainage area maps and Windstorm runs for all existing storm sewer lines within project right-of-way in a condition and format that the Engineer can readily verify and for adequacy and accuracy of existing storm sewer systems

ALL HIGH MAST LIGHTING
County will provide (obtained from TxDOT) all microstation working files associated with the existing high mast lighting within project limits

ALL GEOTECHNICAL
County will provide (obtained from TxDOT) all existing geotechnical reports associated information within the project limits

SCOPE AND FEE SCHEDULE ASSUMPTIONS

1. Public meeting/public hearing court reporter to be provided by the County
2. The TxDOT Laredo District has a VRS network
3. The project surveyors can utilize VRS in a two rover configuration
4. Highway Capacity Analysis and preparation of design report will be done by TTI
5. Preparation of Interstate Access Justification Report will be done by TTI
6. TxDOT/County will provide all design working files in Microstation format for all plans of existing roadways. TxDOT/County will provide all electronic files of computer runs (actual working data) of Winstorm for existing drainage
7. Pavement design is to be done by TxDOT

ATTACHMENT C

SERVICES TO BE PROVIDED BY THE ENGINEER

Attachment C

Services to be Provided by the Engineer

CSJ:	0086-14-058
Highway:	SL 20
County:	Webb County
Project No.:	CBI 2013 (881)
Limits:	Loop 20 from Sta. 554+00 to Just North of Loop 20 / US 59 Overpass
Project Length:	7.0 Miles
Area Office:	Laredo Area Office

Project Description

The Engineer will provide engineering services for Phase II-utility investigations level A, and Phase III, development of Plans, Specifications and Estimate, for Loop 20 from Jacaman Overpass (STA 219+25.62 TO STA 257+42.91) and Del Mar Overpass (STA 319+65.24 TO STA 362+56.18).

Existing Conditions

The existing Loop 20 from Sta. 554+00 to Just North of Loop 20 / US 59 Overpass consist of four (4) to six(6) lanes with shoulders with at grade intersections at Loop 20 and Shiloh Road, Del Mar Road, University Drive, Jacaman Road and Laredo International Airport Road, including corresponding underground storm sewers; cross culverts; drainage ditches; signage and traffic signals.

Proposed Improvements

The proposed Loop 20 from Sta. 554+00 to Just North of Loop 20 / US 59 Overpass will consist of ~~six mainlanes with shoulders and two lane frontage roads on each side~~ eight (8) lane main lanes and no frontage roads from US 59 Hwy to Airport Drive and six (6) lane main lanes and three (3) lane frontage roads from Airport Drive to International Road for the advanced project planning Phase I and Phase II (Schematic / Environmental / Right of Way), and the Phase III – PS&E phase, may be performed at a later date, with Amendment to the Contract, which will consist of ~~designing four mainlanes with shoulders and two lane frontage road each side~~ eight (8) lane main lanes and no frontage roads from US 59 Hwy to Airport Drive and six (6) lane main lanes and three (3) lane frontage roads from Airport Drive to International Road with overpasses over Shiloh Road; Del Mar Road; University Drive; Jacaman Road and Laredo International Airport Road, including corresponding underground storm sewers; cross culverts; signage and traffic signals at frontage roads.

Sidewalks on both sides of the proposed Loop 20 Freeway from the Loop 20 / US 59 overpass to the Loop 20/ International Boulevard overpass.

Hike and Bike Trail along one side of the proposed Loop 20 Freeway from the Loop 20 / US 59 overpass to the Loop 20/ International Boulevard overpass.

GENERAL MANAGEMENT/COORDINATION

Function Code 145 is for Advanced Project Development Services
Function Code 164 is for PS&E Development Services

Task: Contract and Work Authorization Management/Coordination (FC: 145/164)
The Engineer will manage and coordinate all the activities associated with this work authorization.

All communications associated with the work in this work authorization will be directly channeled through the Engineer, the Webb County Engineer and the State's designated project manager.

The Engineer will ensure compliance with "Article 4. Payment requirements" of the contract by providing a Monthly billing statement in addition to the requirements listed by the contract.

The Monthly Billing Statements should be provided no more frequently than monthly and no later than ninety (90) days after any costs are incurred and should include one original and one copy of the following documents:

- Provider's Invoice that should include vendor's name, address, contact information, telephone number, Texas Payee Identification Number (TINS), complete charge information, and description of services/goods provided.
- Completed Form 132- Accurate information such as Control Section Job (CSJ) numbers, function codes, work authorization balances and dates are required.
- Progress report that will include the activities previously completed, activities completed during the billing period, and any pending actions from the State. The progress report should also include all work performed by sub providers.
- Progress assessment reports with actual payments made to Disadvantage Business Enterprises or Historically Underutilized Business Program as detailed in the contract.

The monthly billing statements must be mailed to:
Luis Perez Garcia, P.E., Webb County Engineer
Webb County, Texas
1620 Santa Ursula, 2nd Floor
Laredo, Texas 78040

Task: Work Scheduling and Deliverables (FC: 145/164)
The Engineer should secure all resources necessary to produce the project deliverables listed in this work authorization and to meet the project schedule as presented in "Exhibit C". The project schedule should include milestone activities and specific delivery dates. The Engineer may identify the percentage of payment expected with each deliverable made.

The Engineer should continuously monitor the sub provider's schedules to ensure that the delivery dates are accomplished.

Task: Data Management (FC: 145/164)
The Engineer will utilize MicroStation V8 native files. The computer graphics files will have the same integrity, singularity and attributes as elements generated by the Texas Department of Transportation (the State) State's computer system. The Engineer should obtain from the State the latest level naming criteria.

The Engineer will provide the State's graphics coordinator with a user name and password to access the provider's ftp (internet) site to upload and download large files that cannot be transmitted by e-mail.

Task: Meetings (FC: 145/164)
The Engineer will be required to meet one (1) progress meeting with designated Webb County and TxDOT representatives, utility companies, and adjacent and affected landowners to report on the

project's progress. The Engineer shall be required to prepare the minutes for the meeting and provide an electronic and hardcopy to the County and/or State for review.

Task: QC/QA (FC: 145/164)
The Engineer should meet the project schedule as presented in "Exhibit C" of this work authorization.

The Engineer will perform quality control and quality assurance (QC/QA) review and approve any deliverables including those provided by sub providers before submission to the state.

Peer review will be provided at all levels. Internal mark-ups (redlines) and/or comments developed as part of the Engineer's QC/QA will be maintained for inspection when requested by County and/or the State.

PHASE II- RIGHT OF WAY SERVICES (TO BE PERFORMED BY TXDOT)

Task: Ownership Data and Permission for Right of Entry (FC: 130)
The Engineer shall obtain ownership data for all impacted property owners within the project limits and shall obtain right of entry from all property owners prior to commencing any work for surveying and/or right of way services.

Task: Existing and Proposed Utility Layouts, Utility Coordination and Meetings (FC: 130)
The Engineer shall perform the following duties:

1. The Engineer shall meet with the Area Office and Utility providers periodically to coordinate the work efforts and resolve any utility related problems. The Engineer shall prepare the minutes for these meetings and forwarded to the State. The Engineer shall address the following issues and any other items deemed necessary during the Utility Coordination meetings:
    a) Activities completed since last meeting
    b) Problems encountered.
    c) Late activities.
    d) Activities required by the next progress meeting.
    e) Solutions for unresolved and/or anticipated problems.
    f) Information or items required from other agencies/consultants.

2. If a reimbursable utility relocation exists, the Engineer shall request conveyance documents from the utility provider and shall notify the County and the State's Area Engineer in writing. If utility is allowed by permit, information shall be obtained from the State's Director of Maintenance.
3. The Engineer shall notify the Utility companies in writing and request the following information in writing:
    a. Project letting date and request they relocate prior to letting.
    b. Develop their relocation plan according to the State's Utility Accommodation Policy Manual.
    c. Forward their relocation plan to the Engineer.
    d. Request in writing when relocation of utilities will be complete.
    e. Upon immediate completion of relocation, request they forward as-built plans to County and/or the State.

4. The Engineer shall develop the typical sections, alignment, and preliminary cross sections addressing the utility location and shall forward these to the respective utility company.
5. The Engineer shall update all files and plans based on the utility company responses.
6. The Engineer shall identify all utility conflicts on the plans and prepare layouts and profiles of existing utility crossings showing conflicts of utilities with proposed improvements. The Engineer shall forward these layouts to the County and/or State and the utility companies. During design process, the Engineer shall field verify all visible utility conflicts.
7. The Engineer shall verify the proposed relocation plan submitted by the Utility companies to assure their design is according to Utility Accommodation Policy Manual. Upon the Engineer's review and concurrence with the proposed relocation plan, they shall forward their recommendation for approval to County and/or the State.

Task: Topographic -Utility locations (FC: 130)
The Engineer's Surveyor shall gather all vertical and horizontal overhead utilities (location, elevation, direction, etc.) within the existing and proposed right of way that will not be obtained by Subsurface Utility Engineering (SUE).

Task: SUE -Utility locations (FC: 130) (To Be Performed By TxDOT)
Utility Investigations to include the following:

In performing Quality Level "A" (test hole) services hereunder, Engineer shall:

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

The Engineer shall:
1. Review requested test hole locations and advise the County and State in the development of an appropriate locate (test hole) work plan relative to the existing utility infrastructure and proposed highway design elements.
2. Coordinate with utility owner inspectors as may be required by law or utility owner policy.
3. Neatly cut and remove existing pavement material, such that the cut not exceed 0.10 square

meters (1.076 square feet) unless unusual circumstances exist.

4. Measure and record the following data on an appropriately formatted test hole data sheet that has been sealed and dated by the Engineer:
   a) Elevation of top and/or bottom of utility tied to the datum of the furnished plan. Identify a minimum of two benchmarks utilized. Elevations shall be within an accuracy of 15mm (.591 inches) of utilized benchmarks.
   b) Elevation of existing grade over utility at test hole location.
   c) Horizontal location referenced to project coordinate datum.
   d) Outside diameter of pipe or width of duct banks and configuration of non-encased multi-conduit systems.
   e) Utility facility material(s).
   f) Utility facility condition.
   g) Pavement thickness and type.
   h) Coating/Wrapping information and condition.
   i) Unusual circumstances or field conditions.
5. Excavate test holes in such a manner as to prevent any damage to wrappings, coatings, cathodic protection or other protective coverings and features. Water excavation can only be utilized with written approval from the appropriate State's District office.
6. Be responsible for any damage to the utility during the locating process. In the event of damage, the Engineer shall stop work, notify the appropriate utility facility owner, County Engineer, State Area Engineer, and appropriate regulatory agencies. The regulatory agencies include, but are not limited to the Texas Railroad Commission and the Texas Commission on Environmental Quality. The Engineer will not resume work until the utility facility owner has determined the corrective action to be taken. The Engineer shall be liable for all costs involved in the repair or replacement of the utility facility.
7. Backfill all excavations with appropriate material, compact backfill by mechanical means, and restore pavement and surface material. The Engineer shall be responsible for the integrity of the backfill and surface restoration for a period of three years. Install a marker ribbon throughout the backfill.
8. Furnish and install a permanent above ground marker (as specified by TxDOT District office), directly above center line of the utility facility.
9. Provide complete restoration of work site and landscape to equal or better condition than before excavation. If a work site and landscape is not appropriately restored, the Engineer shall return to correct the condition at no extra charge to the State.
10. Plot utility locate position information to scale and provide a comprehensive utility plan. This information will be provided in Microstation or Geopak format or applicable County and/or State/State's Design Consultant CADD system. The electronic file will be delivered on a floppy disk or C.D. When requested by the District, the Locate information must be over laid on the State's (TxDOT) design plans.
11. Return plans, profiles, and test hole data sheets to the State. If requested, conduct a review of the findings to the State.
12. Close out permits as required.
13. When requested, provide a monthly summary of work completed and in process with adequate detail to verify compliance with agreed work milestones.
14. Comply with all applicable County and State policy and procedural manuals.

In performing Quality Level "B" (designating) services hereunder, Engineer shall:

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

The Engineer shall:

1. As requested by the County and the State compile "As Built" information from plans, plats and other location data as provided by the utility owners.
2. Coordinate with utility owner when utility owner's policy is to designate their own facilities at no cost for preliminary survey purposes. The Engineer is required to examine utility owner's work to ensure accuracy and completeness.
3. Designate, record and mark the horizontal location of the existing utility facilities and their service laterals to existing buildings using non-destructive surface geophysical techniques. No storm sewer facilities are to be designated unless authorized by County and the State. A non-water base paint, utilizing the APWA color code scheme, must be used on all surface markings of underground utilities.
4. Correlate utility owner records with designating data and resolve discrepancies using professional judgment. A color-coded composite utility facility plan with utility owner names, quality levels, line sizes and subsurface utility locate (test hole) locations, if applicable, will be prepared and delivered to the County and State. It is understood by the Engineer; the County and the State that the line sizes of designated utility facilities detailed on the deliverable are from the best available records and that an actual line size is normally determined from a test hole vacuum excavation. A note must be placed on the designate deliverable only that states "lines sizes are from best available records". All above ground appurtenance locations must be included in the deliverable to the County and the State. This information will be provided in Microstation, Geopak or applicable County and State/State's Design Consultant CADD system. The electronic file will be delivered on floppy disk or C.D., as required by the District. A hard copy is required and must be sealed and dated by the Engineer. When requested by the State and Laredo District, the designated utility information must be over laid on the County and State (TxDOT) design plans.
5. Determine and inform the County and State of the approximate utility depths at critical locations as determined by the County and State. This depth indication is understood by both the Engineer; County and the State to be approximate only and is not intended to be used preparing the right of way and construction plans.
6. When requested, provide a monthly summary of work completed and in process with adequate detail to verify compliance with agreed work schedule.
7. Close-out permits as required.
8. Clearly identify all utilities that were discovered from quality levels C and D investigation, but cannot be depicted in quality level B standards. These utilities must have a unique line style and symbology in the designate (Quality Level B) deliverable.
9. Comply with all applicable County and State policy and procedural manuals

The Engineer shall also be responsible for the following:

1. Traffic Control Plan (TCP). Provide all traffic control, labor and equipment. The Engineer shall comply with the regulations of the most recent edition of the "Texas Manual on Uniform Traffic

Control Devices". The Engineer must submit the TCP to the respective States Area Office to obtain approval from the Traffic Control Safety Review Committee concerning the proposed method of handling traffic prior to commencing work.

2. Permits and rights of entry. Obtain all necessary permits from property owners, city, county, municipality, railroad or other jurisdiction to allow the engineer to work within existing streets, roads or private property for designating and/or subsurface utility locating service.
3. Condition Assessments. The Engineer shall perform and document condition assessments of the utility facility by utilizing ultrasonic equipment, interior pipe wall videos, visual inspection or other techniques, when requested.
4. Testimony (Technical Expert Witness). If the Engineer's testimony is required in legal proceeding in connection with claims brought against or prosecuted by the State, the Engineer agrees to appear as a technical expert witness on behalf of the State. These costs, if required, shall be addressed by a Supplemental Work Authorization.

Task: Property Descriptions (Field Notes) for Temporary Construction Easement Drainage Easements or Fee Simple Conveyances (FC: 130)

Property Descriptions – A property description will be prepared for each parcel of land to be acquired. Property descriptions and parcel plats reflect a boundary survey and must be signed and sealed by an RPLS. Field note descriptions will include, but need not be limited to the following:

1. The field note description will begin with a general description that will include, as a minimum:
    a. State, county, and city within which the proposed parcel of land to be acquired is located.
    b. A reference to unrecorded and recorded subdivisions by name, lot, block, and recording data to the extent applicable.
    c. A reference by name to the grantor and grantee, date, and recording data of the most current instrument(s) of conveyance describing the parent tract (show inset).
    d. Property descriptions at parcel plat must be tied to the Texas State Plane Coordinate System and reference metadata (history data) used in preparing the survey.
    e. Property descriptions covering more than one page should read "Page ___ of ___ Pages."
    f. At the end of each property description, add a sentence stating "this property description is accompanied by a separate plat." All property descriptions must be signed and sealed by an RPLS, and must include a statement that the survey was performed on the ground under his supervision and must include they day, month and year of the survey.
2. The field note description will continue with a metes and bounds description that will include at a minimum:
    a. A point of commencing (outside property corner).
    b. A point of beginning and its relation to the parent tract.
    c. A series of courses, identified by number and proceeding in a clockwise direction, describing the perimeter of the parcel of land to be acquired, and delineated with appropriate bearings, distances, and curve data.
    d. A description (8-1/2" x 11") of all monumentation set or found to include, at a minimum, size and material.

Task: Parcel Plats (FC: 130)

A parcel plat will be prepared for each parcel of land to be acquired. The State has developed standard formats for parcel plats, copies of which the Engineer will request and secure for all

purposes. All parcel plats will be (8-1/2" x 11") signed and sealed by a Registered Professional Land Surveyor. They should reflect the property owners and adjoining owners name and recording information.

Task: ROW Maps (FC: 130)
All ROW maps are reviewed and approved for technical completeness, compliance with State (TxDOT) guidelines and adherence to the Professionals hand Surveyors Practices Act by the District.

All ROW map pages must be uniform in size (22" x 34"), form and arrangement. The uniformity must conform to State (TxDOT) standards and guidelines and include similar font styles and sizes for each map sheet, as well as a neat, readable arrangement of data on each sheet. The entire ROW map will be bound by the left margin of each seet.

Projects should contain the following map sheets:

a. Title sheet
b. Parcel Index Sheet – Shows an overall view of project parcels and plan sheets. It may be omitted if all applicable data can be placed on individual map sheets.
c. Control Sheet – This sheet shows an overall view of project and relationship to primary monumentation and control.

If preferred, this information may be included on the Parcel Index Sheet.

- Plan Sheets 1 and 2

Reference Publications for ROW Map Preparation

- State (TxDOT) Surveying Guide, TSPS Manual of Practice, Professional Land Surveyors Practices Act Rules and Regulations, and the State (TxDOT) Right of Way Manual.

Task: Property Ties- Boundary Data (FC: 130)
The Engineer shall prepare metes and bounds for all drainage easements, construction easements, and design of this project.

Task: Existing and Proposed Right of Way (FC: 130)
The Engineer shall stake all proposed right of way and drainage easement **(Not Included)** necessary for preparation and construction of this project.

- On each plan sheet show the following:
  a. Existing ROW (by bearing an distance) through the entire project length, even in areas where no new ROW is needed. In areas where new ROW is only needed on one side, the ROW on both sides of the new facility needs to be delineated and monumented.
  b. Existing ROW monuments;
  c. Record ownership data of adjacent properties.
  d. PC's, PTs and PIs (show and label).
  e. Existing utility lines and easements (deed reference, if available).
  f. Existing improvements such as buildup and fences, etc. Potential obstructions and/ or encroachments. (Locate any improvement within 25 feet of new ROW line. This will assist appraisers in determining damages to the remainder of properties).
  g. Survey lines, city limit lines and county lines (show and label all).

h. Existing public roads, streets, alleyways, existing drainage or channel easement (include recorded plat or deed reference).
i. The whole property relative to existing and proposed right of way. If the property is too large to fit on the map sheet at the existing sheet scale, draw an inset at a smaller or not to scale with a not stating "N.T.S."
j. The existing ROW line should be labeled "Existing Right of Way."
k. Each individual property line should be shown on the map sheet, with respect to and their relationship with existing ROW line based on information obtained during preliminary surveys, research of tax records, deeds, and subdivision plats.

- On each plan sheet show the following:
  a. New ROW lines.
  b. New ROW markers
  c. Portions of the proposed design. Although a ROW map is not to be used to construct a highway, you should show, by either a single line or shading, the following proposed items or additional topography information:
     1. frontage roads
     2. main lanes
     3. connecting ramps

  When control of access is used, it should be described in a recorded deed. Limits of denied access should be staked on the ground. The control of access clauses may be included in the property descriptions or as a separate instrument. If a metes and bounds description is prepared to describe a controlled access line, it must be signed and sealed by an RPLS.

- On Federal Aid Projects such as Interstate, U.S. and State Highways showing the whole property on the map is a requirement.

PHASE IIA- SPECIAL SERVICES

Task: Route and Design Studies (FC: 110)
Traffic Signal Warrant & Illumination Studies (Shiloh, Del Mar Blvd, University Drive, Jacaman and Laredo International Airport Entrance)

The Engineer should conduct site inspections, obtain photographs and prepare existing condition diagrams. Record traffic characteristics as observed while in the field.

The Engineer should review traffic count data and prepare traffic count data summaries in tabular format.

The Engineer should obtain traffic accident records for the study location from the State for the most recent thirty-six (36) month period, analyze the accidents and prepare collision diagrams.

The Engineer should conduct traffic signal warrant studies following the guidelines published in the latest edition of the Texas Manual on Uniform Traffic Control Devices.

The Engineer should prepare and submit two (2) reports to the County and State, which summarize the findings of the traffic counts, field inventories, accident analysis, warrant analysis and

recommendations. The reports will include existing condition diagrams, field photographs, traffic counts, collision diagrams and any recommended improvements (if appropriate).

The Engineer shall refer to TxDOT's Highway Illumination Manual and other deemed necessary State approved manuals for studying the design of continuous lighting and safety lighting for all onventional, high-mast, and underpass lighting. The Engineer shall include safety lighting as part of each design on each flashing beacon and traffic signal. The Engineer shall provide a preliminary layout for initial review and approval by the State. The Engineer shall prepare circuit wiring diagrams showing the number of luminaries on each circuit, electrical conductors, length of runs, service pole assemblies. Underpass lighting shall be used on all structures within each project. The Engineer shall integrate existing illumination within the project limits into the proposed design. The Engineer shall coordinate with the State to determine the location of proposed highmast, conventional, and underpass lighting.

PHASE III- PLAN, SPECIFICATIONS AND ESTIMATE SERVICES

The Engineer shall prepare and submit the 1st, 2nd, 3rd, and final submissions in accordance to the State's Laredo District PS&E Submissions requirements for the Jacaman and Del Mar grade separations and the associated transitions back to the existing roadway. Each Webb County and each of the State's-Project Manager is responsible for the coordination, review, and the quality submission of the PS&E packages prepared by the Engineer. The following tasks identify the responsibilities and deliverables that shall be carried out by the Engineer as part of PS&E development and submissions:

I. GENERAL

Task: Title Sheet (FC: 163)
The Engineer shall prepare and submit this work under this task in accordance to the PS&E Preparation Manual and other deemed necessary County and State approved manuals.

Task: Project Layout/ Index (FC: 163)
The Engineer shall prepare and submit work under this task in accordance to the PS&E Preparation Manual and other deemed necessary State approved manuals. The location of project should depict the entire project with beginning and ending (Station Numbers/Reference Markers) for each noted CSJ. Mapping landmarks (side streets, creeks, etc.) along with North Arrow and a scale should be shown to help relate the physical location of the project. By use of shading or cross-hatching, the proposed areas of construction should be shown.

Task: Typical Sections –Configuration (Lane/Shoulder/Cut/Fill/etc.) (FC: 160)
The Engineer shall use the Design Speed, the Funding Category, Average Daily Traffic, ADT, Roadway Classification, Location Type, and the appropriate Design Criteria to develop the typical sections as set forth in the Roadway Design Manual, PS&E Preparation Manual and other deemed necessary County and State approved manuals to prepare and submit the work under this task. The existing typical section should be shown with current roadway (pavement, right of way, etc.) characteristics. The proposed typical sections should be shown below the existing typical section with all related pertinent (pavement, right of way, etc.) information for the proposed roadway construction.

Task: Typical Sections – Pavement Design (FC: 160)
Pavement Design to be provided by the State.

Task: Typical Sections – Pavement Design Foundation Studies (FC: 110)
Pavement Design Foundation Studies to be provided by the State.

Task: General Notes (FC: 163)
The Engineer shall prepare and submit work under this task in accordance to the PS&E Preparation Manual and other deemed necessary State approved manuals. The Engineer shall compile all pertinent General Notes and develop any Special Provisions/Special Specifications applicable and required for this project. Specifications and General Notes will be provided to the State electronically in acceptable format for transferring data.

Task: Estimate and Quantity (FC: 163)
The Engineer shall prepare and submit work under this task in accordance to the PS&E Preparation Manual and other deemed necessary State approved manuals. For Roadway, Bridge and Traffic items, the Engineer shall prepare a complete listing of construction bid items, compute estimated quantities required for each item, and compute estimated cost of construction work based on current State average low bid unit prices and estimated quantities.

Task: Consolidated Summaries (FC: 163)
For Roadway, Bridge and Traffic quantities, the Engineer shall prepare and submit work under this task in accordance to the PS&E Preparation Manual and other deemed necessary State approved manuals. All summaries shall be consolidated per CSJ, City or County participation, etc. In addition some summaries (Traffic Control Plan, SW3P, etc.) shall be consolidated if applicable according to each phases of sequence of construction. Any quantities shown "For Contractor Information Only" should be shown as such.

II. TRAFFIC CONTROL PLANS (TCP)

The Engineer shall contact the County and the States Project Manager prior to the 1st plan submission to address the approval of the Traffic Control Plan. The Engineer attends a meeting to make a presentation to the District Traffic Safety Review Team, DTSRT to obtain approval. At this time, the Engineer shall notify the State if they plan on requesting a speed reduction at the work zones. The Engineer shall prepare the request form using the latest approved Strip Map within the project limits in conjunction with the Traffic Standards for this request. If the project limits is within the city limits, the request shall be coordinated with the State and the local municipality at the early design process.

Prior to making a presentation to the DTSRT, the Engineer shall be responsible to advise County and State-Project Manager of any traffic control issues that may affect the design from any previous initial meetings. The plans shall address the Typical Sections, Phases Narrative, Phase Layouts, and Temporary Traffic Signals and Illumination for each respective phase.

The Engineer shall provide the County and the State with a hardcopy and accompanying electronic file of a schedule and Critical Path Method for project duration for each phase of construction using Primavera or SureTrack software.

Task: Phase Narrative (FC: 163)
The Engineer shall describe the type of work to be performed for each phase of sequence of construction and any special instructions (ex: storm sewer, culverts, bridges, railing, illumination, signals, retaining walls, signing, paving surface sequencing or concrete placement, ROW restrictions, utilities, etc.) that the contractor should be made aware to include limits of construction, obliteration, and shifting or detouring of traffic prior to the proceeding phase.

Task: Typical Sections (FC: 163)
The Engineer shall include the work limits, the location of channelizing devices, positive barrier, location & direction of traffic, work area, stations, pavement markings, and other information deemed necessary for each phase of sequence of construction.

Task: Phases Layouts (FC: 163)

If Engineer determines that a standard is not applicable to address the entire project, then the Engineer shall prepare layouts for each respective phase of sequence of construction to illustrate any necessary additional construction details not covered by the Standards to address work limits for each sequence in stations, channelizing devices, barricades, positive barrier, tapers, buffer zones, TCP signage, SIGNS, work zone pavement markings, work area, location & direction of traffic, locations for pedestrian crossings, and other information deemed necessary for each phase of sequence of construction. The Engineer shall develop the layouts by referring to the State's (TxDOT) standards, latest version of the TxMUTCD and the Sign Crew Field Book for non-TCP signage that may be needed as part of the TCP signage for intersections. The layouts shall address construction of detours, access to business, homes, side streets, and driveways, and reroute of traffic to other roads. In addition, the Engineer shall assure that drainage issues have been addressed as result of changes in horizontal and vertical profiles by specifying the location and size of the temporary drainage structures. The Engineer shall determine the hydrology and hydraulics in accordance the information shown on "V. DRAINAGE DETAILS". Show all necessary documentation required for "V. DRAINAGE DETAILS" on the traffic control plans as for Contractor information only. When using positive barrier, the engineer shall check for sight distance from adjacent roads and streets.

The Engineer shall prepare the plan and profile sheets and cross sections for all detours using the criteria established under "III. ROADWAY DETAILS, Task: Plans and Profile, Function Code: 160". These sheets and cross sections shall follow the phase layouts on the plans.

Task: Temporary Traffic Signals and Illumination (FC: 163)

If the Engineer determines that the existing traffic signal will be affected, then the adjustment/realignment of traffic signal heads and the use of detection for mainlanes and side streets shall be addressed on the plans. The Engineer shall obtain traffic movement counts to address any new timing plans to minimize the impact during construction and to determine the storage length needed for left and right turn movements. Lighting of signalized intersections shall be addressed.

Task: Standards (FC: 163)

The Engineer shall identify and insert, as frequent as feasible, all applicable, current State (TxDOT) standards. District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the State's Laredo District. The use of these details shall be approved during the early stages of design by the County and State's Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

The Engineer shall identify and insert all applicable State (TxDOT) standards preferably at all times. Standards that have not been approved for use in the State's Laredo District shall be signed, sealed, and dated by a Registered Engineer in Texas for use as details. Approval shall be requested at the early stage of the plan preparation from the Area Engineer regarding the use of these details. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

III. ROADWAY DETAILS

The Engineer shall design, prepare and submit the work under this section in accordance to the Roadway Design Manual, Hydraulic Design Manual, PS&E Preparation Manual, latest version of TxMUTCD and other deemed necessary State approved manuals. In addition, the Engineer should refer AASHTO, "A Policy on Geometric Design of Highways and Street" (2001- 4th Edition) when criteria is not identified on State manuals

The Engineer shall be responsible, at the early plan development stage, to inform the State of changes made from previous initial meetings regarding all exceptions, waivers, and variances that may affect the design. The Engineer shall cease all work under this task until the exceptions, waivers, and variances have been resolved between the Engineer and the State-Area Engineer, unless otherwise directed by the County and State to proceed.

Task: Alignment Sheets (FC: 160)
The alignment sheet(s) include the following for complex projects and/or where it is not desirable to show the following information on the plan and profiles sheet(s): include the project limits for the entire project, label curve date bearings/coordinates for each alignment, computer generated data may be graphically place on the sheet(s) and if applicable the State Plane Coordinates System should be noted on this sheet(s).

Task: Benchmark Data Sheet (FC: 160)
The Benchmark Data sheet shall be developed in tabulated form and accompanied by surveyor's sketch showing the Station Number from respective alignment, Offset, and Elevation and Physical Description.

Task: Plan and Profile (FC: 160)
The Engineer shall design the plan (horizontal) and profile (vertical) including roadway transitions based on the controlling criteria previously defined and as set forth in the previously listed. The Engineer shall develop the alignment for the project in GEOPAK format.

The Engineer shall identify and notify the County and State all locations not meeting the set criteria. In addition, the Engineer shall provide alternatives and a recommendation to address these design issues.

The Engineer shall verify the roadway's existing profile and plan, the superelevation transition lengths (according to the superelevation rate and distance between the axis of rotation and the edge of travel way), and all ponding areas.

The Engineer shall develop and verify all cross sections in preparation of the proposed traffic control plan, drainage, utilities, right-of-way, and access onto adjacent properties. In addition, the cross sections shall be drained to maintain the natural watershed unless otherwise directed by the County and the State.

The Engineer shall determine all cut and fill quantities.

Task: Slope Stability Design Foundation Studies (FC: 110)
The Engineer shall perform a global stability analysis on fill areas on bridge approaches and other areas where the height of fill is determined to be greater than 15 feet. No geotechnical investigations are to be initiated until the County and State has given the Engineer written approval. The Engineer shall prepare an engineering report showing all material testing locations, with a summary of all geotechnical investigations, project background, and a summary of recommendations.

Task: Intersection Details (FC: 160)
The Engineer shall design all intersections to accommodate the design vehicles turning radius. The ADA-wheelchair ramps shall be designed in accordance to the TDLR compliance and the latest TxDOT's Pedestrian Ramp Standards in conjunction with the requirement of the latest version of the TxMUTCD as it relates location of the traffic signals pedestrian heads, signage, and pavement markings. Also, the Engineer shall design all intersections in accordance to TxDOT's, "Regulations for Access Driveways to State Highways" or any approved latest version of the "Access Management Manual". In addition, the Engineer shall assure the location and verification of any storm sewer inlets, and utilities are not within pathway of the pedestrian element nor outside of the limitations of the right of away. In those instances where the Engineer has identified a variance for this task, the Engineer shall notify the County and the State immediately and cease any work further until this issue has been resolved between Engineer and the State-Area Office. The Engineer shall design the intersection by preventing the bottom of the vehicles to be wedged when accessing onto a street.

Task: Driveway Details (FC: 160)
The Engineer shall design all driveways in accordance TxDOT's, "Regulations for Access Driveways to State Highways", any approved latest version of the "Access Management Manual", and the State's Laredo District Standard Driveway Details. The Engineer shall notify the County and the States-Area Office at the early design process when a construction license agreement is needed to construct a portion of the driveway outside of the State's Right of Way. The Engineer shall design the intersection by preventing the bottom of the vehicles to be wedged when accessing onto an adjacent property.

Task: Miscellaneous Details, Etc. (FC: 160)
The Engineer shall design all longitudinal barriers (railing and guardrail), raised median, fencing, bus bays, parking areas, mailboxes, and shoulder texturing in accordance to the criteria set forth in the roadway design manual and standards. Miscellaneous Details Sheet(s) may be developed to illustrate any necessary additional construction details not covered by the Standards. Standards that have not been approved for use in the States Laredo District shall be signed, sealed, and dated by a

Registered Professional Engineer in Texas for use as details. Approval shall be requested at the early stage of the plan preparation from the Area Engineer regarding the use of these details. In addition as part of the approval process, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

Task: Standards (FC: 160)
The Engineer shall identify and insert all applicable TxDOT standards preferably at all times.

IV. WALL DETAILS

Task: Wall Layouts (FC: 163)
The Engineer shall refer to the Roadway Design Manual, PS&E Preparation Manual, Bridge Design Manual, Bridge Design Manual, Bridge Detailing Manual, Bridge Project Development Manual, Bridge Railing Manual, and other deemed necessary State approved manuals to prepare and submit the work under this task. Determine the location of soil boring needed for foundation design of the retaining walls located at

Shiloh Drive Overpass
Del Mar Blvd Overpass
University Blvd Overpass
Jacaman Rd Overpass
Laredo International Airport Entrance Overpass

in accordance to the Geotechnical Manual. Prior to preparation of retaining wall layouts, prepare a comparative cost analysis of different types of retaining walls versus roadway embankment/pavement/soil stabilization/retaining walls type/available ROW to determine optimum selection based on economics, construction time duration, ROW encroachments (need for construction easements) and construction feasibility. The Engineer shall submit early in the plan preparation the retaining wall layouts to obtain approval from State's Laredo-District and Bridge Division. All necessary information from above referenced manuals and respective checklists shall be incorporated into the retaining wall layouts. For stage construction, indicate limits of existing retaining walls for removal and reconstruction.

The approximate limits of the retaining wall are from Station or length. The Engineer shall notify the State the type of retaining walls that will be used for Cut and Fill locations.

Fill Walls:
Spread Footing-High Footing Pressure Design and Low Footing Pressure Design

The Engineer shall select a spread footing wall for fill situation when considerable room behind the walls is available for forming, constructing, and backfilling the footings and stem. The Engineer shall notify the State when the quantity is less than 1000 SF to have as option in the plans to cast in place a spread footing wall design. This selection has to be approved by the County and State.

Mechanically Stabilized Earth (MSE) Walls

The supplier shall perform the internal design of the wall. The Engineer shall prepare the retaining wall layouts showing plan and profile or retaining walls for design by State's approved vendor. The Engineer is responsible for design of geometry and wall stability. A slope of 4:1 or flatter shall be incorporated from the existing and finished ground line elevation to the face of the retaining wall.

Task: Standards (FC: 163)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current State's (TxDOT) standards. District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the

Laredo District. The use of these details shall be approved during the early stages of design by theCounty and State's Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

V. DRAINAGE DETAILS

The Engineer shall use the Roadway Design Manual, Hydraulic Manual, PS&E Preparation Manual, and other deemed necessary State approved manuals to prepare and submit the work under this section

Task: Drainage Area Maps (FC: 161)
The Engineer shall prepare a drainage area map for all the drainage areas for all culverts located within the project limits. The Engineer shall use the USGS Quad Maps to maintain the historical flow path or any other acceptable source that have to be approved by the State.

Task: Hydrology Calculations (FC: 161)
The Engineer shall use the above-listed manuals to prepare and submit the work under this task. The hydrology calculations shall have the following:

- Hydrological Method used
- Drainage Area Number to corresponding culvert number, Size of Drainage Area,
- Cover of existing (i.e. include percentage of each cover to arrive at C, or CN)
- Design Frequency based on the functional classification, type of roadway, and any other information noted on the Hydraulic Manual, Roadway Design Manual, or any other TxDOT literature and guidelines. Include the intensity and/or Precipitation for 24-hr rainfall. If using the US Regression Equations, the Engineer shall include the Stream Slope and Channel Length.
- Time of concentration (i.e. sheet flow, overland flow, & channel flow).

Task: Hydraulic Calculations (FC: 161)
The Engineer shall use the above-listed manuals to prepare and submit the work under this task. The hydraulic calculations shall have the following:

- Description-Material, Size, & Entrance(headwall)
- Design discharges, Flow per barrel, barrel slope, and Manning n-value
- Inlet flow line, allowable headwater, roadway (shoulder) elevation, calculated inlet headwater elevation
- Outlet flow line, Tailwater for design frequency/frequencies, type of flow, critical depth, and calculated friction losses, calculated outlet water elevation
- Controlling headwater elevation, outlet velocity, and recommended countermeasures to maintain an acceptable outlet velocity.

The Engineer shall design all ditches to assure the design discharge is capable of being contained within the size of the ditch and set depth and freeboard as indicated on the Roadway Design Manual, Hydraulic Manual, PS&E Preparation Manual and other deemed necessary State approved manuals.

Task: Culvert Layouts, Cross Sections, and Detail Sheets (FC: 161)
The Engineer shall use the above-listed manuals to prepare and submit the work under this task.

Task: Plan and Profile Sheet (FC: 161)
The Engineer shall use the above-listed manuals to prepare and submit the work under this task. The Engineer shall show the location of culverts and ditches on the roadway's plan view.

The Storm Sewer design shall have it owns plan and profile sheets. The Engineer shall use the above-listed manuals to prepare and submit the work under this task.

Task: Detention Basins (FC: 161)

The Engineer shall show location of detention basins, service area, inflow and outflow structures. Separate detention basin sheets shall be provided including plans and cross-sections, weir structure, and structural details. The Engineer shall determine the right-of-way required for off-site detention areas. Hydraulic data such as detention storage, water surface elevation, peak flows in and out of basin, and pipe velocities. For each outfall, a minimum of one detention basin will be assumed, however, a total of 20 are included for man-hour projection.

Task: Miscellaneous Details (FC: 161)
The Engineer shall use TxDOT standards preferably at all times. Modification to inlets, pipe connection, bedding details, and other elements pertaining to drainage details shall be include under this work task. The BCS sheet must be submitted for all box culverts within the project limits. This sheet must be signed and sealed by the Engineer.

Task: Standards (FC: 161)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current TxDOT standards. The States Laredo District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the Laredo District. The use of these details shall be approved during the early stages of design by the County and State's Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

VI. UTILITIES

Task: Existing and Proposed Utility (P&P) Layouts (FC: 130)
The utility relocation layout sheets are applicable when relocation of existing utilities will be included in the construction plans. Since these sheets will most likely be developed by either a local public agency or utility company, there are no recommended guidelines for the content. The preparation of these plans will be addressed by separate Work Authorizations.

Task: Standards (For each utility type) (FC: 130)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current TxDOT standards. The State's Laredo District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the Laredo District. The use of these details shall be approved during the early stages of design by the County and State's Project Manager/Area Engineer. In addition,

these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

VII. BRIDGES

The Engineer shall refer to the Roadway Design Manual, PS&E Preparation Manual, BRINSAP File, Bridge Design Manual, Bridge Detailing Manual, Geotechnical Manual, Bridge Project Development Manual, Bridge Railing Manual, and other deemed necessary State approved manuals to prepare and submit the work under this section.

Task: Bridge Hydraulic Data (FC: 161)

As part of the Bridge Hydraulic Data, the Engineer shall use the above-listed manuals, the Flood Insurance Study, "Guidelines for Specification for Study Contractors", and other deemed necessary State approved manuals to prepare and submit the work under this task. The Engineer shall analyze the existing outfall channel(s) outside ROW, design appropriate outfall channels, and determine appropriate bridge opening.

The hydrology calculations shall have the following:

- Hydrological Method used
- Drainage Area Number to corresponding culvert number, Size of Drainage Area,
- Cover of existing (i.e. include percentage of each cover to arrive at C, or CN)
- Design Frequency based on the functional classification, type of roadway, and any other information noted on the Hydraulic Manual, Roadway Design Manual, or any other TxDOT literature and guidelines. Include the intensity and/or Precipitation for 24-hr rainfall. The US Regression Equations may be used only as a check.
- Time of concentration (i.e. sheet flow, overland flow, & channel flow).

The hydraulic calculations shall have the following:

- Description-Material, Size, & Entrance(headwall)
- Design discharges, Flow per barrel, barrel slope, and Manning n-value
- Inlet flow line, allowable headwater, roadway (shoulder) elevation, calculated inlet headwater elevation
- Outlet flow line, Tailwater for design frequency/frequencies, type of flow, critical depth, and calculated friction losses, calculated outlet water elevation
- Controlling headwater elevation, outlet velocity, and recommended countermeasures to maintain an acceptable outlet velocity.
- The Engineer shall model the existing and proposed bridge structures with the 100 year design and discharge as determined from the Bridge Hydraulic Manual. For FEMA defined areas where a study exists, the Engineer shall use the 100 year discharge from the study to determine the impacts and make recommendations. The Engineer shall obtain and evaluate the study if available from FEMA. The Engineer shall make a recommendation to use HEC-2 or HEC-RAS for modeling. If a study does not exist, the Engineer shall utilize HECRAS.
- Perform scour analysis on the stream bridge foundation in accordance with TSEAS and/or HEC 18 guidelines.

The Engineer shall prepare a hydraulic report for stream crossing structures and for bridges, and bridge-class culverts handling flows greater than 200 cfs, along with the bridge layouts. The Engineer shall prepare a hydraulic study in cooperation with County and State, City of Laredo; Webb County, International Boundary Water Commission, and U.S. Army Corps of Engineer to assure their acceptance of completed plans. A separate report showing the results and conclusions of the study, signed, and sealed will be submitted to County and State for their approval before continuing with plan preparation relative to drainage for the project.

The hydraulic report should include the following:

- Introduction – Location, Existing, Proposed, & FEMA Participation (if participating separate on FEMA);
- Hydrology – Map Location, Drainage Area Size, Land Use, Hydrology Method, Comparison to other methods, & Conclusions with Frequency discharge table;
- Hydraulic - Hydraulic program used, Cross Section location, Starting water surface elevation, Tabular water surface profile (design and 100 year, i.e. natural w/o structures, existing, & proposed)
- Impact of proposed structure
- Scour Evaluations – Methods and assumptions. Perform scour analysis on the stream bridge foundation in accordance with TSEAS and/or HEC 18 guidelines.
- FEMA – Coordinate with local floodplain administrator and provide documentation.
- Appendix – Hydrology (inputs and outputs), Hydraulic (inputs and outputs).

Task: Bridge Layout (FC: 170)

The Engineer shall prepare all the bridge layout plan sheets. Determine the location of soil boring needed for foundation design of the bridges located at:

Del Mar Blvd
Jacaman Rd

in accordance to the Geotechnical Manual. Prior to preparation of bridge layouts, prepare a comparative cost analysis of bridge structures to determine optimum in bridge beams for vertical clearance (railroad/roadway/waterway). Prior to preparation of bridge layouts, prepare a comparative cost analysis of bridge structures versus roadway embankment/pavement/soil stabilization/retaining walls to determine optimum in bridge beams for the direct connectors. The Engineer shall submit early in the plan preparation the bridge layouts to obtain approval from the State's Laredo District and Bridge Division. All necessary information from above referenced manuals and respective checklist shall be incorporated into the bridge layouts to include bridge typical sections, structural dimensions, abutment and bent locations, superstructure and substructure types. Locate and plot all soil borings and utilities. Show proposed retaining walls. For stage construction, indicate limits of existing bridge for removal and reconstruction.

Task: Bridge Detail Summary (FC: 170)

The Engineer shall prepare bridge quantities, estimates and specifications in accordance to the above-listed manuals.

Task: Bridge Structural Details (FC: 170)
The Engineer shall refer to the above-listed manuals to prepare structural design and develop detailed structural drawings of all required details in an effort to submit the work under this task. Additionally, the Engineer shall perform the following tasks:

- Perform calculations for design of bridge abutments.
- Perform calculations for bridge slab design.
- Perform calculations to determine elevations of bridge substructure and super structure elements.
- Perform calculations for bridge box beam design.
- Prepare necessary foundation details and plan sheets.
- Prepare plan sheets for abutment design.
- Prepare plan sheets for additional abutment details.
- Prepare framing plan and slab plan sheets.
- Compute and prepare tables for slab and bearing seat elevations, dead load deflections, etc.
- Design beams and prepare beam design tables.
- Prepare Bridge Summary Sheet

Task: Bridge Design Foundation Studies (FC: 110)
The Engineer shall analyze the geotechnical information to determine appropriate soil bearing valves, and shall perform analysis calculations to determine appropriate foundation.

Task: Bridge Standards (FC: 170)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current State's (TxDOT) standards. The State's Laredo District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the State's Laredo District. The use of these details shall be approved during the early stages of design by the County and State's Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

VIII. TRAFFIC ITEMS

Task: Traffic Signal Layouts (FC: 162)
The Engineer shall prepare a traffic signal warrant study to support their recommendation for the continuous activation of an existing traffic signal and/or a proposed traffic signal based on projected volumes. This warrant study includes addressing pedestrian signals along with obtaining traffic and pedestrian counts as part of this scope.

The Engineer shall conduct an inventory of the existing intersection to verify the existing as-built plans for such items as existing controllers, poles, signal heads, pedestrian signals, detectors, radio units, antennas, and determination of conduit runs and existing cabling. An evaluation shall be made of all existing inventoried equipment.

The Engineer shall determine the applicable detection system and equipment, proposed controller hardware and software, and new conduit. Layouts shall be prepared showing all existing conditions limited to all above ground signal hardware, with limited emphasis on the existing conduits(s) cabling which may be impacted by the installation of communication and detection system. The layouts shall

also detail all proposed equipment required for the improvements such as controllers, detectors, radio units, antennas, conduit, cabling, etc. The proposed drawings shall identify all existing conditions (underground and above ground) and all traffic signal items associated with the installation.

The Engineer shall develop and include a timing plan into the plans.

All proposed traffic signal improvements shall be implemented within existing right-of-way.

The Engineer shall refer to latest version of the TxMUTCD, Traffic Signal Manual, Roadway (ramp) and Traffic Standards for work performed for either temporary or permanent traffic signals. The Engineer shall develop and include a timing plan.

Task: (Traffic Signals) Standards (FC: 162)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current TxDOT standards. The State's Laredo District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the State's Laredo District. The use of these details shall be approved during the early stages of design by the Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

Task: Illumination (FC: 163)
The Engineer shall refer to TxDOT's Highway Illumination Manual and other deemed necessary State approved manuals for design of continuous lighting and safety lighting for all conventional, high-mast, and underpass lighting. Safety lighting shall be included as part of the design on each flashing beacon and traffic signal. Preliminary layouts shall be provided for initial review and approval. Circuit wiring diagrams shall be prepared showing the number of luminaries on each circuit, electrical conductors, length of runs, service pole assemblies. Underpass lighting shall be used on all structure within this project. Any existing illumination within the project limits shall be coordinated with the proposed design. Coordinate with County; City of Laredo and State to determine the location of proposed high-mast, conventional, and underpass lighting.

Task: (Illumination) Standards (FC: 163)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current TxDOT standards. The State's Laredo District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the Laredo District. The use of these details shall be approved during the early stages of design by the Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

Task: Signing (FC: 162)
The Engineer shall inventory all signage through the project limits including those limits that are considered incidental to the project limits. All intersections and roadway signage shall be designed and spaced according to the requirements set forth in TxDOT's Sign Crew Field Book and standards for work under this task. Any signs no longer used by the State shall be taken out and replace by an

accepted TxMUTCD signs. The Engineer shall design all signage according to the latest version of the TxMUTCD, Supplemental to TxMUTCD, and TxDOT's Signs and Markings Manual.

Task: (Signing) Standards (FC: 162)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current TxDOT standards. The State's Laredo District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the State's Laredo District. The use of these details shall be approved during the early stages of design by the County and States Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

Task: Pavement Markings (FC: 162)
The Engineer shall refer to latest version of the TxMUTCD, Supplemental to TxMUTCD, TxDOT's Signs and Markings Manual, TxDOT's Sign Crew Field Book and standards for work under this task. For two lane roadways, the Engineer shall verify and bring to current the pavement markings for passing and no passing locations according to the TxMUTCD. The pavement markings at intersections shall be designed according to pedestrian locations as shown on the latest Ramp Standards and TxMUTCD.

Task: (Pavement Markings) Standards (FC: 162)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current TxDOT standards. The State's Laredo District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the State's Laredo District. The use of these details shall be approved during the early stages of design by the County and State's Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

Task: TMS (FC: 165) (Not Included in this Contract)
The Engineer shall develop ITS projects in accordance with State's Laredo District Integration System and networks. In addition, all hardware and network systems implementations shall be compliance with the State's Laredo District Traffic Management Center.

Task: (TMS) Standards (FC: 165) (Not Included in this Contract)
The Engineer shall identify and insert, as frequent as feasible, all applicable, current TxDOT standards. The State's Laredo District Standards and/or miscellaneous details that have been approved for use at other Districts shall be signed, sealed, and dated by a Registered/Licensed Engineer in Texas for use in the State's Laredo District. The use of these details shall be approved during the early stages of design by the County and States Project Manager/Area Engineer. In addition, these details shall be accompanied by the appropriate general notes, special specifications, special provisions, and method of payment.

IX ENVIRONMENTAL

Task: Storm Water Pollution Prevention Plans (SW3P) (FC: 161)

The Engineer shall submit and prepare SW3P sheets when soil is to be disturbed as part of the erosion control measures during each phase of the sequence of construction. The general plan for the SW3P on this project is to enclose the area under construction including existing and proposed inlets with erosion control devices and provide a stabilized construction entrances at points where traffic will be entering or leaving the construction site. The Engineer shall also design structures or features to control erosion and suspended sediments for post-construction. A standardized General Note will serve as the SW3P where there is to be no soil disturbance (seal coats, overlays, etc.) in the project. The Engineer shall refer to the Hydraulic Design Manual, TxDOT standards, TxDOT Storm Water Management Guidelines, the Environmental Manual, and District Environmental Staff for guidance on work under this task. Erosion Control measures shall conform to one or more of the approved TxDOT / Texas Natural Resources Conservation Commission (TNRCC) / US Environmental Protection Agency (EPA) / US Army Corps of Engineers (USACE) Best Management Practices. The appropriate Best Management Practice(s) shall be listed on the Environmental Issues, Permits, and Commitments (EIPC) sheet to be included as a Plan Sheet and shall be followed by the Engineer and Contractor to completion.

Task: Sensitive Areas (FC: 161)

Sensitive areas shall be delineated by the Engineer's; County and/or State's District and/or Division Environmental Staff and any Avoidance, Minimization, and/or Compensation actions and shall be described on the EIPC sheet, which shall be included as a Plan Sheet. Sensitive areas may require coordination with other agencies, including USACE, EPA, US Fish & Wildlife Service (USFWS), FHWA, TNRCC, Texas Historical Commission (THC), and Texas Parks & Wildlife Department (TPWD). Actions described on the EIPC, other Plan Sheets, or General Notes, shall be followed to completion by the Engineer and Contractor. Special consideration may be required for impacts on Water Resources, Biological Resources, Noise, Archeological Resources, Historical Resources, and Public Involvement. Further guidance and considerations can be found in the Environmental Manual and from the District Environmental staff.

Task: Wetland Mitigation Plan (FC: 161) (Not Included in this Contract)

Wetland Mitigation Actions shall be delineated and described by the Engineer's; County and/or State's District and/or Division Environmental Staff and will require coordination with the USACE, and/or EPA, TNRCC, USFWS, or TPWD. Any Avoidance, Minimization and/or Compensation actions shall be described on the EIPC sheet as well as Plan Sheets specific to the wetland site. Actions described on the EIPC, any other Plan Sheets, or General Notes specific to the wetland site shall be followed to completion, under penalty of law, by the Engineer and Contractor. Presently there are no wetland mitigation areas; if required the Engineer will be compensated separately by Work Authorizations.

X. MISCELLANEOUS

Task: SW3P (FC: 161)

The Engineer shall prepare and submit this work under this task in accordance to the PS&E Preparation Manual and other deemed necessary State approved manuals.

1. Roadway Details
2. The Engineer shall describe the Erosion Control Devices to be used in the project.

Task: Landscaping/Irrigation (FC: 161)
The engineer shall perform the following tasks under this item:

- Develop concepts based on the design from the Laredo Aesthetics Manual and Landscape. For location of property, the Engineer shall determine sight distance, clear zone, and design parameters in accordance with the Roadway Design Manual. The engineer shall also attend scheduled meetings at the State's Laredo District Office.

- The engineer shall attend and present landscape concepts for approval and selection by the State's Laredo District Aesthetics Review Committee.

- Revise and finalize conceptual drawing from the State's Laredo District Aesthetics Review Committee and forward to the Roadway/Bridge Design Engineer for incorporation into the respective plan sheet.

- For vegetation items, the Engineer/Architect shall prepare quantities, general notes, special provisions,

Task: Aesthetics
(FC: 163)
Prepare and submit plan sheets based on concepts submitted by the State. Aesthetics may involve retaining walls, ground plan treatment, as well as, plant design, irrigations systems, and lighting systems.

XI. CROSS SECTIONS

Task: Cross Sections (FC: 160)
The Engineer shall submit preliminary cross sections as part of traffic control layouts for review and approval of the proposed traffic control plans by the State's Traffic Control Safety Review Committee. Two rolls of cross sections shall be included with each submittal for review. The design cross - sections shall indicate the slope rate on the side slopes and shall be included at the end of the plans following "X Miscellaneous". The Engineer shall use GeoPak software and provide the State with the applicable files.

ELECTRONIC FILE DELIVERABLES

The Engineer shall forward to the County and the State, three (3) sets of CD/DVDs or an external hard drive with all the files containing the information and layouts used to prepare the PS&E.

Each CD/DVD shall be labeled and include the following:

- CSJ
- County

- Highway
- Date of the CD Burn
- INTERIM (in 1" letters) Note: As-built shall specify FINAL
- Volume sequence (ie. Disk 1 of 3)

Each CD/DVD created shall have the standard directory structure, as follows:

CSJ_DIR Structure (XXXXXXXX)
- ADV PLAN
  - ENV
  - PROJ COORD
  - ROW
    - Field Notes
    - Maps
    - Plats
    - Utility-SUE
  - SCHEMATIC
    - Final
    - Preliminary
- SURVEY
  - Construction
  - Design
- CONSTR
  - CHG ORDERS
  - P3-SCH
    - Construction
    - Design
- CORRESPONDENCE
  - ADV PLAN
  - CONSTR
  - DESIGN
  - ENV
  - ROW
    - Division
    - Owners
    - SUE
  - UTILITIES
    - AEP-Electric
    - Center Point-Gas
    - City-Waste Water
      - Eng-Firm
    - City-Water
      - Eng-Firm
    - Laredo MPO
    - Medina Coop-Electric
    - Other

- SBC-ATT
- Sponsor Agency
- Time Warner-Cable
- TxDOT-TMS

DESIGN
- BatchPlot
- Bridge
- Drainage
- Estimate
  - Preliminary
  - Final
- General
- GeoPak
- Misc
- Pavmt Design
- PS&E
- REF Files
- Roadway
  - Driveways
- Standards
  - Bridge
  - Drainage
  - Illumination
    - Elec
  - Pavmt Markers
  - Retain Walls
  - Roadway
  - Signing
  - SW3P
  - TCP
  - TMS
  - Traff Signals
- Summaries
  - Excel
- TCP
  - Phase I
  - Phase II
- Traffic
- Walls
- Xsec

DOCUMENTS
MSTN_File Structure
OLD FILES

A "readme" file should be created and placed under the "documents" subdirectory. The readme file should be composed of the minimum directory structure detailed above and modified to list particular

files that are contained under the various subdirectories. This information will guide the end user to the location of particular files. In addition to the file information, the readme file should contain the general project information such as the CSJ, Limits of Construction, and Type of Improvements.

All CADDSEALS placed on finished documents are to remain on that document. Do not remove CADDSEALS. The file naming convention will be as shown below. Not all plan sets will have all of the listed sheets.

Sheet File Type Naming Convention

Title Sheet *TTL*.DGN
Supplemental Index *INDX*.DGN
General Notes & Spec. Data *GNOT*.DGN
Estimate & Quantities *E&Q*.DGN
Consolidated Summaries *SUM*.DGN
Project Layout *PRJLO*.DGN
Typical Sections *TYP*.DGN
Traffic Control Plans *TCP*.DGN
Horizontal Alignment Data *HAD*.DGN
Bench Mark Data *BM*.DGN
Table of Cross Slopes *CS*.DGN
Plan & Profile Sheets *PP*.DGN
Landscape Sheets *LAND*.DGN
Irrigation Sheets *IRRI*.DGN
Detail Sheets (any) *DET*.DGN
Drainage Area Maps *DA*.DGN
Hydraulic Data Sheets *HD*.DGN
Storm Sewer Plan & Profiles *SS*.DGN
Culvert Cross Sections *CUL*.DGN
Water Quality Facilities *WQ*.DGN
Retaining Wall Sheets *RET*.DGN
Bridge Layouts *BR*.DGN
Bridge Quantities/Bearing Seat Info *BRQUAN*.DGN
SW3P Info Sheet *SW3P*.DGN
Erosion Control (Temp & Perm) *EC*.DGN
Signing Layouts *SIGN*.DGN
Pavement Markers (incl. Delineation) *PMLO*.DGN
Signalization Sheets *SIG*.DGN (including electrical service sheets)
Illumination Sheets *ILLI*.DGN (including electrical service sheets)
Roadway Cross Sections *XS.DGN
Master Design File *MDF.DGN
Alignment File *ALN*.DGN

Where an "*" (wildcard) appears in the filename, the user is free to describe the file as they see fit as long as the required.

DELIVERABLES

II. PHASE II - RIGHT OF WAY SERVICES (By TxDOT)

The Engineer shall deliver to the County and the States Project Manager assigned by the County and State ten (10) copies and all electronic data for the work associated with the Subsurface Utility Engineering.

II. PHASE IIA- SPECIAL SERVICES

The Engineer shall deliver to the County and the States Project Manager assigned by the County and State ten (10) copies and all electronic data for the traffic signal warrant study to support their recommendation for the continuous activation of an existing traffic signal or a proposed traffic signal based on projected volumes. Each warrant study shall include addressing pedestrian signals along with obtaining both traffic and pedestrian counts and a timing plan.

III. PS&E DELIVERABLES

The Engineer shall deliver to the County and State's Project Manager assigned by the County and State ten (10) copies of the 1st and 2nd and final submittal. For the final submittal, the Engineer shall submit one set in Mylar accompanied by a paper copy. The Engineer shall develop an Exhibit C, Work Schedule for all project submissions.

I. 1st PS&E Submittal
   A. Approved (signed form) Design Summary Report
   B. Title Sheet
   C. Typical Sections (existing and proposed)

   D. Traffic Control Plan
   E. Plan & Profile
   F. Alignment Data Sheet, if applicable
   G. Benchmark Data Sheet, if applicable
   H. Vertical Alignment (existing and proposed)
   I. Horizontal Alignment (existing and proposed)
   J. Design Exceptions/Waivers/Variance-Identified
   K. Hydrological Drainage Area Map
   L. Utility Layout (conflicts identified)
   M. Bridge Layouts (including bridge class structures)
   N. Miscellaneous Details
   O. Corresponding Quantity Summary Sheets
   P. Corresponding Standard Detail Sheets for all Items of Work in this submittal
   Q. Preliminary Estimate
   R. Newly created Special Provisions/Specifications to be used (Form 1814)
   S. Applicable General Notes
   T. Applicable Pay Items
   U. R.O.W. (issues identified)
   V. FEMA coordination, status if required

W. Draft Hydraulic Report
X. Draft Geotechnical Report
Y. Draft Traffic Studies Report
Z. Surveying Information

II. 2nd PS&E Submittal - The 60% PS&E submission includes updates from the previous submissions and the following:

A. Index Sheet
B. Hydrologic Computation Sheets
C. Hydraulic Data Sheets
D. Drainage Area Maps
E. Drainage Plan & Profile
F. Drainage Structure Details
G. Storm Sewer Details
H. Storm Water Pollution Prevention Plan
I. Bridge Details
J. Railroad Exhibit A
K. Retaining Walls
L. Miscellaneous Details (EPIC Sheet)
M. Corresponding Quantity Summary Sheets
N. Corresponding Standard Detail Sheets for all Items of Work in this submittal
O. Updated General Notes
P. Updated Estimate
Q. Utility Adjustment/Relocation Details
R. R.O.W. Acquisition Detail
S. 2 Rolls of Cross Sections
T. District Design Review Team, DDRT Form
U. District Traffic Safety Review Team, DTSRT Form
V. Hydraulic Report
W. Geotechnical Report
X. Traffic Studies Report
Y. Submit 3 CDs/DVD for 60% submission in PDF format including general notes and proposed bid items. Plan Sheets will have watermark indicate a "60% PS&E" on every plan sheet.

III. 3rd S&E Submittal –The 90% PS&E submission includes updates from the previous submissions and the following:

a. Final Index of Sheets
b. Pavement Marking Layout/Details
c. Signalization (existing and proposed)
d. Illumination
e. Traffic Management Items
f. Miscellaneous Details
g. Corresponding Quantity Summary Sheets
h. Corresponding Standard Detail Sheets for all Items of Work in this submittal
i. Cross Sections (1 set) (Paper or disk/CD format)

j. Estimate(DCIS)
k. General Notes
l. Certifications
m. Form 1002
n. Specification List (DCIS)
o. New Special Provisions & Special Specifications. If required, include Form 1814.
p. Contract Time Determination
q. Request for Construction Speed Zone. If required, include Form 1204 with District Engineer approval or a copy of the county or city ordinance.
r. Third Party Agreements - If required (not included in this scope. If required; will be by separate Work Authorization)
s. Airway-Highway Clearance
t. List of any commitments made during the Public Involvement Process

IV. Final PS&E Submittal - (Mylar sheets)

d. PS&E Package 100% complete
Four Months prior to letting. **(General Notes and supporting PS&E paper work to be provided under separate supplemental work authorization)**
e. Submit the following signed TxDOT Forms: Form 1828, "Information Security Compliance Agreement" and Form 1980, "Request for External Access to TxDOT information Systems", which are required to grant access to the engineer to the department's mainframe system for purpose of signing and sealing the project's specifications.
f. Construction in Excel format (See attached example –shown on Exhibit "A" – Services to be provided by the State, Item K)
g. Form 1002
h. General Notes
i. Special Specifications and Special Provisions with a completed Form 1814 in TxDOT format
j. (2) each signed and sealed Specification Certifications
k. Utility, ROW Encroachment, ROW Acquisition, ROW Relocation Certifications – (3) originals of each signed and sealed.
l. Special Specifications, Special Provisions and applicable reference items to all items involved in the PS&E in Excel spreadsheet format ((See attached example –shown on Exhibit "A" – Services to be provided by the County and State, Item K)
m. Construction CPM Schedule
n. It suggested that the Engineer follow these steps to assure a proper submission of the Engineer's estimate.

- The Engineer shall download the latest 2004 English Descriptive Codes from the TxDOT website prior to commencing to generate the Engineer's estimate, this is to assure that the proper Item and Descriptive Codes as required by DCIS are being used.
- The Engineer shall upload the Engineer's estimate to State's Mainframe (DCIS) upon 100% submittal.
- The Engineer shall verify the "Unit Bid" prices for each of the items on the estimate by checking the district wide unit bid prices on the State website, if a particular item has not been used in this State's Laredo District, the Engineer shall check a neighboring State

district for the use of the item, or if that is unsuccessful, the Engineer shall refer to the State's statewide unit bid averages.

- The Engineer shall breakout all items for every bridge or bridge class culvert per bridge or bridge class culvert. This means all bridge items shall be coded correctly by having every bridge or bridge class culvert item coded with a B1, B2, B3, etc. as a suffix on the Estimator input. Example: All bridge items for bridge #1 shall have a B1 suffix in the description. The same would be done for all other subsequent bridges or bridge class culverts in the estimate.
- The Engineer shall submit a Microsoft Excel® Spreadsheet that specifies the required special provisions and reference items that are required for each of the standard specifications and or special specifications used on the project estimate.
- The Engineer shall verify the required special provisions and reference items for each item by checking the 2004 Special Provisions Required Checklist and 2004 Specification Guidelines, which are available on the TxDOT website.

SCOPE AND FEE SCHEDULE ASSUMPTIONS

DRAINAGE (FC 161):

1. Wetland Mitigation will not be required
2. Sensitive Areas Investigation will not be required
3. Preparation of a Wetland Mitigation plan will not be required

ROADWAY:

1. Txdot/County will provide all design working files in Microstation format for all plans of existing roadways. Txdot/County will provide all electronic files of computer runs (actual working data) of Winstorm for existing drainage
2. Sheet count (number of sheets) for PS&E Plan and Profile and Retaining Wall was determined by TxDOT and is assumed to be correct. If sheet count increases it will be determined to be a change in scope and the Engineer will be eligible for increase in fee.
3. Assume no schematic changes will be required after commencing PS&E; if changes occur, Engineer will require additional fee
4. No Traffic Management System design is required
5. Pavement design is to be done by TxDOT
6. Assume three (3) phases for traffic control plan, no intermediate sub-phases within the 3 phase traffic control plan will be required. If additional phases or sub-phases are needed, Engineer will require additional fee as this will be deemed a scope change.
7. Cross sections to be provided on roll plots and not on plan sheets
8. Raised Median design is not required
9. Fencing design is not required
10. Bus Bay design is not required
11. Parking Areas design is not required
12. Landscaping/Irrigation design is not required

13. Aesthetic details design is not included, design is to be provided by TxDOT
14. No ITS design is included in the scope of the contract.
15. All Survey, ROW and Parcel Maps Shall be provided by the state.

RIGHT OF WAY: (To Be Performed By TxDOT)

1. SUE: Quantity of test holes is assumed as 15 locations per overpass, 32 for detention pond, and 5 per mile to cover other locations
2. SUE: Precise test hole location recommendations to be made by Client. Existing utility records are to be provided to RODS SUE for use in locating utility in field.
3. RODS SUE will only bill for actual test holes performed to depth of hole.
4. SUE Quality Level A rates are inclusive of any/all associated costs for QL B designation to pinpoint utility at requested location, vacuum excavation, engineering and CADD to create signed and sealed test hole data sheets.
5. RODS SUE will serve as a vacuum excavation consultant.
6. RODS SUE will require test hole placement by client and utility records to assist in locating the utilities via electromagnetic designation. Utilities that cannot be located via electromagnetic methods may require an additional labor charge.
7. Test holes will be excavated and backfilled to TxDOT standards
8. All Utility Data for the SUE investigations shall be provided by the state.

Note: Red Font Indicates Task Not Included

Attachment E

Supplemental Agreement No. 9 to Main Contract

Summary of Detailed Fee Schedule – Phases II, III Supporting Lump Sum Calculations – SA No. 9 to Main Contract Develop PS&E for the Extension of Loop 20, Jacaman Overpass (Sta. 219+25.62 to Sta. 257+42.91) and & Del Mar Overpass (Sta. 319+65.24 to Sta. 362+56.18) - Including Associated Off-Site Detention Ponds And Warrant and Illumination Studies From US 59 to International Blvd. (Sta. 115+85.40 to Sta. 484+35)
(Revised 10-19-2017)

CSJ: 0086-14-058

ATTACHMENT E

SUMMARY OF DETAILED FEE SCHEDULE - PHASES II,III SUPPORTING LUMP SUM CALCULATIONS

SA NO. 9 TO MAIN CONTRACT

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASES II & III - SUMMARY

Develop PS&E for the Extension of Loop 20, Jacaman Overpass (Sta. 219+25.62 to Sta. 257+42.91) and & Del Mar Overpass (Sta. 319+65.24 to Sta. 362+56.18) - Including Associated Off-Site Detention Ponds And Warrant and Illumination Studies From US 59 to International Blvd. (Sta. 115+85.40 to Sta. 484+35)

From US 59 TO INTERNATIONAL

DANNENBAUM ENGINEERING CO.

PHASES SUMMARY

PHASES II & III - SUMMARY									$3,358,680.08	
	PRIME		DBE		DBE					
PHASE	Dannenbaum Engineering Corporation								TOTAL HOURS AND FEE	
	Hrs	Fee	Hrs	Fee	Hrs	Fee	Hrs	Fee	Hrs	Fee
PHASE II - ROW/UTILITY SERVICES (US 59 TO INTERNATIONAL) (TO BE PERFORMED BY TXDOT)									-	$ -
PHASE IIA - SPECIAL SERVICES (TRAFFIC WARRANT STUDY & ILLUMINATION STUDY)	943	$ 124,402.43							943	$ 124,402.43
PHASE III - PS&E SERVICES (JACAMAN AND DEL MAR OVERPASSES WITH TRANSITIONS TO EXISTING)	22444	$ 3,234,277.65							22,444	$ 3,234,277.65
Total	23387	$ 3,358,680.08	0	$ -	0	$ -	0	$ -	23,387	$ 3,358,680.08
Percent Participation	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	100.00%

% PARTICIPATION :			
NON-DBE	$	3,358,680.08	100.00%
DBE	$	-	0.00%
TOTAL	$	3,358,680.08	100.00%

Rdwy & Bridge(Jacaman/DelMar Overpasses) CC =	$40,000,000.00
5 Detention Ponds/Storm Sewer/Channel Excav CC =	$10,000,000.00
Total CC =	$50,000,000.00
PH III PS&E Services Fee:	$3,234,277.65
PH III PS&E ENG Fee % of Total CC =	6.717%

Attachment E-2

Supplemental Agreement No. 9 to Main Contract

Detailed Fee Schedule – Phase II, III Supporting Lump Sum Calculations – SA No. 9 to Main Contract Phase IIA – Traffic Warrant Study Illumination Study Special Services US 59 to International (Sta. 115-85.40 to STA 484+35)
(Revised 10/19/2017)

CSJ: 0086-14-058

ATTACHMENT E-2
SUMMARY OF DETAILED FEE SCHEDULE - PHASES II,III SUPPORTING LUMP SUM CALCULATIONS
SA NO. 9 TO MAIN CONTRACT

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE IIA - TRAFFIC WARRANT STUDY & ILLUMINATION STUDY

SPECIAL SERVICES

US 59 TO INTERNATIONAL (STA 115+85.40 TO STA 484+35)

DANNENBAUM ENGINEERING CO.
PHASE IIA SUMMARY

PHASE IIA - TRAFFIC WARRANT STUDY & ILLUMINATION STUDY SUMMARY BY FUNCTION CODES

Total Phase II Services = $124,402.43

	PRIME		DBE		DBE			
Function Codes	**Dannenbaum Engineering Corporation**				**RODS, SUE, Inc.**		**Grand Total PHASE IIA SUMMARY**	
	Hrs	**Fee**	**Hrs**	**Fee**	**Hrs**	**Fee**	**Hrs**	**Total**
FC 110 Route and Design Studies	943	$ 124,402.43						$ 124,402.43
DIRECT EXPENSES								$ -
Total	**943**	**$ 124,402.43**	**0**	**$ -**	**0**	**$ -**	943	$ 124,402.43
Percent Participation		**100%**		**0%**		**0%**		**100.00%**

ATTACHMENT E-2
SUMMARY OF DETAILED FEE SCHEDULE - PHASES II,III SUPPORTING LUMP SUM CALCULATIONS
SA NO. 9 TO MAIN CONTRACT

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - PLAN, SPECIFICATIONS AND ESTIMATE SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associate Off-Site Detention Ponds Jacaman Overpass and Del Mar Overpass and Transitions from and to Existing Roadway

DANNENBAUM ENGINEERING CO.
PHASE III SUMMARY

PHASE III - PLAN, SPECIFICATIONS AND ESTIMATE SERVICES SUMMARY BY FUNCTION CODES — **Total Phase III Services = $3,234,277.65**

DANNENBAUM ENGINEERING CO.

Function Codes	Jacaman Overpass		Del Mar Overpass		Grand Total	
	Hrs	Fee	Hrs	Fee	Hrs	Total
FC 130 Right of Way Data	55	$ 7,331.55	49	$ 6,443.42	104	$ 13,774.97
FC 160 Roadway Design Controls	1043	$ 134,285.61	748	$ 96,813.90	1791	$ 231,099.50
FC 161 Drainage (Roadway)	781	$ 102,444.80	771	$ 100,928.83	1552	$ 203,373.63
FC 161 Drainage(SW3P)	290	$ 37,973.12	286	$ 37,824.54	576	$ 75,797.66
FC 161 Drainage (Offsite Detention Ponds)	2535	$ 348,527.54	1573	$ 216,593.96	4108	$ 565,121.50
FC 162 Signing, Pavement Markings, Signalization	611	$ 78,363.02	591	$ 76,293.07	1202	$ 154,656.09
FC 163 Miscellaneous (Roadway)(General)	2944	$ 384,115.87	2864	$ 373,913.54	5808	$ 758,029.41
FC 163 Miscellaneous (Roadway)(Retaining Wall)	338	$ 44,013.81	257	$ 33,024.07	595	$ 77,037.88
FC 163 Miscellaneous (Roadway)(Illumination)	220	$ 29,326.20	220	$ 29,326.20	440	$ 58,652.40
FC 163 Miscellaneous (Roadway)(Cross Sections)	121	$ 16,199.66	122	$ 16,212.89	243	$ 32,412.55
FC 164 Project Management (All Projects)	1352	$ 273,359.99	1352	$ 273,359.99	2704	$ 546,719.97
FC 170 Bridge Design	1667	$ 236,487.47	1654	$ 234,973.90	3321	$ 471,461.37
FC 161 DIRECT EXPENSES		$ 8,250.00		$ 30,500.00		$ 38,750.00
FC 164 DIRECT EXPENSES		$ 3,713.36		$ 3,677.36		$ 7,390.72
Total	**11957**	**$ 1,704,391.99**	**10487**	**$ 1,529,885.66**	**22444**	**$ 3,234,277.65**
Percent Participation		**52.70%**		**47.30%**		**100.00%**

PHASE III GRAND TOTAL = $3,234,277.65

PHASE IIA - SPECIAL SERVICES - TRAFFIC WARRANT STUDY & ILLUMINATION STUDY

(US 59 TO INTERNATIONAL)

DANNENBAUM ENGINEERING CO.

MAXIMUM AMOUNT PAYABLE
LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)
PHASE IIA - SPECIAL SERVICES
Develop - TRAFFIC WARRANT STUDY & ILLUMINATION STUDY For the Extension of Loop 20
US 59 TO INTERNATIONAL (STA 115+85.40 TO STA 484+35)

DANNENBAUM ENGINEERING CO.
PHASE IIA

SPECIAL SERVICES STUDY SERVICES TASK DESCRIPTION	Principal/PM	DEPUTY PM	Senior Engineer-Civil	Senior Engineer-Bridge	Engineer	Senior Designer	CADD Operator/Tech	Clerical	Total Labor Hrs.	Task Cost
FC 110 - ROUTE AND DESIGN STUDIES										
SCOUR ANALYSIS: EAST BOUND FRTG RD 3-LANE BRIDGE (AT APPROX STA 124+50 - 127+30)										
SCOUR ANALYSIS & REPORT				22	43	43	35	4	147	$ 18,406.35
SUB-TOTAL - FC 110 - ROUTE AND DESIGN STUDIES - SCOUR ANALYSIS: EAST BOUND FRTG RD 3-LANE BRIDGE (AT APPROX STA 124+50 - 127+30)	0	0	0	22	43	43	35	4	147	$ 18,406.35
FC 110 - ROUTE AND DESIGN STUDIES (AIRPORT, JACAMAN, UNIVERSITY, DEL MAR, & SHILOH)										
TRAFFIC WARRANT STUDIES										
PERFORM TRAFFIC SIGNAL WARRANT STUDY (W/EXHIBITS)			12		19	9	49		89	$ 10,264.03
ANALYZE INCORPORATION OF PEDESTRIAN / BICYCLE FACILITIES WITHIN PROJECT LIMITS (COORDINATION INCLUDED)			9		19	9	19		56	$ 7,084.33
FINAL REPORT & RECOMMENDATIONS										$ -
PREPARE TRAFFIC ANALYSIS REPORT & EXHIBITS (INCLUDING SUMMARY OF ALL TRAFFIC ENGINEERING TASKS)	10		39		43	9	49		150	$ 22,801.99
SUB-TOTAL - FC 110 - ROUTE AND DESIGN STUDIES (AIRPORT, JACAMAN, UNIVERSITY, DEL MAR, & SHILOH)	10	0	60	0	81	27	117	0	295	$ 40,150.35
FC 110 - ILLULMINATION STUDIES (US 59 TO INTERNATIONAL)										
CONDUCT ILLUMINATION STUDY / CONTOURS (W/EXHIBITS)			15		47	30	86		178	$ 19,965.77
FINAL REPORT & RECOMMENDATIONS									0	$ -
PREPARE TRAFFIC ANALYSIS REPORT & EXHIBITS (INCLUDING SUMMARY OF ALL TRAFFIC ENGINEERING TASKS)	10		41		59	9	54		173	$ 25,783.63
BICYCLE AND PEDESTRIAN ACCOMMODATIONS									0	$ -
INCORPORATE SAFE AND CONVENIENT WALKING AND BICYCLING FACILITIES	10		13		49	39	39		150	$ 20,096.33
SUB-TOTAL - FC 110 - ILLULMINATION STUDIES (US 59 TO INTERNATIONAL)	20	0	69	0	155	78	178	0	501	$ 65,845.73
TOTAL DIRECT EXPENSES (FROM BELOW)										$ -
SUBTOTAL SPECIAL SERVICES TRAFFIC WARRANT STUDY & ILLUMINATION STUDY	30	0	129	22	279	148	331	4	943	$ 124,402.43
HOURS SUB-TOTALS	30	0	129	22	279	148	331	4	943	
LABOR RATE PER HOUR	$ 327.93	$ 236.07	$ 225.50	$ 225.50	$ 132.09	$ 106.64	$ 83.44	$ 64.89		
DIRECT LABOR COSTS	$ 9,837.90	$ -	$ 29,089.50	$ 4,961.00	$ 36,853.11	$ 15,782.72	$ 27,618.64	$ 259.56	$ 124,402.43	
TOTAL	$ 9,837.90	$ -	$ 29,089.50	$ 4,961.00	$ 36,853.11	$ 15,782.72	$ 27,618.64	$ 259.56	$ 124,402.43	
PERCENT LABOR UTILIZATION FOR TOTAL PROJECT (BASED ON FEE)	7.91%	0.00%	23.38%	3.99%	29.62%	12.69%	22.20%	0.21%	100.00%	CHECK
PERCENT LABOR UTILIZATION FOR TOTAL PROJECT (BASED ON MANHOURS)	3.18%	0.00%	13.68%	2.33%	29.59%	15.69%	35.10%	0.42%	100.00%	$ 124,402.43
DIRECT EXPENSES										
PER DIEM - $121 /NIGHT STAY X 2 PERSON X 6 NIGHT ($85 hotel/$36 meals)										
DELIVERY SERVICES - $50 / PACKAGE X 4 PACKAGES										
MILEAGE 10 TRIP x 286 MI / TRIP @ $0.565/mile										
TOTAL DIRECT EXPENSES										$ -
GRAND TOTAL - PHASE IIA - SPECIAL SERVICES										$ 124,402.43

PHASE III - BASIC PS&E SERVICES

(JACAMAN & DEL MAR OVERPASSES INCLUDING TRANSITIONS TO EXISTING ROADWAY)

DANNENBAUM ENGINEERING CO.

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

PS&E Project Management: Jacaman Overpass and Del Mar Overpass and Transitions from and to Existing Roadway

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
		FC 164 - PROJECT MANAGEMENT (FC 160 TO FC 190) (PS&E SERVICES) (18 MONTHS) (JACAMAN OVERPASS AND DEL MAR OVERPASS AND TRANSITIONS FROM AND TO EXISTING ROADWAY)(ADDITIONAL FEE REQUIRED IF MORE THAN 18 MONTHS)										
		PREPARE/MANAGE WORK AUTHORIZATIONS (PS&E DEVELOPMENT) (INCLUDING RECORD KEEPING, FILING, ADMINISTRATION, ETC) AND OVERALL QA/QC	78	97			11			194	380	$ 62,518.98
		SCHEDULE & ATTEND WORK AUTHORIZATION DEVELOPMENT MEETINGS									0	$ -
		COORDINATION/PREPARE SUB WORK AUTHORIZATIONS/MANAGE SUBCONSULTANTS	11	14	17					65	107	$ 14,963.56
		PREPARATION OF INVOICES AND PROGRESS REPORTS (TOTAL = 18 EA)	17	58	28					27	130	$ 27,332.90
		SCHEDULE & ATTEND PRE-DESIGN MEETING (TOTAL= 1)	11	12			13			11	47	$ 8,871.03
		SCHEDULE & ATTEND TRAF SAFETY REVIEW MEETING (TOTAL= 1)	11	12			11				34	$ 7,893.06
		SCHEDULE, ATTEND AND PREPARE MINUTES FOR 18 MONTHLYPROGRESS MEETIN	130	130	130		140			38	568	$ 123,593.42
		RESEARCH / REVIEW EXISTING PLANS & DATA								0	0	$ -
		PREPARE PROJECT SCHEDULE (UPDATE TWICE)	2	16	16			11	11	6	62	$ 10,521.20
		PREPARE & ASSEMBLE PRELIMINARY COST ESTIMATES (1 @ 60% AND 1 @ 100%)		2	2	6	43	43		6	102	$ 12,930.87
		CONDUCT SITE VISIT OF PROJECT AREA (1 SITE VISITS)		11			11			1	23	$ 4,114.65
		ATTEND MONTHLY MPO MEETINGS (18)	16	146						46	208	$ 42,698.04
		ATTEND/UPDATE COMMISSION CONSTRUCTION MEETING (4)	32	32	32					15	111	$ 26,237.35
		MEET WITH STATE PARK OFFICIALS (4)	32	32	32					15	111	$ 26,237.35
		MEET WITH COUNTY ON GOLF COURSE (2)	16	16	16					7	55	$ 13,086.23
		MEET WITH CITY/AIRPORT OFFICIALS (4)	32	32	32					15	111	$ 26,237.35
		MEET WITH UTILITY COMPANIES	8	35	35					17	95	$ 19,881.52
		QC/QA - OVERALL 30% SUBMITTAL (1 SUBMITTAL)	8	35		22				2	67	$ 15,976.67
		QC/QA - OVERALL 60% SUBMITTAL (1 SUBMITTAL)	11	71	45	36				2	165	$ 38,763.48

ATTACHMENT E-2
SUMMARY OF DETAILED FEE SCHEDULE - PHASES II,III SUPPORTING LUMP SUM CALCULATIONS
SA NO. 9 TO MAIN CONTRACT

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

PS&E Project Management: Jacaman Overpass and Del Mar Overpass and Transitions from and to Existing Roadway

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
		QC/QA - OVERALL 90% SUBMITTAL (1 SUBMITTAL)	11	32	32	32				2	109	$ 25,723.25
		QC/QA - OVERALL 100% SUBMITTAL (1 SUBMITTAL)	11	23	30	23				2	89	$ 21,118.12
		ORGANIZE AND DOWNLOAD ELECTRONIC FILE DELIVERABLES			1		6	11		2	20	$ 2,320.86
		COMPLETION OF CPM SCHEDULE (FORMS 1823 & 1002 NOT INCLUDED)	2	9	18		35	30		16	110	$ 15,700.08
		SUB-TOTAL - FC 154 - PROJECT MANAGEMENT (FC 160 TO FC 190) (PS&E SERVICES) (18 MONTHS) (JACAMAN OVERPASS AND DEL MAR OVERPASS AND TRANSITIONS FROM AND TO EXISTING ROADWAY)(ADDITIONAL FEE REQUIRED IF MORE THAN 18 MONTHS)	439	815	466	119	270	95	11	489	2704	$ 546,719.97
		HOURS SUB-TOTALS	439	815	466	119	270	95	11	489	2,704	
		LABOR RATE PER HOUR	$ 327.93	$ 236.07	$ 225.50	$ 225.50	$ 132.09	$ 106.64	$ 83.44	$ 64.89		
		DIRECT LABOR COSTS	$ 143,961.27	$ 192,397.05	$ 105,083.00	$ 26,834.50	$ 35,664.30	$ 10,130.80	$ 917.84	$ 31,731.21	$ 546,719.97	
		TOTAL	$ 143,961.27	$ 192,397.05	$ 105,083.00	$ 26,834.50	$ 35,664.30	$ 10,130.80	$ 917.84	$ 31,731.21	$ 546,719.97	
		PERCENT LABOR UTILIZATION FOR TOTAL PROJECT (BASED ON FEE)	26.33%	35.19%	19.22%	4.91%	6.52%	1.85%	0.17%	5.80%	100.00%	
		PERCENT LABOR UTILIZATION FOR TOTAL PROJECT (BASED ON MANHOURS)	16.24%	30.14%	17.23%	4.40%	9.99%	3.51%	0.41%	18.08%	100.00%	
		GRAND TOTAL (FC 164)	439	815	466	119	270	95	11	489	2,704	$ 546,719.97
TOTAL DANNENBAUM DIRECT EXPENSES (FROM BELOW)												$ -
SUBTOTAL BASIC SERVICES SUB CONSULTANTS (FROM BELOW)												
GRAND TOTAL - PHASE III SERVICES US 59 TO SOUTH OF JACAMAN (DIRECT EXPENSES, BASIC, SPECIAL AND SUB CONSULTANT SERVICES)												$ 546,719.97
		DIRECT EXPENSES										
		REPRO - 0 SHEETS X $0.20 / SHEET (BOND) - CHECK PLOTS & REVIEW SETS) X 0 X 30 SUBMITTAL SETS)										$ -
		PLOTS (B/W ON BOND) $1.00/LINEAR FOOT (30 FT/PLOT x 20 PLOTS)										$ -
		COURT REPORTER (PUBLIC HEARINGS AND TRANSCRIPTION) ($100 / HR)										$ -
		COLOR GRAPHICS ON FOAM BOARD ($5.00/SF) (3'x6'x 10 Ea)										$ -
		CAR RENTAL - $90 / TRIP X 4 TRIP										$ -
		PER DIEM - $121 /NIGHT STAY X 2 PERSON X 2 NIGHT ($85 hotel/$36 meals)										$ -
		DELIVERY SERVICES - $50 / PACKAGE X 6 PACKAGES										$ -
		MILEAGE 4 TRIP x 286 MI / TRIP @ $0.565/mile										$ -
		TOTAL DIRECT EXPENSES										$ -

PHASE III - BASIC PS&E SERVICES

(JACAMAN OVERPASS)

DANNENBAUM ENGINEERING CO.

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
		III. ROADWAY DETAILS (JACAMAN OVERPASS) (STA 219+25.62 TO STA 257+42.91)										
		I. GENERAL										
		FC 163 - MISCELLANEOUS (ROADWAY)										
1	1	TITLE SHEET		1	4		11	16	9		41	$ 5,048.26
2	2 - 3	2 - INDEX OF SHEETS		3	8		16	22	11		60	$ 7,889.57
2	4 - 5	2 - PROJECT LAYOUT (1" = 200') (DBL BANKED)		3	11		16	22	11		63	$ 8,566.07
0	6 - 5	TYPICAL SECTIONS - CONFIGURATION (LANES/SHOULDERS/CUT/FILL/ETC) (PAVEMENT DESIGN):										$ -
4	6 - 9	4 - EXISTING TYPICAL SECTIONS	1	8	16		27	43	26		121	$ 16,145.88
6	10 - 15	6 - PROP TYPICAL SECTIONS	3	11	19		40	65	38		176	$ 23,250.98
20	16 - 35	20 - GENERAL NOTES & SPECIFICATION DATA	3	11	19		42	65	38		178	$ 23,515.16
6	36 - 41	6 - ESTIMATE & QUANTITIES	3	12	27		53	71	43		209	$ 28,065.26
2	42 - 43	2 - SUMMARY OF TRAFFIC CONTROL QUANTITIES	1	3	8		11	19	11		53	$ 7,237.13
4	44 - 47	4 - SUMMARY OF ROADWAY QUANTITIES	1	8	16		27	43	24		119	$ 15,979.00
1	48 - 48	1 - SUMMARY OF RETAINING WALL QUANTITIES		1	3		8	11	7		30	$ 3,726.41
2	49 - 50	2 - SUMMARY OF CULVERT QUANTITIES	1	3	8		11	22	11		56	$ 7,557.05
2	51 - 52	2 - SUMMARY OF STORM SEWER QUANTITIES	1	3	7		11	22	11		55	$ 7,331.55
1	53 - 53	1- SUMMARY OF BRIDGES		1	4		9	16	9		39	$ 4,784.08
1	54 - 54	1 - SUMMARY OF ILLUMINATION QUANTITIES		1	3		8	11	7		30	$ 3,726.41
2	55 - 56	2 - SUMMARY OF TRAFFIC SIGNAL QUANTITIES	1	3	7		11	22	11		55	$ 7,331.55
4	57 - 60	4 - SUMMARY OF SMALL SIGNS	1	8	11		27	43	24		114	$ 14,851.50

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
1	61 - 61	1 - SUMMARY OF LARGE SIGNS		1	3		8	10	7		29	$ 3,619.77
1	62 - 62	1 - SUMMARY OF PAVEMENT MARKINGS		1	3		8	10	7		29	$ 3,619.77
1	63 - 63	1 - SUMMARY OF DELINEATION & OBJ MRKR QUANTITIES		1	3		8	10	7		29	$ 3,619.77
1	64 - 64	1 - SUMMARY OF SW3P (EROSION CONTROL)		1	3		8	10	7		29	$ 3,619.77
1	65 - 65	1- SUMMARY OF REMOVAL ITEMS		1	3		8	10	7		29	$ 3,619.77
0	66 - 65	II. TRAFFIC CONTROL PLANS (TCP)										$ -
2	66 - 67	2 - SEQUENCE OF CONSTRUCTION NARRATIVE	1	4	9		22	32	22		90	$ 11,455.85
4	68 - 71	4 - TRAFFIC CONTROL PLAN TYPICAL SECTIONS (1:100)	1	8	11		30	30	30		110	$ 14,352.09
2	72 - 73	2 - TRAFFIC CONTROL PLAN GENERAL NOTES	1	3	7		11	24	12		58	$ 7,628.27
2	74 - 75	2 - TCP ADVANCE WARNING SIGNS	1	3	7		11	24	12		58	$ 7,628.27
6	76 - 81	6 - ML TRAFFIC CONTROL PLAN - PHASE LAYOUTS (THREE PHASES-39 STA) (1:100)	3	16	30		68	98	66		281	$ 36,465.79
6	82 - 87	6 - NBFR TRAFFIC CONTROL PLAN - PHASE LAYOUTS (THREE PHASES-39 STA) (1:100)	3	16	30		68	98	66		281	$ 36,465.79
6	88 - 93	6 - SBFR TRAFFIC CONTROL PLAN - PHASE LAYOUTS (THREE PHASES-38 STA) (1:100)	3	16	30		68	98	66		281	$ 36,465.79
4	94 - 97	4 - TEMPORARY TRAFFIC SIGNALS AND ILLUMINATION	1	3	7		13	22	12		58	$ 7,679.17
26	98 - 123	26 - PRELIM CROSS SECTIONS (ROLL PLOT) '26 - PRELIMINARY CROSS SECTIONS (50 FOOT INCREMENTS ON 11x17 SHEETS @ 3 SECTIONS / SHEET)	1	9	16		38	63	40		167	$ 21,135.90
0	124 - 123	0 - STANDARDS										$ -
1	124 - 124	1 - BC 1 THRU 12					0.50		0.50		1	$ 107.77
1	125 - 125	1-WZ (TD)-03					0.50		0.50		1	$ 107.77
1	126 - 126	1-WZ (STPM)-03					0.50		0.50		1	$ 107.77
1	127 - 127	1-WZ (UL)-03					0.50		0.50		1	$ 107.77

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
1	128 - 128	1-WZ I(DERD)-03					0.50		0.50		1	$ 107.77
1	129 - 129	1-WZ (BTS-1)-03					0.50		0.50		1	$ 107.77
1	130 - 130	1-WZ (BTS-2)-03					0.50		0.50		1	$ 107.77
1	131 - 131	1-WZ (BRK)-03					0.50		0.50		1	$ 107.77
1	132 - 132	1-TCP (2-1)-98					0.50		0.50		1	$ 107.77
1	133 - 133	1-TCP (2-3)-03					0.50		0.50		1	$ 107.77
1	134 - 134	1-TCP (2-5)-03					0.50		0.50		1	$ 107.77
1	135 - 135	1-TCP (2-6)-98					0.50		0.50		1	$ 107.77
3	136 - 138	3 - TCP (3-1) THRU (3-3)-98					1.50		1.50		3	$ 323.30
1	139 - 139	1-TCP (7-1)-98					0.50		0.50		1	$ 107.77
139		SUB-TOTAL - FC 163 - MISCELLANEOUS (ROADWAY)	31	163	333	0	705	1052	660	0	2944	$ 384,115.87
		FC 160 - ROADWAY DESIGN CONTROLS										
3	3	2 - HORIZONTAL ALIGNMENT LAYOUT SHEETS (1:100 - DOUBLE BANKED)	1	4	9		19	30	19		82	$ 10,595.98
0	4 - 3	0 - BENCHMARK DATA SHEETS:										
2	4 - 5	2 - SURVEY CONTROL INDEX OF SHEETS (1:100 DOUBLE BANKED)			1		3	4	3		11	$ 1,298.65
2	6 - 7	2 - REMOVAL PLAN (1:100 - DOUBLE BANKED)		3	7		11	22	11		54	$ 7,003.62
1	8	PLAN AND PROFILE										
6	9 - 14	6 - ROADWAY P & P SHEETS - EB & WB MAIN LANES TOGETHER STA (INCL 1,000 FT TRANSITIONS @ BEG & END)	3	15	27		61	95	56		257	$ 33,474.27
2	15 - 16	2 - NB ENT RAMP P & P SHEETS - STA 224+00 TO STA 236+63.96	1	4	9		19	30	17		80	$ 10,429.10
2	17 - 18	2 - SB EXIT RAMP P & P SHEETS - STA 224+00 TO STA 237+08.49	1	4	9		19	30	17		80	$ 10,429.10
2	19 - 20	2 - NB EXIT RAMP P & P SHEETS - STA 246+00 TO STA 260+73.99	1	4	9		19	30	17		80	$ 10,429.10

ATTACHMENT E-2
SUMMARY OF DETAILED FEE SCHEDULE - PHASES II,III SUPPORTING LUMP SUM CALCULATIONS
SA NO. 9 TO MAIN CONTRACT

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
2	21 - 22	2 - SB ENT RAMP P & P SHEETS - STA 246+00 TO STA 256+26.89	1	4	9		19	29	20		82	$ 10,572.78
6	23 - 28	6-ROADWAY P&P SHEETS - NB FRONTAGE ROAD (STA 208+00 TO STA 266+35)(INCL 1000FT TRANSITIONS @ BEG & END)									0	$ -
6	29 - 34	6-ROADWAY P&P SHEETS - SB FRONTAGE ROAD - STA 211+46.35 TO STA 269+06.35(INCL 1000FT TRANSITIONS @ BEG & END)									0	$ -
2	35 - 36	2 - INTERSECTION LAYOUTS - JACAMAN	1	4	9		19	32	22		87	$ 11,059.58
4	37 - 40	4 - DRIVEWAY LAYOUTS (2 PER SHEET)	1	4	9		19	32	22		87	$ 11,059.58
1	41	DRIVEWAY DETAILS		1	1		3	7	3		15	$ 1,854.64
2	42 - 43	2 - MISCELLANEOUS ROADWAY DETAILS	1	3	7		11	22	11		55	$ 7,331.55
2	44 - 45	2 - LONGITUDINAL BARRIER									0	$ -
0	46 - 45	0 - RAISED MEDIANS (NO RAISED MEDIANS)									0	$ -
2	46 - 47	2 - FENCING (NO FENCING)									0	$ -
4	48 - 51	4 - BUS BAYS (NO BUS BAYS)									0	$ -
4	52 - 55	4 - PARKING AREAS (NO PARKING AREAS)									0	$ -
0	56 - 55	0 - STANDARDS										
1	56	CCCG-01					0.50		0.50		1	$ 107.77
1	57	CRCP (1)-09					0.50		0.50		1	$ 107.77
1	58	TA (CP)-99					0.50		0.50		1	$ 107.77
1	59	JS-94					0.50		0.50		1	$ 107.77
1	60	GF(31)-11					0.50		0.50		1	$ 107.77
1	61	GF(31)DAT-11					0.50		0.50		1	$ 107.77
1	62	GF(31)LS-11					0.50		0.50		1	$ 107.77
1	63	GF(31)TR-11					0.50		0.50		1	$ 107.77

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
1	64	GF(31)T101-13					0.50		0.50		1	$ 107.77
1	65	SGT 7-09					0.50		0.50		1	$ 107.77
1	66	SGT 8-09					0.50		0.50		1	$ 107.77
1	67	BED-09					0.50		0.50		1	$ 107.77
1	68	SSCB (1)-99					0.50		0.50		1	$ 107.77
1	69	SSCB (2)-00A					0.50		0.50		1	$ 107.77
1	70	SSCB (3)-02					0.50		0.50		1	$ 107.77
1	71	TRACC (N)-05					0.50		0.50		1	$ 107.77
1	72	REACT (N)-05					0.50		0.50		1	$ 107.77
1	73	QUAD (N)-99					0.50		0.50		1	$ 107.77
1	74	TE(HMAC)-11					0.50		0.50		1	$ 107.77
4	75 - 78	4 - RS(1)-10					2		2		4	$ 431.06
0	79 - 78	0 - PREPARE PLANS FOR FINAL ELECTRONIC DELIVERABLES		2	6	4	0	16	22		50	$ 6,269.06
55		SUB-TOTAL - 0 - FC 160 - ROADWAY DESIGN CONTROLS	11	52	112	4	234	379	252	0	1043	$ 134,285.61
		0 - IV. WALL DETAILS										
0	79 - 78	FC 163 - MISCELLANEOUS - RETAINING WALL										
6	79 - 84	6 - PREPARE RETAINING WALL PLAN AND PROFILE SHEETS/BORING DATA/INCL EXT SLOPE STABILITY (100:1)	3	16	30		61	97	56		263	$ 34,600.12
1	85 - 85	1 - PREPARE RETAINING WALL MISCELLANEOUS DETAILS		3	4		11	16	11		45	$ 5,687.28
1	86 - 86	1 - MSE WALL UNDERCUT AND REPLACE DETAILS		1	3		8	11	7		30	$ 3,726.41
0	87 - 86	0 - STANDARDS:										
8		SUB-TOTAL - 0 - FC 163 - MISCELLANEOUS - RETAINING WALL	3	20	37	0	80	124	74	0	338	$ 44,013.81

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
		V. DRAINAGE DETAILS										
		FC 161 - DRAINAGE										
0	87 - 86	0 - DATA COLLECTION/REVIEW DATA									0	$ -
0	87 - 86	0 - FIELD TRIP TO VERIFY EXISTING CONDITIONS (TWO TRIPS)									0	$ -
4	87 - 90	4 - PREPARE LARGE AND SMALL DRAINAGE AREA MAPS:	1	8	11		27	43	26		116	$ 15,018.38
2	91 - 92	2 - HYDROLOGY CALCULATIONS (STORM SEWER, CULVERTS, DITCHES):	1	4	8		19	26	16		74	$ 9,693.60
2	93 - 94	2 - HYDRAULIC COMPUTATIONS SHEETS (STORM SEWER, CULVERTS, DITCHES):	1	4	9		19	32	18		83	$ 10,725.82
3	95 - 97	3 - CULVERT P & P SHEETS	3	11	19		38	56	38		165	$ 22,027.04
0	98 - 97	0 - INCLUDE SPECIAL DITCHES ON RDWY P&P SHEETS									0	$ -
7	98 - 104	7 - STORM SEWER P & P SHEETS	4	19	35		72	120	63		313	$ 41,253.55
1	105 - 105	1 - PREPARE MISCELLANEOUS DETAILS		1	3		8	11	7		30	$ 3,726.41
0	106 - 105	STANDARDS										
19		SUB-TOTAL - 0 - FC 161 - DRAINAGE	10	47	85	0	183	288	168	0	781	$ 102,444.80
		VI. UTILITIES										
1	106	FC 130 - ROW (UTILITIES)										
2	107 - 108	2 - PREPARE EXISTING UTILITY LAYOUTS (1:100)(DOUBLE BANKED)	1	3	7		11	22	11		55	$ 7,331.55
0	109 - 108	0 - PREPARE PROPOSED UTILITY LAYOUTS AND P&P SHEETS (WHEN JOINT BIDDING ONLY)									0	$ -
0	109 - 108	0 - STANDARDS									0	$ -
3		SUB-TOTAL - FC 130 - ROW (UTILITIES)	1	3	7	0	11	22	11	0	55	$ 7,331.55

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
		FC 170 - BRIDGE DESIGN										
		EAST & WEST BOUND MAIN LANE BRIDGE OVER JACAMAN (ONE COMPLETE BRIDGE)										
1	109 - 110	2 - BRIDGE LAYOUTS		6		60		90			156	$ 24,544.02
1	111 - 111	1 -SUMMARY OF QUANTITIES (BRIDGE) AND BEARING SEAT ELEVATION		3		30	91	6	24		154	$ 22,135.80
2	112 - 112	1 - FOUNDATION LAYOUTS		3		42		52	39		136	$ 18,978.65
3	113 - 116	4 - ABUTMENTS		3		72	75	104	51		305	$ 42,196.96
2	117 - 120	4- INTERIOR BENTS		3		72	51	65	65		256	$ 36,036.00
2	121 - 122	2 - CONC SLAB SPAN		3		30	15	52	26		126	$ 17,169.28
1	123 - 124	2 - CONC FRAMING PLAN & BENT REPORT		3		30	51	24	26		134	$ 18,938.60
1	125 - 125	1 - CONC TYPICAL SECTIONS AND DEFLECTIONS		3		30	39	24	26		122	$ 17,353.52
1	126 - 126	1 - PRESTR CONC I-GIRDER DESIGN		3		27	51	24	15		120	$ 17,344.26
0	127 - 128	2 - ARCHITECTURAL TREATMENT		1		6	6	8	6		27	$ 3,735.37
1	129 - 129	1 - DRAIN DETAILS		3		26	15	24	26		94	$ 13,281.36
1	130 - 130	1 - BRIDGE BORING LOGS		3		3	6	22	3		37	$ 4,773.65
16		SUB-TOTAL SHEETS - EAST & WEST BOUND MAIN LANE BRIDGE OVER JACAMAN (ONE COMPLETE BRIDGE)	0	37	0	428	400	495	307	0	1667	$ 236,487.47
16		SUB-TOTAL BRIDGE SHEETS	0	37	0	428	400	495	307	0	1667	$ 236,487.47
		VIII. TRAFFIC ITEMS										
0	131 - 130	FC 162 - SIGNING, PAVEMENT MARKINGS AND SIGNALIZATION										
0	131 - 130	0 - SIGNALIZATION (JACAMAN)										
1	131	TRAFFIC SIGNAL SUMMARY OF QUANTITIES	1	4	9		22	36	21		93	$ 11,798.97
2	132 - 133	2 - TRAFFIC SIGNAL EXISTING CONDITIONS LAYOUT	1	3	7		11	22	11		55	$ 7,331.55
2	134 - 135	2 - TRAFFIC SIGNAL PROPOSED LAYOUT	1	4	9		22	37	22		95	$ 11,989.05
1	136 - 136	1 - TRAFFIC SIGNAL INTERVAL SEQUENCE		1	3		8	11	7		30	$ 3,726.41
1	137 - 137	1 - TRAFFIC SIGNAL TIMING PLAN		1	3		8	11	7		30	$ 3,726.41
1	138 - 138	1 - TRAFFIC SIGNAL CONDUIT AND CONDUCTOR PLAN		3	4		11	18	11		47	$ 5,900.56
2	139 - 140	2 - TRAFFIC SIGNAL ELEVATION DETAILS	1	3	7		11	25	11		58	$ 7,651.47

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
1	141 - 141	1 - TRAFFIC SIGNAL WIRING DIAGRAM		1	3		9	11	7		31	$ 3,858.50
1	142 - 142	1 - TRAFFIC SIGNAL NOTES & DETAILS		1	3		9	11	7		31	$ 3,858.50
0	143 - 142	0 - TRAFFIC SIGNAL STANDARDS									0	$ -
	143 - 142	**0 - FC 162-PREPARE SIGNING & PAVEMENT MARKING DESIGN**										
2	143 - 144	2- SIGNING & PAVEMENT MARKING LAYOUT (1:100)(DOUBLE BANKED)	1	3	7		11	22	11		55	$ 7,331.55
1	145 - 145	1 - LARGE SIGN DETAILS		1	3		9	11	7		31	$ 3,858.50
1	146	SMALL SIGN SUMMARY	1	3	7		11	22	11		55	$ 7,331.55
0	147 - 146	0 - SIGNING AND PAVEMENT MARKING STANDARDS:										$ -
0	147 - 146	**0 - PREPARE TMS DESIGN (NOT REQUIRED)**									0	$ -
0	147 - 146	**0 - TMS STANDARDS (NOT REQUIRED)**									0	$ -
16		**SUB-TOTAL - FC 162 - SIGNING, PAVEMENT MARKINGS AND SIGNALIZATION**	**6**	**28**	**65**	**0**	**142**	**237**	**133**	**0**	**611**	**$ 78,363.02**
		FC 163 - MISCELLANEOUS - ILLUMINATION										
1	147	PREPARE ILLUMINATION DESIGN:									0	$ -
1	148	SUMMARY OF QUANTITIES	1	3	7		11	22	11		55	$ 7,331.55
2	149 - 150	2 - ILLUMINATION LAYOUT (1;100)(DOUBLE BANKED)	1	3	7		11	22	11		55	$ 7,331.55
2	151 - 152	2 - ILLUMINATION CIRCUIT DIAGRAM	1	3	7		11	22	11		55	$ 7,331.55
2	153 - 154	2 - MISCELLANEOUS ILLUMINATION DETAILS	1	3	7		11	22	11		55	$ 7,331.55
0	155 - 154	0 - ILLUMINATION STANDARDS										
8		**SUB-TOTAL - FC 163 - MISCELLANEOUS - ILLUMINATION**	**4**	**12**	**28**	**0**	**44**	**88**	**44**	**0**	**220**	**$ 29,326.20**
		IX. ENVIRONMENTAL										
		FC 161 - DRAINAGE (SW3P)										
0	155 - 154	PREPARE SW3P :										
2	155 - 156	2 - 'SW3P NARRATIVE		3	4		11	16	11		45	$ 5,687.28
6	157 - 162	6 - SW3P LAYOUTS	3	11	19		47	65	39		184	$ 24,259.05
2	163 - 164	2 - MISCELLANEOUS SW3P DETAILS	1	3	7		13	22	11		57	$ 7,595.73
0	165 - 164	SW3P STANDARDS:									0	$ -
3	165 - 167	3 - EC-(1)THRU (3)-93					2		2		4	$ 431.06

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
0	168 - 167	CONDUCT SENSITIVE AREAS INVESTIGATION (NOT REQUIRED)									0	$ -
0	168 - 167	0 - PREPARE WETLAND MITIGATION PLAN									0	$ -
0	168 - 167	0 - PREPARE MISCELLANEOUS DETAILS									0	$ -
13		SUB-TOTAL - FC 161 - DRAINAGE (SW3P)	4	17	30	0	73	103	63	0	290	$ 37,973.12
		X. MISCELLANEOUS										
		FC 163 - MISCELLANEOUS - LANDSCAPING/AESTHETICS (NOT REQUIRED)										
10	168 - 177	10 - LANDSCAPING/IRRIGATION									0	$ -
10	178 - 187	10 - AESTHETIC PLAN									0	$ -
4	188 - 191	4 - AESTHETIC DETAILS									0	$ -
24		SUB-TOTAL - FC 163 - MISCELLANEOUS - LANDSCAPING/AESTHETICS (NOT REQUIRED)	0	0	0	0	0	0	0	0	0	$ -
		XI. CROSS SECTIONS										
		FC 163 - MISCELLANEOUS - CROSS SECTIONS										
26	192 - 217	26 - FINAL CROSS SECTIONS (ROLL PLOT) '26 - FINAL CROSS SECTIONS (50 FOOT INCREMENTS ON 11x17 SHEETS @ 3 SECTIONS / SHEET)	2	8	15		26	43	27		121	$ 16,199.66
26		SUB-TOTAL - FC 163 - MISCELLANEOUS - CROSS SECTIONS	2	8	15	0	26	43	27	0	121	$ 16,199.66
		HOURS SUB-TOTALS	72	387	712	432	1,898	2,831	1,739	0	8,070	
		LABOR RATE PER HOUR	$ 327.93	$ 236.07	$ 225.50	$ 225.50	$ 132.09	$ 106.64	$ 83.44	$ 64.89		
		DIRECT LABOR COSTS	$ 23,610.96	$ 91,359.09	$ 160,556.00	$ 97,416.00	$ 250,640.78	$ 301,897.84	$ 145,060.44	$ -	$ 1,070,541.11	
		TOTAL	$ 23,610.96	$ 91,359.09	$ 160,556.00	$ 97,416.00	$ 250,640.78	$ 301,897.84	$ 145,060.44	$ -	$ 1,070,541.11	
		PERCENT LABOR UTILIZATION FOR TOTAL PROJECT (BASED ON FEE)	2.21%	8.53%	15.00%	9.10%	23.41%	28.20%	13.55%	0.00%	100.00%	
		PERCENT LABOR UTILIZATION FOR TOTAL PROJECT (BASED ON MANHOURS)	0.89%	4.80%	8.82%	5.35%	23.51%	35.08%	21.54%	0.00%	100.00%	
321		GRAND TOTAL	72	387	712	432	1,898	2,831	1,739	0	8070	$ 1,070,541.11
TOTAL DANNENBAUM DIRECT EXPENSES (FROM BELOW)												$ 3,713.36
SUBTOTAL BASIC SERVICES SUB CONSULTANTS (FROM BELOW)												$ -
SUBTOTAL SPECIAL SERVICES DANNENBAUM (FROM BELOW)												$ 356,777.54

MAXIMUM AMOUNT PAYABLE

LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)

PHASE III - DEC BASIC PS&E SERVICES

Develop PS&E for the Extension of Loop 20 - Including Associated Off-Site Detention Ponds

Jacaman Overpass (STA 219+25.62 TO STA 257+42.91)

Dannenbaum Engineering Corporation

PHASE III

NO. OF DWGS	SHEET	BASIC SERVICES DESCRIPTION	Principal/Program Manager	DEPUTY PM (Engr VI)	Senior Engineer-Civil	Senior Engineer-Bridge	Civil Engineer	Senior Designer	Engr Tech/CADD	Clerical	Total Labor Hrs.	Task Cost
GRAND TOTAL - PHASE III SERVICES Jacaman Overpass PS&E (DIRECT EXPENSES, BASIC, SPECIAL AND SUB CONSULTANT SERVICES)												**$ 1,431,032.01**
		DIRECT EXPENSES										
		REPRO - 320.5 SHEETS X $0.20 / SHEET (BOND) - CHECK PLOTS & REVIEW SETS) X 320.5 X 30 SUBMITTAL SETS)										$ 1,923.00
		PLOTS (B/W ON BOND) $1.00/LINEAR FOOT (30 FT/PLOT x 20 PLOTS)										$ -
		PLOTS (COLOR ON BOND) $2.00/LINEAR FOOT (30 FT/PLOT x20 PLOTS)										$ -
		COURT REPORTER (PUBLIC HEARINGS AND TRANSCRIPTION) ($100 / HR)										$ -
		COLOR GRAPHICS ON FOAM BOARD ($5.00/SF) (3'x6'x 10 Ea)										$ -
		CAR RENTAL - $90 / TRIP X 4 TRIP										$ 360.00
		PER DIEM - $121 /NIGHT STAY X 2 PERSON X 2 NIGHT ($85 hotel/$36 meals)										$ 484.00
		DELIVERY SERVICES - $50 / PACKAGE X 6 PACKAGES										$ 300.00
		MILEAGE 4 TRIP x 286 MI / TRIP @ $0.565/mile										$ 646.36
		TOTAL DIRECT EXPENSES										$ 3,713.36
		SPECIAL SERVICES (DANNENBAUM)										
		DETENTION PONDS								$ 356,777.54		
		TOTAL ENGINEERING (DANNENBAUM) - SPECIAL SERVICES								$ 356,777.54		

PHASE III - BASIC PS&E SERVICES

(Det Ponds - Vicinity of Jacaman (Systems D&E and F&G))

Dannenbaum Engineering Corporation

ATTACHMENT E-2
SUMMARY OF DETAILED FEE SCHEDULE - PHASES II,III SUPPORTING LUMP SUM CALCULATIONS
SA NO. 9 TO MAIN CONTRACT

MAXIMUM AMOUNT PAYABLE
LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)
PHASE III - DEC SPECIAL PS&E SERVICES

Offsite Detention Pond Design

Vicinity of Jacaman (Systems D&E and F&G)
Dannenbaum Engineering Corporation
PHASE III

SPECIAL SERVICES (FC 161) HYDROLOGIC TASK DESCRIPTION	Principal/Program Manager	Senior Engineer-Civil	Civil Engineer	Senior Designer	Eng/Tech/CADD	Clerical	Total Labor Hrs.	Remarks	Task Cost
FC 161 - DRAINAGE									
PS&E (3 Ponds)									
Runoff Comupations	6	3	11	11	9		42		$ 6,021.07
Hydraulic Data sheets	6	3	11	11	9		42		$ 6,021.07
Dentention pond Plan (15 Sheets)	6	6	11	15	22		66		$ 8,208.85
Dentention pond Profiles (15 Sheets)	6	6	11	15	22		66		$ 8,208.85
Dentention pond Inlet & Outlet Structures (15 Sheets)	6	6	11	15	22		66		$ 8,208.85
Detention Pond Point Table (15 sheets)	6	6	11	11	22		60		$ 7,782.29
Miscellaneous Details (9 Sheets)	3	13	22	22	37		105		$ 12,254.63
30% Cost Estimate & Quantities	3	22	43	68	43	11	207		$ 23,177.89
60% Cost Estimate, Qunatities and Specifications	3	22	68	92	70	11	279		$ 31,292.38
90% Cost Estimate & Quantities	3	22	43	70	43	11	207		$ 23,391.17
100% Cost Estimate, Quantities and Specifications	3	22	70	86	70	11	279		$ 30,916.72
30% Deliverables	6	22	22	43		11	114		$ 15,133.87
60% Deliverables	6	22	22	43		11	114		$ 15,133.87
90% Deliverables	6	22	22	43		11	114		$ 15,133.87
100% Deliverables	6	47	43	73		22	198		$ 27,458.25
QA/QC	9	37	37	36			126		$ 20,021.24
Coordination	9	22	32	36		9	114		$ 16,562.30
FEMA APLICATIONS									
CLOMR (For 3 Crossing) Does not include FEMA Fee	9	81	59	59	32	32	276		$ 40,048.50
LOMR (For 3 Crossings) Does not include FEMA FEE	9	81	38	38	22	22	216		$ 33,551.87
SUB-TOTAL - FC 161 - DRAINAGE	111	465	587	787	423	162	2535		$ 348,527.54
TOTAL DIRECT EXPENSES (FROM BELOW)									$8,250.00
TOTAL - FC 161 - DRAINAGE INCLUDING DIRECT EXPENSES									$ 356,777.54
TOTAL ENGINEERING (SUBCONSULTANT) - SPECIAL SERVICES (FROM BELOW)									$ -
TOTAL FC 161 - DRAINAGE									$ 356,777.54
HOURS SUB-TOTALS	111	465	587	787	423	162			
LABOR RATE PER HOUR	$ 327.93	$ 225.50	$ 132.09	$ 106.64	$ 83.44	$ 64.89			
DIRECT LABOR COSTS	$ 36,400.23	$ 104,857.50	$ 77,536.83	$ 83,925.68	$ 35,295.12	$ 10,512.18	$ 348,527.54		
TOTAL	$ 36,400.23	$ 104,857.50	$ 77,536.83	$ 83,925.68	$ 35,295.12	$ 10,512.18	$ 348,527.54		

MAXIMUM AMOUNT PAYABLE
LOOP 20 EXTENSION PROJECT (CSJ: 0086-14-058)
PHASE III - DEC SPECIAL PS&E SERVICES

Offsite Detention Pond Design

Vicinity of Jacaman (Systems D&E and F&G)
Dannenbaum Engineering Corporation
PHASE III

SPECIAL SERVICES (FC 161) HYDROLOGIC TASK DESCRIPTION	Principal/Program Manager	Senior Engineer-Civil	Civil Engineer	Senior Designer	Eng/Tech/CADD	Clerical	Total Labor Hrs.	Remarks	Task Cost
PERCENT LABOR UTILIZATION FOR TOTAL PROJECT (BASED ON FEE)	10.44%	30.09%	22.25%	24.08%	10.13%	3.02%	100.00%	CHECK	
PERCENT LABOR UTILIZATION FOR TOTAL PROJECT (BASED ON MANHOURS)	4.38%	18.34%	23.16%	31.05%	16.69%	6.39%	100.00%	$ 348,527.54	
DIRECT EXPENSES									
REPRO -400 SHEETS X $0.20 / PAPER SHEET x 10 Sets								$ -	
REPRO -200 8 1/2" x 11" COLOR COPIES X $1.00 / PAPER SHEET x 10 Sets								$ -	
LOMR FEE (1 @ $8,250.00)								$ 8,250.00	
PER DIEM - $121 /NIGHT STAY X 2 PERSON X 4 NIGHT ($85 hotel/$36 meals)								$ -	
DELIVERY SERVICES - $50 / PACKAGE X 4 PACKAGES								$ -	
MILEAGE 4 TRIP x 286 MI / TRIP @ $0.565/mile								$ -	
TOTAL DIRECT EXPENSES								$ 8,250.00	

Attachment F

Work Schedule

(Revised 10/19/2017)

CSJ: 0086-14-058

ATTACHMENT F - WORK SCHEDULE

SUPPLEMENTAL NO. 9 TO MAIN CONTRACT

(Revised 10/19/2017)

PS&E - JACAMAN OVERPASS (STA. 219+25 TO STA. 257+42.91) AND
PS&E - DEL MAR OVERPASS (STA. 319+65.24 TO STA. 362+56.18) AND
WARRANT/ILLUMINATION STUDIES FROM INTERNATIONAL BLVD TO US 59 (STA. 115+85.43 TO STA. 484+35)

DANNENBAUM

ID	Task Name	Duration	Start	Finish
1	SA No. 9 to Main Contract	1888 days	Fri 12/1/17	Tue 1/31/23
2	PROJECT START	0 days	Fri 12/1/17	Fri 12/1/17
3	**PHASE II/IIA WARRANT/ILLUMINATION STUDIES - US 59 TO INTERNATIONAL BLVD.**	195 days	Fri 12/1/17	Wed 6/13/18
4	PREPARE MAPS/COLLECT ROW DATA/FIELD SURVEY/PREPARE REPORT/PLATS/UTILITIES (BY TxDOT)	195 days	Fri 12/1/17	Wed 6/13/18
5	TRAFFIC WARRANT STUDY	183 days	Fri 12/1/17	Fri 6/1/18
6	ILLUMINATION STUDY	183 days	Fri 12/1/17	Fri 6/1/18
7	SUE (BY TxDOT)	183 days	Fri 12/1/17	Fri 6/1/18
8	**PHASE III PS&E (JACAMAN OVERPASS)**	1888 days	Fri 12/1/17	Tue 1/31/23
9	HYDRAULIC/HYDROLOGY STUDIES/POND SITING & DESIGN	270 days	Fri 12/1/17	Mon 8/27/18
10	30% PS&E	120 days	Fri 12/1/17	Fri 3/30/18
11	60% PS&E	120 days	Sat 3/31/18	Sat 7/28/18
12	90% PS&E	120 days	Sun 7/29/18	Sun 11/25/18
13	FINAL PS&E	90 days	Mon 11/26/18	Sat 2/23/19
14	TxDOT/FHWA APPROVAL(S)	120 days	Sun 2/24/19	Sun 6/23/19
15	CONSTRUCTION	730 days	Mon 2/1/21	Tue 1/31/23
16	**PHASE III (DEL MAR OVERPASS)**	1888 days	Fri 12/1/17	Tue 1/31/23
17	HYDRAULIC/HYDROLOGY STUDIES/POND SITING & DESIGN	270 days	Fri 12/1/17	Mon 8/27/18
18	30% PS&E	120 days	Fri 12/1/17	Fri 3/30/18
19	60% PS&E	120 days	Sat 3/31/18	Sat 7/28/18
20	90% PS&E	120 days	Sun 7/29/18	Sun 11/25/18
21	FINAL PS&E	90 days	Mon 11/26/18	Sat 2/23/19
22	TxDOT/FHWA APPROVAL(S)	120 days	Sun 2/24/19	Sun 6/23/19
23	CONSTRUCTION	730 days	Mon 2/1/21	Tue 1/31/23