

## **EXHIBIT A – SCOPE OF SERVICES**

**Project Name: White Oak Bayou Federal Flood Damage**

**Reduction Project**

**E127-00-00 Channel Modifications**

**Project Limits: Jones Road to E100**

**Aguirre & Fields**

### **Project Description**

The project includes the channel modifications of approximately 8,100 feet of E127 starting on the east right-of-way (ROW) of Jones Road and stopping at the sheet pile weir just upstream of the confluence with the E100 branch of White Oak Bayou. The existing channel crosses under the Union Pacific railroad trestle, and under both the westbound and eastbound US 290 frontage road and mainlane bridges. The existing E127 channel continues eastwardly with bridge crossings at Rio Grande Street and at Senate Avenue. The channel continues parallel to Elwood Drive before coming to an existing sheet pile weir structure just upstream with the confluence with E100.

There are several goals of this project. One project goal is to provide flood damage reduction along the channel. The goal is to increase the flow in the E127 channel to handle a minimum of a 100-year storm event. The other goal is to add recreational amenities, such as a hike and bike trail along the channel from Rio Grande Street underneath US 290 and connecting to Jones Road. The third goal is to work in conjunction with the Master Development Plan of Village Center. The proposed Village Center will be a 43-acre mixed use development along Jones Road.

### **Preliminary Engineering Report / Preliminary Design**

Scope to include:

Flood Mitigation Assistance Project Grant Administration:

The grant administration subconsultant will aid the City of Jersey Village to complete required quarterly financial and performance reporting to Federal Emergency Management Agency – Flood Mitigation Assistance Program contract manager. Below is a summary of scope for the grant administration team:

1. Update the current grant workplan schedule to include revised schedules for the project.
2. Federal Financial Reports (SF-425) will be submitted within 30-days of the end of the first Federal quarter following the initial grant agreement. Quarterly Federal Financial Reports (FFR) will be submitted until the grant ends. A final FFR will be submitted 90 days after the end date of the performance period.
3. Program Performance Reports (SF-PPR) will be submitted within 30-days of the end of each quarter following the initial grant agreement. Quarterly Program Performance Reports (PPR) will be submitted until the grant ends. A final FFR will be submitted 90 days after the end date of the performance period.

4. Quarterly and final report review meetings with Jersey Village, FEMA and project manager.

Surveying:

Below is a brief summary of the scope for the surveyor. The surveyor will follow the Harris County Flood Control District Surveying Guidelines (2019 or latest version).

1. Control Surveying. Perform Control Surveying as specified in the current HCFCF Survey Guidelines, Sections I. and IV. Set Control Monuments at maximum spacing of 1,500 feet. Show survey control data on Right-of-Way Alignment Map. Horizontal control shall be relative to the Texas State Plane Coordinate System, South Central Zone No. 4204, unless otherwise instructed by the Jersey Village project manager or a representative of HCFCF. Vertical control will be referenced to the North American Vertical Datum of 1988 (NAVD88) Orthometric Values, utilizing GEOID 12B, unless otherwise instructed by the Jersey Village project manager or a representative of HCFCF. A minimum of three (3) Harris County Floodplain Reference Marks shall be used to determine vertical control.
2. Topographic Surveying. Identify relevant topographic information, for the limits shown below:
  - Survey full cross sections every 200 feet including water surface, extending an additional 200 feet on each end of the project.
  - Toe to toe cross sections every 100 feet, between full cross sections.
  - Locate all grade breaks, channel confluences, washouts, and drainage structures within project limits. If accessible, open storm and sanitary manholes and inlets within project limits to obtain pipe flowline elevation, size, and material information.
  - Survey visible surface utilities within the project limits. Survey buried utility markings resulting from Texas811 utility locate request by SUE provider. Provide topographic survey to SUE consultant for development of buried utility mapping.
  - Locate all trees 4-inch in diameter and larger located in the channel and along the area from top of bank to fence or ROW.
  - Locate any encroachments into the ROW.
  - Locate any property fences, walls, subdivision monuments, subdivision landscaping, bridges, roadways, medians, sidewalks, ramps, manholes, storm inlets, drainage lines, sewer lines, water lines, fire hydrants, power lines and poles, telephone lines and poles, light poles, gas lines, fiber optic lines, cable lines, monuments, trees, etc.
  - Provide a digital terrain model (DTM) including XML file deliverables with break lines and point files.
3. Perform abstracting to recover original survey corners, property corners, etc. to determine existing HCFCF right-of-way.
4. Establish project baseline.
5. Provide clearances for overhead lines that are crossing or adjacent to the E127 channel.
6. Survey locate geotechnical borings after they are drilled.

Right-of-Way Acquisition:

1. Prepare Right-of-way Alignment Map in accordance with HCFCD Land Surveying Guidelines.
2. ROW Coordination Meeting with HCFCD and EOR.
3. For proposed parcel acquisitions, prepare exhibits and written legal description in accordance with HCFCD Land Surveying Guidelines. Legal description includes “metes and bounds”.
4. Abstracting and Title Report research. Obtain an Abstractor Certificate for each proposed acquisition parcel.

Geotechnical:

Below is a brief summary of the scope for the geotechnical engineer. Geotechnical investigations and reporting will be completed in accordance with the HCFCD Geotechnical Guidelines dated December 2010, or latest revision.

1. Site reconnaissance
2. Assist with identifying desired boring locations:
  - A. For channel improvements (maximum spacing of 750 feet for borings)
    1. Approximately 11 bore holes expected for channel improvements.
    2. Additional bore hole locations for existing sheet pile weir. Assume 2.
    3. Additional bore hole near JV ground level water storage tank. Assume 1.

Total borings for channel, weir, and storage tank= 11+2+1 = 14 {estimated}
  - B. For bridge analysis
    1. US 290 EB FR bridge. Assume 2.
    2. US 290 WB FR bridge. Assume 2.
    3. Rio Grande St bridge. Assume 2.
    4. Senate Ave bridge. Assume 2.

Total boring locations for bridges = 8 {estimated}.

3. Shall stake the borings so borings can be located by the surveyor.
4. Slope stability analysis (including short term condition, rapid drawdown condition, and long term conditions).
5. Erosion analysis and erosion protection recommendations {entire length of project limits}
6. Drilled Shaft and Driven Pile Analyses – axial compressive and tensile capacities, and lateral capacities.
7. Summary of local geology.
8. Assessment of dispersive nature of soils and recommendations for addressing dispersive soils if encountered.

9. Determination if a Phase 1 geologic fault study is warranted
10. Perform laboratory analysis of field samples
11. Prepare Investigations Report with recommendations
12. Global stability check related to JV ground level water storage tank.
13. Construction considerations including pile drivability and vibration considerations and drilled shaft installation considerations.
14. Recommendations for specification of select fill, granular material, and riprap as necessary.

**Environmental:**

This section includes all required environmental surveys/documents associated with receiving a United States (U.S.) Army Corps of Engineers (USACE) Clean Water Act (CWA) Section 404 Permit for channel modifications to approximately 8,100 feet of E127 (a potentially jurisdictional waters of the U.S. [WOTUS]). Tasks associated with this effort include:

1. Delineation of Potentially Jurisdictional Water of the U.S. and Wetlands
  - a. Because the project requires a USACE Section 404 permit, a delineation of potentially jurisdictional WOTUS and wetlands is required.
  - b. The delineation will be performed in accordance with the resources below:
    - i. 1987 USACE Wetland Delineation Manual and Regional Supplement (Atlantic and Gulf Coastal Plan Region (Version 2.0), 2010.
    - ii. Harris County Flood Control District Tech Manuals, including Ordinary High Water Mark Manual.
  - c. To account for potential compensatory mitigation needs, baseline functional assessments of delineated streams and wetlands will be performed using USACE standard operating procedures (SOPs). These SOPs include:
    - i. Perform USACE Galveston District Interim Hydrogeomorphic (iHGM) Functional Analysis of existing wetlands.
    - ii. Perform USACE Galveston District Stream Condition Assessment (Level 1 for less than 500 linear feet of impacts to ephemeral, intermittent, or perennial streams, Level 2 for greater than 500 linear feet of impacts to intermittent or perennial streams).
  - d. Following the delineation, a report will be developed that summarizes findings and quantifies all water features within the study area. The report format will include all necessary supporting appendices and forms and will be suitable for USACE review.

Deliverables:

Draft and Final Delineation of Potentially Jurisdictional Waters of the U.S. and Wetlands Report

Assumptions:

- Assumes 5 days of field work for two AECOM staff.

- It is assumed that AECOM will respond to one round of combined City of Jersey Village and Harris County Flood Control District comments.
- Right-of-Entry will be provided in a timely matter not to delay project schedules

## 2. Federally Listed Threatened and Endangered Species Habitat Assessment

- a. Because the project requires a USACE Section 404 permit, compliance with the Federal Endangered Species Act (ESA), the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act is required. This task is required to ensure the project does not adversely affect federally threatened and endangered (T&E) species, migratory birds, and/or directly or indirectly modify critical habitat of such species.
- b. The assessment will include a preliminary review of data from the U.S. Fish and Wildlife Service (USFWS), USFWS National Wetland Inventory (NWI), Texas Parks and Wildlife Department (TPWD) Natural Diversity Database (TXNDD), U.S. Geological Survey (USGS) topographic maps, Natural Resources Conservation Service (NRCS) soil data, aerial imagery, and other additional resources that may indicate the presence of potentially suitable T&E species habitat.
- c. A field investigation will be performed to identify potentially suitable T&E species and migratory bird species habitat within the project limits. Site conditions will be documented with regards to vegetation and any species observations or evidence of species habitat that is observed in the field. Any potentially suitable T&E species habitat will be delineated with a GPS unit (if observed).

### Deliverables:

Draft and Final Federally Listed Threatened and Endangered Species Habitat Assessment Report

### Assumptions:

- Habitat field investigation will be completed concurrently with the waters of the U.S. delineation.
- No T&E presence/absence surveys or aquatic species relocation is required. If required, a separate scope and fee estimate will be submitted.
- It is assumed that AECOM will respond to one round of combined City of Jersey Village and Harris County Flood Control District comments.
- Right-of-Entry will be provided in a timely matter not to delay project schedules

## 3. Cultural Resources Survey

- a. Because the project requires USACE Section 404 permit, it constitutes a federal undertaking and is subject to review requirements under Section 106 of the National Historic Preservation Act of 1966, as amended. Under Section 106, and in accordance with the Advisory Council on Historic Preservation regulations pertaining to the protection of historic properties (36 Code of Federal Regulations [CFR] 800), prior to permit issuance or funding, federal agencies are required to locate, evaluate, and assess the effects of their undertaking on historic properties. Historic properties are defined as

those properties that are included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

- b. Since the project occurs on lands owned/controlled by the City of Jersey Village, which is a political subdivision of the State of Texas, it falls within the purview of the Antiquities Code of Texas (Texas Natural Resource Code, Title 9, Chapter 191). The Antiquities Code requires the Texas Historical Commission (THC) to review any actions that have the potential to disturb prehistoric or historic sites within the public domain of the State of Texas. Regulations pertaining to the code can be found within Title 13 Part 2, Chapter 26 of the Texas Administrative Code (TAC), Rules of Practice and Procedure. In accordance with 13 TAC 26.7(d)(2), the THC may require archaeological investigations to take place in all potentially affected areas of a project in order to identify potential impacts to cultural resources. Such investigations are regulated through an Antiquities permitting process that establishes the terms under which work may proceed. Thus, prior to any such fieldwork, an Antiquities Permit from the THC would be required, stipulating the conditions under which survey, discovery, excavation, demolition, restoration, or scientific investigations can occur.
- c. In order to complete the USACE permitting and meet Antiquities Code requirements, a cultural resources survey of the project area will be performed in order to identify historic properties, State Antiquities Landmarks (SALs), and other cultural resources (e.g., structures, buildings, archeological sites, cemeteries, and objects) that may be affected.
- d. The survey will be conducted in accordance with archaeological survey standards for Texas set by the Council of Texas Archeologists (CTA) and the THC. All archaeological work will be supervised by archaeologists who meet the Secretary of the Interior's Professional Qualification Standards for Historic Preservation Projects (Department of the Interior, Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines, 36 CFR 61). Any historic buildings, structures, objects, and potential historic districts that are 45 years of age or older and fall within or adjacent to the project area will be evaluated by an architectural historian.
- e. Following completion of the fieldwork, a draft and final report of findings will be produced in conformance with CTA guidelines for cultural resources management reports. Once the report has been approved, the report will be distributed to the appropriate agencies. The archeologist will furnish the THC with one printed copy of the final report, which shall be an unbound copy containing at least one map with the plotted locations of any and all sites recorded, and two copies of a tagged PDF format of the report on an archival quality CD or DVD, one with the plotted locations of any and all sites recorded, and the other with redacted site location data.
- f. Pursuant to 13 TAC 26.17, field records and photographs generated during archaeological field investigations will be prepared for permanent curation at an approved Texas curatorial facility. Any collected artifacts would also be prepared for curation according to relevant specifications after acceptance of the final report by the THC. Artifacts collected from publicly-owned land would be kept separate from those on privately-owned land.

Deliverables:

Draft and Final Cultural Resources Survey Report

Assumptions:

- No more than five person days of field survey by two archeologists and two person days of survey by an architectural historian will be necessary
  - No deep mechanical trenching will be required
  - Assumes no more than 2 Texas Archeological Research Laboratory (TARL) Site Form Fees and 1/8-inch TARL Drawer Curation Fee
  - Additional cultural resource investigations that may be required by THC as a result of this survey, such as site testing, data recovery, or survey beyond that currently scoped, would be requested, approved, and provided under a separate scope and fee estimate.
  - No artifacts would be collected, and only records will be curated
  - It is assumed that AECOM will respond to one round of combined City of Jersey Village and Harris County Flood Control District comments.
  - Right-of-Entry will be provided in a timely matter not to delay project schedules
4. USACE Section 404 Permit Strategy Memo
- a. In order to determine the appropriate and most efficient USACE Section 404 permitting mechanism, a USACE Section 404 Permit Strategy Memo will be developed.
  - b. The memo will:
    - i. Quantify impacts to jurisdictional waters of the U.S. and wetlands (using a 30% design plan set and previously performed field delineation data)
    - ii. Discuss potential avoidance and minimization options
    - iii. Discuss the various permitting mechanisms, impact thresholds (Nationwide Permit [NWP] 43, NWP 27, and Individual Permit [IP]), and typical permit processing timelines.
    - iv. Discuss compensatory mitigation options (if needed).

Deliverables:

Draft and Final USACE Section 404 Permit Strategy Memo

5. USACE Section 404 Permit Application
- a. Because approximately 8,100 feet of E127 will be impacted by project activities, a USACE Section 404 Permit will be required. As such, a pre-application meeting with the USACE Galveston District is recommended. At approximately the 30% design plan set, a meeting will be scheduled. A meeting agenda and applicable attachments and figures will be distributed to USACE attendees.

- b. Based on direction from the USACE Galveston District, the project will most likely qualify for either an NWP 43 (which authorizes Stormwater Management Facilities) or an IP.
- c. A Section 404 permit application will be prepared. It will include all required documents and applicable attachments for a complete submittal.
- d. The submittal will utilize the most up-to-date USACE Forms (acquired from the USACE Galveston District website) and other applicable attachments. The submittal will be suitable for USACE review.
- e. If the USACE deems necessary, three additional documents will be required:
  - i. Compensatory Mitigation Plan,
  - ii. 404(b)(1) Alternative Analysis document (to document the least damaging practicable alternative),
  - iii. TCEQ Tier II 401 Certification Questionnaire and Alternative Analysis Checklist

Deliverables:

Draft and Final USACE Galveston District Pre-Application Meeting Agenda w/ Attachments

Draft and Final Section 404 Permit Application (Either NWP 43 PCN or IP)

Draft and Final Compensatory Mitigation Plan

Draft and Final 404(b)(1) Alternative Analysis

Draft and Final Tier II 401 Certification Questionnaire and Alternative Analysis Checklist

Draft and Final USACE Interagency Review Team Comment Response Matrix

Draft and Final Public Notice Comment Response Matrix

Assumptions:

- Any loss of streams and/or wetlands will be compensated by purchasing in-stream and riparian buffer credits from mitigation banks with available credits. If the USACE deems on-site permittee responsible mitigation, additional scope and fee will be required to develop the on-site PRM plan.
- For each deliverable, it is assumed that AECOM will respond to one round of combined City of Jersey Village and Harris County Flood Control District comments.
- For the USACE Permit Application, it is assumed that AECOM will respond to two rounds of USACE/Interagency Review Team comments

**Hazardous Materials:**

1. Phase 1 Environmental Site Assessment (ESA) Report
  - a. Because the project will require excavation and the potential need for drainage easement acquisition, a Phase I ESA Report is recommended. This report will



- b. The report will be consistent with the procedures included in American Society for Testing and Materials (ASTM) Practice E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.
- c. Elements of the Phase I ESA will include a site visit, review of historical information, interviews with people familiar with the site including local government inquiries to obtain relevant information regarding the environmental conditions of the subject property, and review of compiled regulatory agency database information that may provide an indication of recognized environmental conditions, historical controlled recognized environmental conditions, and environmental risk on or near the subject property. The City of Jersey Village is the user of record. Reliance for the Phase I ESA will be "The City of Jersey Village, its partner entities, and AECOM."
- d. Standard environmental record sources will be used to provide specified local, state, and federal regulatory lists information for potential sites of environmental concern located in the vicinity of the subject property. A database search will be performed, based upon ASTM specified standard record sources and search distance criteria. A vendor will be contacted to obtain the environmental database records.
- e. A site visit will be performed to determine the existence of potentially hazardous materials or substances, pits, ponds, lagoons, stained soil, stressed vegetation, odors, uncontrolled dumping, and pools of liquid likely containing hazardous substances, discarded or unidentified substance containers or drums, and evidence of contamination to the extent possible given site specific access constraints. Topographic, geologic, hydrologic, and hydrogeologic conditions will be observed during the site reconnaissance to address contaminant migration routes.
- f. Interviews with owners, occupants, or past owners or occupants, or others with knowledge of the uses and physical characteristics of the subject property, will be conducted, as necessary. The interviews will be conducted by telephone, mail, electronic communications, or in person during the site reconnaissance to obtain information pertaining to recognized environmental conditions of the subject property. Site questionnaires to key individuals with knowledge of the past history of the subject property will be developed and provided. Data collected and interviews performed will comply with ASTM Standard for Phase I Environmental Site Assessments E1527-13 and will meet the Environmental Protection Agency's (EPA) appropriate inquiry requirements.
- g. Based on the site reconnaissance, interviews, and records review, a report will be developed to meet the latest ASTM standards for Phase I ESAs. The report will include field findings, records review findings, interview questionnaires, conclusions, and recommendations based on the research performed and results of the investigations conducted. Controlled recognized environmental conditions, historical recognized environmental conditions, and de minimis conditions will be identified based on the data collected and the results of the investigations performed during the Phase I ESA. Data gaps, exceptions, deviations, and references will be provided as part of the Phase I ESA report.

Deliverables:

Draft and Final Phase I Environmental Site Assessment Report (completed per ASTM E1527-13 Standards)

Assumptions:

- The City of Jersey Village will provide any past environmental studies within or adjacent to the project boundary to assist in the identification of potential REC's.
- One meeting with the City of Jersey Village to review any Recognized Environmental Concerns (REC's) in connection with the property and recommendations.
- It is assumed that AECOM will respond to one round of combined City of Jersey Village and Harris County Flood Control District comments.
- Recommendations for additional surveys or sampling will be part of the transmittal letter and package sent to the City of Jersey Village that contains the draft Phase I ESA report.

## Subsurface Utility Engineering (SUE):

1. Quality Level D - Review of utility research. Gather/acquire utility ownership information. Create Utility Table. Identify pipelines and ownership information. Draft an ACAD file of all Quality Level D utility linework as best interpreted from record drawings and available GIS databases.
2. Quality Level C – Review of topographic survey for utility features.
3. Prepare List of Utilities spreadsheet for PER. Acquire contact information for representative for each public and private utility company.
4. Submit an Existing Utility Base Map in general accordance with ASEC 38-02, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data.

## Hydrologic and Hydraulic Analysis (H&amp;H):

The drainage subconsultant will develop alternatives to deepen and widen the E127 channel to convey the Atlas 14 100-year storm event. All drainage design will follow City of Jersey Village, HCFCD Hydrology and Hydraulics Guidance Manual, HCFCD Policy Criteria and Procedure Manual, and NRCS grant guidelines. Below is a brief summary of scope for the H&H design team:

1. Site reconnaissance to observe channel conditions, review scour history, review field survey of stream and bridges
2. Review existing studies, as-built plans, wetlands delineation, easements and ROW, GIS data and topographic mapping
3. Review FEMA FIRM and study, obtain FEMA effective models, coordinate with HCFCD and JV staff to obtain flood history of E127.
4. Investigate design alternatives to consider the depth need for trail under railroad and 290 bridges and due to possible limited ROW – recommend possible use of retaining walls
5. Coordinate with bridge engineer to determine maximum depth of excavation near existing bridge structures.
6. Verify and review existing drainage system outfalls
7. Perform both a hydrologic and hydraulic analysis. Review FEMA Effective White Oak Bayou HEC-HMS and HEC-RAS models.

8. Update effective HEC-HMS models to Atlas 14 rainfall conditions and apply new flows to corrected effective HEC-RAS models.
9. Storage outflow HEC-RAS models shall be cycled with HEC-HMS models through each model condition to obtain convergence per HCFCF standards.
10. Create corrected effective models. Update “effective” models with topographic survey data.
11. Create Pre-Project conditions model. Update corrected effective model to reflect changes in watershed including US 290 bridges and detention.
12. Review E127 outlet weir structure. Check and update storage routing curves.
13. Create and analyze proposed design alternatives. Include in model considerations for Village Center Development. A total of 3 design alternatives will be analyzed.
14. Review and analyze updates to models related to bridges and culverts.
15. Determine proposed detention and weir outfall structure modifications necessary.
16. Provide alignment layout and profiles for proposed improvements.
17. Evaluate environmental and permitting impacts.
18. Assist with Preliminary Engineering Report which will include design alternatives and recommendation.
19. Develop floodplain mapping and inundation limits for existing and proposed conditions.
20. Prepare models, exhibits, and report for CLOMR and LOMR, as required.
21. Coordinate with City of Jersey Village and HCFCF.
22. Coordinate with TxDOT regarding hydraulic modeling within US 290 ROW.
23. Complete scour analysis at each existing bridge structure. Determine proposed riprap design/modifications at existing bridge structures.

Structural:

1. Site assessment and analysis of hydraulic capacity of existing bridges at the E127 crossing:
  - a. US 290 EB Frontage Road
  - b. US 290 WB Frontage Road
  - c. Rio Grande St
  - d. Senate Ave
  - e. Sheet pile weir near confluence with E100
2. Review of TxDOT As-built record drawings for US 290 bridges
3. Review bridge BRINSAP reports.
4. Prepare Bridge Condition Assessment Reports
5. Design of new structures or modify existing structures if needed due to Atlas 14 hydraulics for:

- a. US 290 EB Frontage Road
  - b. US 290 WB Frontage Road
  - c. Rio Grande St E127 Crossing
  - d. Senate Ave E127 Crossing
  - e. Sheet pile weir near confluence with E100
6. Meet with UPRR to discuss ultimate E127 channel typical section and discuss potential impact to existing structure. A&F, JV and HCFCD will also discuss schedules with UPRR.
  7. Retaining wall design associated with ground level water storage tank.
  8. Retaining wall design associated with modifying existing detention pond if needed.

Civil:

1. Attend kickoff meeting with City of Jersey Village.
2. Coordinate with all subconsultants.
3. Develop and maintain Project Schedule.
4. Prepare monthly progress reports.
5. Schedule and attend coordination meetings with Jersey Village on monthly basis. Prepare meeting minutes.
6. Schedule and attend coordination meetings (assume 2) with HCFCD. Prepare meeting minutes.
7. Schedule and attend coordination meetings (assume 2) with TxDOT. Prepare meeting minutes.
8. Schedule and attend coordination meetings (assume 2) with Union Pacific Railroad. Prepare meeting minutes.
9. Schedule and attend coordination meetings with all subconsultants (assume 2 per subconsultant).
10. Monthly coordination with Grant Administration subconsultant.

Preliminary Engineering and PER

1. Site reconnaissance and Data Collection
2. Review of as-built plans, reports, and models from Jersey Village, HCFCD, and TxDOT
3. Review of all topographic survey information.
4. Review of all existing right-of-way information.
5. Review of digital terrain model.
6. Coordinate with Village Center Developer.
7. Schedule and attend coordination meeting to review existing H&H conditions. Discuss and coordinate existing H&H conditions with Structural TL.

8. Schedule and attend coordination meeting to review proposed H&H improvements. Discuss and coordinate proposed H&H improvements with Structural TL.
9. Schedule and attend coordination meeting to review existing conditions of structures including bridges, trestle, box culvert weir, sheet pile weir, and Jersey Village ground level water storage tank.
10. Schedule and attend coordination meeting to review proposed improvements to structures for all items mentioned above.
11. Review of geotechnical investigation report. Coordinate results of geotechnical analyses with H&H TL and Structures TL.
12. Review of Phase 1 environmental site assessment report.
13. Review of subsurface utility engineering Utility Table, including monthly updates.
14. Review of parcel acquisition exhibits and documents from surveyor.
15. Prepare Preliminary Engineering Report. See specific items related to PER below.
16. Schedule and attend Draft PER review comment meeting with Jersey Village and HCFCO
17. Review Draft PER {H&H} comments.
18. Review Draft PER {H&H and Structures} comments.
19. Address all Draft PER review comments. Prepare Final PER.

#### **Preliminary Engineering Report**

1. The Preliminary Engineering Report shall include the following:
  - A. Executive Summary (Present findings and recommendations)
  - B. Project Introduction
  - C. Existing Conditions and Findings from Preliminary Design Activities (Discuss reports reviewed, existing land use, geotechnical conditions, and environmental conditions in addition to items below:)
    1. Existing Conditions of Right-of-way and Topographic Information
    2. Existing public and private utilities, including pipelines
    3. Preliminary List of Utilities and Ownership information
    4. Existing Conditions of Pavement
    5. Existing Conditions of Bridges
      - A. Jersey Village
      - B. TxDOT
      - C. Union Pacific Railroad
    6. Existing Traffic Volumes on Streets with Bridges over Channel
    7. Existing Condition Drainage Analysis
  - D. Proposed Conditions, Evaluations, and Recommendations
    1. Proposed ROW / Property Acquisition
    2. Proposed public and private utilities
    3. Proposed Pavement

4. Proposed Bridges
    - A. Jersey Village (Rio Grande St and Senate Ave)
    - B. TxDOT
    - C. Union Pacific Railroad
  5. Proposed Traffic Control for Bridge Closures
  6. Proposed Condition Drainage Analysis
  7. Proposed trail amenities
- E. H&H Report Summary – to include H&H analysis assessing existing and proposed conditions per HCFCD standards
  - F. Geotechnical Investigation – Summarize findings and recommendations made by geotechnical engineer.
  - G. Environmental Site Assessment – Summarize findings and recommendations. Include whether or not an ESA Phase 2 is recommended.
  - H. Tree/Landscape Impacts and Protection
  - I. Floodplain/Floodway
  - J. Jurisdictional Determination – Identify all agencies, public and private, railroads, etc. having jurisdiction over project design.
  - K. Interagency coordination – Discuss previous and ongoing coordination with agencies.
  - L. Estimated Construction Cost
  - M. Appendices
    1. Right-of-way
    2. Site Photographs
    3. Complete H&H Analysis Report to include hydrologic and hydraulic analysis output tables, proposed drainage area maps, detention pond exhibits, proposed typical channel sections, and preliminary scour analysis. Floodplain and inundation maps showing the existing and proposed limits shall also be included.
    4. Complete Geotechnical Investigation Report
    5. Complete Phase 1 Environmental Site Assessment Report
2. Include 30% Design plans in the PER. 30% Design plans will be 11"x17" and shall include the following:
    - A. Cover Sheet
    - B. Location Map
    - C. Sheet Index
    - D. Overall Project Layout (PL) Sheets
    - E. Existing Conditions Floodplain Map
    - F. Existing Conditions Inundation Map
    - G. Proposed Conditions Floodplain Map
    - H. Proposed Conditions Inundation Map
    - I. Survey Control Data (CC) Summary Sheets
    - J. Baseline Geometry (CBL) Sheets
    - K. Typical Section – Channel
    - L. Typical Section - Trail
    - M. Plan View Sheets
    - N. Profile View Sheets

- O. Bridge Layouts
- P. Bridge Hydraulic Data Sheets
- Q. Channel Hydraulic Data Sheets
- R. Drainage Area Maps
- S. Bicycle Trail Overall Layout (BBL) Sheets
- T. Bicycle Trail Sheets
- U. Existing Utility Base Map {SUE}
- V. Tree Removal and Tree Protection Sheets

### **Final Design**

Once the Preliminary Engineering Report is accepted by the City of Jersey Village and HCFCO, and then approved in Commissioner's Court, the project will move into the Final Design Phase. Aguirre & Fields and team will take the PER recommendations and meet with City of Jersey Village to verify and confirm direction of Final Design. A&F will then provide a Final Design & Bid Document scope and fee proposal.

### **Construction Phase Services and CEI**

Upon request, A&F will also provide a CPS and CEI scope and fee proposal.