ATTACHMENT B - SCOPE OF SERVICES

LAREDO COLOMBIA SOLIDARITY INTERNATIONAL BRIDGE (LCSIB) EXPANSION PROJECT PRESIDENTIAL PERMITTING, CONCEPTUAL PLANNING, ENVIRONMENTAL, SCHEMATIC, PLANS, SPECIFICATIONS AND ESTIMATE (PS&E), BID PHASE, AND CONSTRUCTION PHASE

Purpose

The City of Laredo (the "CITY") would like to develop a presidential permit authorizing for the construction of the expansion of the existing Colombia Solidarity International Bridge facility in north Laredo, Texas. For this project, the City requires professional services of LJA Engineering (the "CONSULTANT") for the necessary tasks and subtasks to perform services related to complete the preparation of the Presidential Permit Application and Conceptual Planning for the expansion of the bridge and the associated changes to the port facilities to accommodate the expansion. The scope includes coordination with the US and Mexican Federal Government, TxDOT, Laredo and Webb County MPO, the State of Nuevo Leon, as well as the development of the environmental clearance, schematic, plans, specifications, and estimates (PS&E), bid advertisement services and construction phase services of the project. For the preparation of PS&E, these services will include preparing the bridge design, roadway approach design, changes to the port facilities, hydrologic and hydraulic design, traffic studies, traffic signal design, survey, ROW mapping, ROW acquisition services, and geotechnical data collection, and if requested, provide design support, and testify as the CONSULTANT of Record at Right of Way hearings. Below is a detailed description of services to be provided.

I. TASK 1 PROJECT MANAGEMENT

A. The CONSULTANT will perform a monthly review of the progress of the Contract with respect to schedule, budget, and quality assurance/ quality control.

B. The CONSULTANT will provide a monthly schedule update to the CITY with respect to the Work Authorization.

C. The CONSULTANT will maintain all records and files related to the project throughout the duration of the services. Uploading of project files to the ProjectWise website will be coordinated with the CITY.

D. The CONSULTANT will provide a monthly progress report and invoice to the CITY with respect to the Contract.

E. Deliverables:

1. See Task 6 Deliverables.

II. TASK 2 BI-NATIONAL & STAKEHOLDER PROJECT DEVELOPMENT MEETINGS, CONSULTATIONS & COORDINATION

A. BI-NATIONAL & STAKEHOLDER PROJECT DEVELOPMENT MEETINGS, CONSULTATIONS & COORDINATION

The CONSULTANT will contact, schedule, coordinate and attend project development meetings (including in-person and virtual) with the goal of establishing the proposed bridge expansion plan(s) to be utilized within the preparation of the Presidential Permit Application document. During these meetings potential bridge expansion alternatives will

be identified and discussed. Another goal of these project development meetings will be to present, promote and gain support for the LCSIB Expansion Project. Participants at these project development meetings will include relevant U.S. Agencies (federal, state, and local) private sector stakeholders, and consultants and relevant Mexican Agencies (federal, state and local) and consultants. These activities may also require and include travel and site visits to the LCSIB and other locations necessary to conduct said project development in-person meetings. The CONSULTANT will prepare necessary meeting materials that may be required to conduct said project development meetings, such as agendas, meeting notes, meeting presentations, etc.

In addition to specific project development meetings, this item also includes necessary consultation and coordination communications such as telephone calls, emails, and other non-scheduled virtual meetings. For the duration of the Presidential Permit effort, the CONSULTANT anticipates up to **twenty (20) virtual meetings and up to ten (10) in-person site meetings**. The CONSULTANT estimates up to **five (5) in-person meetings that require travel via air to Washington DC** and up to **five (5) in-person meetings that require travel via air to Mexico**.

In addition, the CONSULTANT will prepare and distribute up to **seven (7) monthly project status updates to selected project stakeholders**. The monthly updates will include completed, current, and future project development items.

B. INCLUSION OF PROJECT WITHIN LAREDO & WEBB COUNTY AREA METROPOLITAN PLANNING ORGANIZATION (LWCAMPO) PLANNING DOCUMENTS
The CONSULTANT will assist the City of Laredo with the inclusion of the LCSIB Expansion Project into the various LWCAMPO planning documents and the allocation of a small amount of federal transportation construction funding for this project. This item is extremely critical and very time sensitive as having the project included within the Texas Statewide Transportation Improvement Program (STIP) will allow for direct participation in and oversight of the future environmental clearance process by FHWA and TxDOT.

C. PARTICIPATION AT U.S.-MEXICO BINATIONAL BRIDGES AND BORDER CROSSINGS GROUP (BBBXG), U.S.-MEXICO JOINT WORKING COMMITTEE (JWC) AND OTHER APPLICABLE MEETINGS/CONFERENCES
The CONSULTANT will attend and actively participate in any scheduled BBBXG, JWC, Legislative and other meetings/conferences that will advance the LCSIB Expansion Project. These activities may also require the CONSULTANT to expend travel and related expenses to multiple and currently undefined locations. The CONSULTANT will prepare presentations and present the presentations as necessary and requested by the CITY. For this phase, **the CONSULTANT will attend up to one (1) BBBXG meeting, up to one (1) JWC meeting and up to three (3) other applicable meetings**.

III. TASK 3 PRESIDENTIAL PERMIT APPLICATION SERVICES AND CONCEPTUAL PLANNING

A. INITIAL PROJECT DEVELOPMENT TIMELINE
The CONSULTANT will develop and submit up to **one (1)** project development timeline, which will include preparation and submittal of a Presidential Permit Application and

necessary contacts, meetings, and coordination activities with multiple project stakeholders.

B. FEDERAL NOTIFICATION OF PROJECT INTENT
The CONSULTANT will develop and provide to the City of Laredo up to **one (1)** draft letter, notifying the U.S. Department of State of the City's intention to commence activities necessary and related to the submittal of a Presidential Permit Application to expand the existing Colombia Solidarity International Bridge (LCSIB). The letter would be prepared in accordance with Executive Order 13867, the current guidance for international crossing permits, for final preparation with signature by the City of Laredo. The CONSULTANT will deliver the final letter directly to the U.S. Department of State, digitally via email and in hard copy format via over-night delivery.

C. INDENTIFICATION OF COMPLEMENTARY SHORT- AND MEDIUM-TERM ENHANCEMENTS PROJECTS FOR IMPLEMENTATION BY OTHERS
During the bridge expansion development meetings, the CONSULTANT will also solicit information from project stakeholders on potential impacts and will identify enhancement projects complimentary to the bridge expansion that will facilitate expedited through-put of both non- commercial and commercial vehicles processed at the Port of Entry (POE). While these potential POE enhancement projects may not be included within the Presidential Permit Application, the CONSULTANT will compile and submit a report to include a listing of these potential POE impacts/enhancements. This report would also include potential future projects and project details presented by the project stakeholders. The CITY could then utilize these complimentary projects report to establish separate project development teams of consultants for implementation of chosen projects. These complimentary projects may take the form of CITY projects, CBP projects, or Donation Acceptance Program (DAP) projects. **The CONSULTANT will provide up to one (1) Planning Report.**

D. CONCEPTUAL PLANNING
The CONSULTANT will perform the following:

1. Perform site visits for field reconnaissance.
2. Gather data to include, but not be limited to previous studies, land records, property and facility management records, land use, engineering data, permits, public safety requirements, and/or environmental requirements from previous studies.
3. Identify purpose and need, project description, and overall approach to project development.
4. Develop bridge design criteria for the bridge expansion for Mexico loading, and in accordance with AASHTO and TxDOT standards and guidelines.
5. Develop roadway design criteria in accordance with TxDOT guidelines.
6. Develop changes to the port facilities in accordance with GSA Border Station Design Guide.
7. Identify three preliminary / potential alternative locations for the bridge and connecting roadways. Perform preliminary alignment analysis.
8. Perform preliminary traffic evaluations:
   - Obtain existing reports and traffic data maps.
   - Evaluate the existing traffic data for roadways and bridges in the vicinity of the Project area.

- Coordinate and conduct a meeting with TxDOT to determine and review any preliminary planning under development by TxDOT for adjoining and adjacent roadways, including the APD or PS&E activities for SH 255 and FM 1472.

9. Prepare preliminary cost estimate for each alternative.
10. Determine preliminary environmental constraints and/or issues for each alternative.
    - The CONSULTANT shall identify environmental constraints within the project area and develop a list of all properties in the project area which are eligible for or entitled to protection under applicable law, for example, properties included in or potentially eligible for inclusion in the National Register of Historic Places.
11. Determine preliminary right of way (ROW) requirements - Preliminary ROW requirements shall be determined using the following:
    - Possible bridge route alternatives,
    - POE facility requirements for bridge expansion,
    - Roadway functional classification and design criteria,
    - Consideration of environmental impacts,
    - Access denial limits (control of access),
    - Utility corridor space requirements,
    - Drainage requirements and
    - Typical sections.

    Preliminary ROW requirements and opinion of costs will be tabulated. A preliminary ROW technical memorandum that documents and describes the ROW requirements and associated opinion of ROW acquisition costs shall be prepared. ROW acquisition costs will be based on current appraisal values obtained from the Webb County Appraisal District for the specific parcels to be acquired.
12. Coordinate / conduct stakeholder workshop to obtain comment regarding project, location, and alignment.
13. Develop a Public Involvement Plan
14. Prepare a Draft Preliminary Engineering Report including alternate alignment solutions and recommendations with associated cost estimates for each alternate solution and preliminary recommendation; summarize each alternate solution in sufficient detail to indicate clearly the problems involved in order for the CITY to make the appropriate comparisons to the CONSULTANT's final recommendations and provide the required approvals for further project development; provide a formal and clearly outlined recommendation regarding the preferred alignment(s) of the project; prepare bound copies of the preliminary and / or final report, including all attachments, exhibits, preliminary layouts, sketches, profiles, and cost estimates.

E. PRESIDENTIAL PERMIT APPLICATION DOCUMENT

The CONSULTANT will prepare and submit one (1) Presidential Permit Application (PPA) for the LCSIB Expansion Project within approximately six (6) months after approval of the contract by the Laredo City Council. The timing for the completion and submittal of the PPA is dependent upon the CITY and the State of Nuevo Leon reaching agreement on the proposed conceptual bridge design to include: the expansion components, size, and location(s). The intent is to reach this agreement within the first forty-five (45) days after the notice to proceed is issued. Due to current federal legislative initiatives being considered for passage into law, the latest intended time for submittal of the PPA would be the end of November 2024. **The CONSULTANT will provide up to one (1) application**

for review by the Department of State and up to one (1) application that addresses comments from the Department of State.

The time for review and issuance of a Presidential Permit for the LCSIB Expansion project, once the Application has been submitted, is entirely out of the control of the CONSULTANT and the CITY, and as such a timeline for issuance cannot be stipulated.

The Presidential Permit Application will include the following:

1. Identifying Information
2. Description of Facility
3. Construction Plan
4. Traffic Information
5. Financing
6. Protected Areas
7. Foreign Policy Interest
8. Other U.S. Approvals
9. Government of Mexico Approval
10. Existing Presidential Permit
11. Letters of Support
12. Supplemental Information – Traffic
13. Supplemental Information – Nearby Bridges
14. Supplemental Information – Construction Plan
15. Coordination – Mexican Agencies
16. Preliminary Engineering Report

IV. **TASK 4 ENVIRONMENTAL ASSESSMENT**

Environmental clearance for the project under this work authorization will be accomplished by means of an Environmental Assessment (EA.) The environmental assessment document will include items of study, evaluation, coordination and analysis as is defined within the most current FHWA guidelines and criteria. Initially, key environmental issues will be investigated including initial data collection efforts through available sources of information and supplemented with field investigations. This task will also include an initial meeting with the CITY and others whose input may be useful. The results of this task will be the identification and prioritization of the important issues as determined by the CITY that are likely to arise during the course of project development and that should be considered during environmental analysis. It is understood that CONSULTANT is receiving EA work completed by the previous CONSULTANT.

For the purposes of this scope and professional services fee submittal it is currently anticipated this work task shall include only the development of a Final Draft Environmental Assessment Document prepared in the current TxDOT modular EA format. Should extended environmental studies be required, beyond the EA level, the appropriate additional professional services fee shall be negotiated at a later date. The likely lead federal agency for review and approval of the EA document will be FHWA.

A. **UNDER THE CURRENT GUIDANCE OF EO 13867 THE EA DOCUMENT IS NOT REQUIRED TO BE COMPLETED OR INCLUDED WITHIN THE PRESIDENTIAL PERMIT APPLICATION DOCUMENT. HOWEVER, IT WILL BE A REQUIRED DOCUMENT TO OBTAIN FOLLOW-UP PROJECT PERMITS,**

AND IT IS RECOMMENDED THAT EA DEVELOPMENT BE INITIATED AS SOON AS THE FHWA AND TxDOT CAN BE BROUGHT INTO THE PROJECT VIA AN EXECUTED ADVANCED FUNDING AGREEMENT (AFA).

A. RIGHT-OF-ENTRY (ROE)

If not afforded by the CITY, the CONSULTANT shall secure permission to enter private properties to perform any surveying, environmental, engineering, or geotechnical activities needed within the general area of the proposed Laredo-Colombia Solidarity International Bridge Expansion Project (proposed project) or proposed project right-of-way (ROW). A draft copy of the ROE letter shall be provided to the CITY for approval prior to any mailings. Property owner names shall be obtained from the CITY or the Webb County Appraisal District website. Detailed research for individual property owner parcel, deed or easement information shall not be conducted at the Webb County Appraisal District office by the CONSULTANT. If requested in writing by a private property owner, the CONSULTANT shall contact the property owner in advance of field investigations; property owners may elect to be present while the CONSULTANT, or designated subconsultants, are present on the owner's property. The CONSULTANT shall not commit acts which would result in damages to private property. The CONSULTANT shall make every effort to comply with private property owner requests while on their property. The CONSULTANT will contact property owners in advance of field surveys or to address specific property owner concerns about the work to be conducted or being conducted on individual property parcels. The CONSULTANT shall coordinate ROE for up to ten (10) parcels within the project area for the purpose of completing field investigations. It is anticipated that the CITY will assist with problems regarding landowners who refuse to grant ROE or are otherwise hostile with respect to the completion of this scope of services. Private property will not be accessed without a written/signed ROE authorization from the landowner. No tasks listed in this scope of services that require access onto private property shall be conducted without a signed ROE from the landowner.

B. FIELD INVESTIGATIONS

The CONSULTANT shall conduct environmental investigations and field studies necessary to complete the EA and associated technical reports, forms, etc. The scope of work anticipates initial field investigations and at least one subsequent follow-up field investigation based on agency comments, etc. All field investigations and analyses would be limited to the U.S. side of the bridge.

1. See Task 6 Deliverables

C. ENVIRONMENTAL ASSESSMENT AND TECHNICAL REPORTS

The CONSULTANT shall prepare an Environmental Assessment (EA) that satisfies the requirements of 23 CFR 771.115(c), 43 TAC 2.41-2.52, and the National Environmental Policy Act (40 CFR 1500-1508). Document content shall be in sufficient detail to meet the FHWA requirements for environmental review documents. Should the classification process or environmental investigations determine that another level of environmental documentation is required (such as an Environmental Impact Statement), the effort associated with preparing another document type shall be considered out of scope and subject to an **additional services request**.

1. **NEED AND PURPOSE**
   The CONSULTANT shall develop a Need and Purpose statement for the project.
   a. Need for the Project – The EA shall explain why the project is proposed. The EA shall identify and describe the transportation or other needs in which the proposed project is intended to satisfy (e.g., provide system continuity, alleviate traffic congestion, improve safety, and/or correct unsatisfactory roadway conditions, etc.).
   b. Purpose of the Project – The EA shall describe the goal(s) or desired outcomes that would be attained if a proposed project was implemented. The objectives shall be clearly expressed and useful for identifying the alternative(s) that do and do not warrant consideration as a possible preferred alternative.

2. **PROJECT INTRODUCTION AND PLANNING PROCESS**
   The EA shall provide a brief historical description of the planning, scoping and public outreach processes that resulted in identifying the proposed project. The EA shall reference the applicable transportation improvement plan and any relevant MPO information from the approved planning documents as applicable. Other relevant studies in the proposed project area shall be referenced as appropriate.

3. **ALTERNATIVE ANALYSIS**
   The EA shall evaluate Build Alternatives and a No Build Alternative and shall additionally describe preliminary alternatives that were considered but eliminated from further study. One or more Build Alternatives and the No Build Alternative shall be subject to detailed analysis in the EA. The Build Alternative(s) shall be examined against the No Build Alternative and the alternatives shall be discussed at equal levels of detail to provide an equitable comparison based upon the purpose and need and related objectives of the proposed project.

   The EA shall clearly document the basis for the elimination of alternatives and selection of a recommended preferred alternative.

4. **SOCIAL AND ECONOMIC IMPACTS**
   The CONSULTANT shall identify and evaluate the social and economic impacts of the proposed project. The CITY shall provide the CONSULTANT with any available project data including available field survey results, correspondence, and documentation of agency coordination. The CONSULTANT understands that the CITY may choose to lead selected agency coordination efforts. The CONSULTANT shall use appropriate data sources, such as US Census Bureau data, windshield surveys, maps, and aerial photographs to determine existing conditions and the potential for social and economic impacts. Potential social and economic impacts to be documented include:
      a. Demographics (population, ethnic/racial distribution, income) based on the most recent census or projections there from.
      b. Land uses in the project area (community services, schools, etc.).
      c. Other potential impacts identified in studies of social impacts.

The CONSULTANT shall identify potential displacements, potential replacement housing or other replacement sites and racial, ethnic, and income levels of affected individuals and communities, in order to determine any disproportionate impacts on any minority, Limited English Proficiency, or low-income individuals or communities. Studies shall fulfill the requirements of Executive Order 12898 (on Environmental Justice).

5. FARMLAND

The CONSULTANT shall identify farmland impacts for the proposed project. Identification of farmland impacts shall be in accordance with the Farmland Protection Policy Act (7 USC 4201 et. seq.). Farmland impacts shall be reported in the EA as the proposed project area may be located within agricultural areas designated as prime farmlands. If required, Natural Resources Conservation Service (NRCS) Form AD-1006, "Farmland Conversion Impact Rating" would be completed, processed with the NRCS and included in the EA as appropriate.

6. UTILITY RELOCATION

The CONSULTANT shall identify whether or not utility relocations would be necessary as a result of the proposed project. If the need for utility relocations is identified, the impacts resulting from the removal or adjustment of any utilities within the existing/proposed project right-of-way (ROW) would be considered and discussed in the EA.

7. AIR QUALITY ANALYSIS

The CONSULTANT shall conduct an air quality analysis, including a Mobile Source Air Toxics (MSAT) qualitative analysis, if needed. The National Ambient Air Quality Standards for Webb County shall be assessed. The Texas Commission on Environmental Quality (TCEQ) air quality designations shall be reviewed for the region/area of the proposed project (e.g., attainment, non-attainment, etc.). The effects (positive or negative) of the proposed project on local air quality shall be evaluated, including the potential for fugitive dust particulate emissions during construction activities.

8. BICYCLE AND PEDESTRIAN FACILITIES

The CONSULTANT shall identify impacts on existing bicycle and pedestrian facilities, if any, including linkages to transit stops and corridors.

9. COMMUNITY IMPACTS

The CONSULTANT shall conduct a Community Impact Assessment, if needed, including displacements, changes to access and travel patterns, changes to community cohesion, Environmental Justice analysis in accordance with Executive Order 12898, and Limited English Proficiency analysis in accordance with Executive Order 13166. The CONSULTANT shall conduct an analysis sufficient to meet requirements of TA 6640.8A.

10. VISUAL/ AESTHETIC IMPACTS

The CONSULTANT shall examine any visual or aesthetic impacts that may include impacts to any landscaping, decorative, or other features that may be affected by the proposed project.

11. NOISE ANALYSIS

The CONSULTANT shall complete a traffic noise analysis using the FHWA Traffic Noise Model® (TNM®) files, version 2.5. Noise analyses shall be conducted for each reasonable alternative as appropriate. The existing and predicted (future) traffic data and information required for inclusion in the TNM® shall be developed by the CONSULTANT.

No representative receivers that might be impacted by highway traffic noise and may benefit from feasible and reasonable noise abatement are present in the project area. Therefore, the extent of noise modeling would be limited to determining predicted (future) noise impact contours for adjacent undeveloped properties where development may occur in the future.

Should the environmental investigations determine that another level of noise analysis is required, the effort associated with preparing additional analyses shall be considered out of scope and subject to an **additional services request**.

12. WATER RESOURCES

The CONSULTANT shall document compliance with laws and regulations concerning the management of water resources. Additionally, the CONSULTANT shall determine whether the proposed project requires any of the following permits related to water resources:

a. Texas Pollutant Discharge Elimination System (TPDES)
b. State water quality certification under Section 401 of the Clean Water Act (CWA)
c. Nationwide or Individual Permit under Section 404 of the CWA

13. SURFACE WATER

The CONSULTANT shall assess surface water features within the project area (e.g., irrigation canals, open water, drainage ditches, etc.). Surface drainage and the water quality of surface waters, streams, creeks or washes would be additionally assessed as needed. Impacts to surface waters would be assessed for the recommended Build Alternative in the EA. The TCEQ Section 303(d) list of impaired waters would be reviewed to evaluate the potential for the proposed project to adversely affect impaired waters.

14. FLOODPLAINS

Executive Order 11988 requires federal agencies to determine whether a proposed action occurs within a floodplain. Executive Order 11988 directs each federal agency to take action 1) to reduce the risk of losses associated with floods, 2) to minimize the impact of floods on human health and safety, and 3) to preserve the beneficial values of floodplains. The CONSULTANT shall evaluate the project area regarding Federal Emergency Management Agency (FEMA) designated/mapped areas, flood event

impacts, flood control measures, encroachments of the 100-year floodplain, developed areas in or near the 100-year floodplain, local watersheds, and drainageways.
The CONSULTANT shall determine whether the proposed project is located within any FEMA mapped floodplains. The EA shall document the floodplains, if any, that could be potentially impacted by the proposed project.

15. GROUNDWATER

The CONSULTANT shall evaluate the project area regarding groundwater availability and allocation. This evaluation shall include the identification of local public drinking water systems.

16. WATERS OF THE US, INCLUDING WETLANDS

Section 404 of the CWA regulates the discharge of dredged or fill material into waters of the US, including wetlands. The US Army Corps of Engineers (USACE) administers the permitting program for actions under Section 404 of the CWA. The CONSULTANT shall prepare the delineation of waters of the US, including wetlands, for areas within the preferred Build Alternative. The delineation would be conducted in accordance with the 1987 Corps of Engineers Wetland Delineation Manual and the appropriate Regional Supplement to the Corps of Engineers Wetland Delineation Manual.

The CONSULTANT shall collect background data (i.e., aerial/color infrared aerial photographs, topographic data, etc.) prior to the field investigation. If ROE/field access is not authorized on all proposed ROW parcels, the CONSULTANT shall utilize other available resources such as the NRCS Web Soil Survey, aerial photography, topographic maps, and National Wetlands Inventory (NWI) data, etc., to delineate wetlands within the preferred alternative or related areas.

The wetland delineation would consist of staking and mapping identified waters of the US, including wetlands and other special aquatic sites. Under normal circumstances, wetlands must possess three essential characteristics: hydrophytic vegetation, wetland hydrology, and hydric soils. Indicators of these characteristics would be documented in the wetland areas, as well as in the nearby upland areas, to determine the presence (or absence) of wetland characteristics. Waters of the US shall be delineated in the field and recorded using Trimble® Geo7X Global Positioning System (GPS) technology. Areas extending beyond the project ROW shall be noted but not delineated during the field investigation. Wetland data forms shall be completed at vegetative community changes within the project ROW as well as in other areas to determine the geographical boundary of a wetland or the ordinary high-water mark of a stream/creek.

The CONSULTANT shall draft a waters of the US delineation report which summarizes the methods and results of the delineation activities as well as associated mapping (i.e., vicinity, site location, topography, aerial photograph, LiDAR, soils, floodplains, NWI, etc.), site photographs, wetland data point locations, acreage summary tables, and other supporting data (e.g., antecedent precipitation data).

17. USACE PERMIT APPLICATION

Permit applications prepared for the proposed project may include the following:

a. Section 10 of the Rivers and Harbors Act (33 USC 403). The CONSULTANT shall determine whether the proposed project requires a Section 10 permit and shall prepare and submit a permit application to the USACE and obtain the permit.
b. Section 404 of the Clean Water Act (33 USC 1344). The CONSULTANT shall determine whether the proposed project requires a Section 404 permit (Regional General or Nationwide or Individual Permit (IP)). The CONSULTANT shall prepare and submit a Tier I checklist or a Tier II Section 401 certification questionnaire and water quality certification documentation to TCEQ as appropriate.

18. RIVERS AND HARBORS ACT SECTION 9/ US COAST GUARD BRIDGE PERMIT APPLICATION

Section 9 of the Rivers and Harbors Act of 1899 defines the requirements for the approval to construct dams, dikes, bridges, or causeways in navigable waters; this approval authority rests with the USACE. The CONSULTANT shall work with both the USACE and the US Coast Guard (USCG) to prepare a bridge permit application (33 USC 401) as the proposed project crosses the Rio Grande, a navigable international waterway. Bridge permit applications shall comply with the USCG Commandant Publication P16591.3D, Bridge Permit Application Guide. Supporting documentation (e.g., environmental documentation, plan sheets, navigation impact report, etc.) shall be provided by the ENGINEER as part of the application. NEPA documentation and USACE permitting shall be submitted to the USCG prior to USCG approval of the bridge permit application.

19. FISH AND WILDLIFE COORDINATION ACT (FWCA)

The CONSULTANT shall identify water body modifications and impacts to wildlife. The FWCA applies to projects that would result in the control or modification of a natural stream or body of water and would require a Section 404 Individual Permit.

20. THREATENED AND ENDANGERED SPECIES

For the purposes of this work authorization, protected species shall include:

a. Species listed by the US Fish and Wildlife Service (USFWS) as threatened or endangered or proposed for listing as threatened or endangered (50 CFR 17.11-12);
b. Species that are candidates for review or listing by the USFWS as threatened or endangered (per most recently updated list in the Federal Register);
c. Species listed by the Texas Parks and Wildlife Department (TPWD) as threatened or endangered as reflected in the Annotated List of Rare Species for Webb County; and
d. Species protected by the Migratory Bird Treaty Act (50 CFR 10.13).

The CONSULTANT shall examine existing data to determine the likelihood that protected species, their habitat or designated critical habitat (per 50 CFR 17.94-95) could be impacted by the proposed project and shall report the findings in the EA. Existing data shall include the records of the TPWD Natural Diversity Database. The

CONSULTANT shall not conduct species-specific presence/absence surveys for protected species or critical habitat. If required, presence/absence and/or critical habitat surveys would be conducted under a supplemental work authorization if needed.

21. HAZARDOUS MATERIALS IMPACTS

The CONSULTANT shall conduct an Initial Site Assessment (ISA) for potential hazardous materials impacts for the proposed project area. The ISA shall determine the potential for encountering hazardous materials in the general project area, including possible environmental liability, increased handling requirements (e.g., soil or groundwater), and any potential health and safety issues.

The completed ISA shall include, when applicable, copies of search reports including maps depicting locations, copies of agency file information, photographs, recommendations, and any other supporting information gathered by the CONSULTANT to complete the ISA. The CONSULTANT shall include the information presented in the completed ISA in the relevant section(s) of the EA, including:

a. A concise summary of information gathered during the ISA, including sufficient information to show that the proposed project area for the roadway facility was adequately investigated for known or potential hazardous material contamination.
b. A concise description of the scope of the ISA, disclosure of any limitations of the assessment, and a statement indicating who conducted the assessment.
c. A concise summary of the findings of the ISA, along with an opinion of the potential of any suspected hazardous material contamination sites to impact the proposed project during construction.
d. A discussion of any actions recommended for conducting further investigation of suspect areas, and/or justification for postponement of further investigations.
e. A summary of efforts to be employed to avoid or minimize involvement with known or suspected hazardous material contamination sites during construction, and justification for not avoiding contaminated sites within the preferred alternative or corridor alignment.
f. Disclosure of known or suspected hazardous material contamination that is anticipated to be encountered during construction.
g. A discussion of any required or recommended special considerations, contingencies, or provisions to handle known or suspected hazardous material contamination during ROW negotiation and acquisition, property management, design, and construction.
h. A summary of any early coordination or consultation conducted with the regulatory agencies, local entities, or property owners.
i. A discussion of any further hazardous materials related coordination with, and approvals or permits required from, the regulatory agencies or other entities.
j. Should the findings of the ISA conclude that additional investigations, special considerations, or other commitments are required during future stages of project development, the CONSULTANT shall review those findings and commitments with the CITY prior to completing the hazardous materials discussion for the EA.

22. CULTURAL RESOURCES

The proposed undertaking would be sponsored by the FHWA. As the FHWA is a federal agency, the project would fall under the regulatory jurisdiction of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. As the proposed project represents a publicly sponsored undertaking, the project sponsor is required to provide the applicable federal agencies and the Texas Historical Commission (THC), which serves as the State Historic Preservation Office (SHPO) for the state of Texas, with an opportunity to review and comment on the project's potential to adversely affect historic properties listed on or considered eligible for listing on the National Register of Historic Places (NRHP). At this time, no other federal or state jurisdiction has been identified for the project. If any additional regulatory triggers are identified as the project moves forward, the CONSULTANT will evaluate whether or not any additional, out-of-scope cultural studies or agency coordination may be required.

The cultural resources study would consist of desktop archival research, an intensive archeological field survey, and production of a report suitable for review by the SHPO in accordance with the THC's Rules of Practice and Procedure, Chapter 26, Section 26, and the Council of Texas Archeologists' (CTA) Guidelines for Cultural Resources Management Reports.

Cultural Resources Assumptions

- All cultural resources investigations are supervised by an archeological Principal Investigator who meets the Secretary of the Interior's (SOI) Professional Qualification Standards for Archeology, and all architectural history investigations are supervised by an architectural history Principal Investigator who meets the SOI's Professional Qualifications for Architectural History.
- The project area consists only of the proposed project facilities described in this proposal. This proposal does not provide for surveys of reroutes, alternate alignments, or additional or ancillary locations that fall outside the boundaries of the project area as described herein.
- In the event that archeological sites are encountered within the project area, additional investigations will be required, an **additional services** will be submitted.
- This scope includes a limited review of existing literature, site files, and online map sources to determine the estimated time period of occupation of any historic-age archeological sites and/or construction dates of historic-age structures or engineering features that may be encountered during the survey. If extensive historical research is required to more fully develop the context of historic-age resources, such as architectural evaluations; detailed reviews of historic records, deed records, genealogical records; or library or museum collections, an **additional services** will be submitted.
- The CONSULTANT will employ a non-collection policy to the maximum extent practicable. Diagnostic (i.e., time- or culturally sensitive) and non-diagnostic artifacts will be sketched and photodocumented in the field, and notes will be recorded on their provenience and apparent cultural and chronological affiliation. In the event that any cultural materials are collected during the survey, they will be temporarily housed at the CONSULTANT's facilities in Austin, Texas, and

processed for analysis. Any cultural materials collected from private land would be returned to the landowner. Any artifacts collected from public land during the survey may need to be curated at an approved curational facility according to the guidelines of the THC and the curation facility. This scope of work does not cover the costs of processing artifacts for curation, the negotiation of a curation agreement with an approved curation facility, or curation fees.

- This scope includes provisions for curating cultural resources survey records (e.g., field forms, field notes, digital photographs, photo sheets, official agency correspondence), which is required for all held-in-trust projects conducted under the Antiquities Code of Texas, at an approved curation facility, including the CONSULTANT's charges for preparing project records for curation as well as the curation facility's fees for permanently housing the project records. TARL charges a minimum fee for records-only curation for project records that occupy less than 1.5 inches of drawer space. This proposal assumes that 1.5 inches or less of drawer space would be required. In the event that more than 1.5 inches of drawer space is required or if TARL's records policies or fees change prior to submission of project records for curation, additional curation fees may be incurred and will require an **additional services request**.
- This scope does not include provisions for conducting surveys for Traditional Cultural Properties or Traditional Cultural Plants. Information regarding these cultural resources is typically restricted within federally recognized tribes and not available to archeological contractors.
- This scope covers only a Phase I cultural resources inventory. In the event that potentially significant prehistoric and/or historic-age resources are present within the project area, additional investigations may be required, such as significance testing and/or mitigation studies. These tasks will require an **additional services request**.
- One technical report will be written describing the results of the cultural resources survey of the project area. This proposal does not provide for generating multiple or supplemental technical reports.
- This scope provides for responding to two (2) rounds of comments, including one initial set of client comments and one (1) set of agency comments. Additional rounds of comments may not be covered under the terms of this scope and will require an **additional services request**.
    - **EXCLUSION** - This proposal does not include mitigation, should mitigation be required.
    - **EXCLUSION** - This proposal does not include tribal organization coordination.
- Title 13, Part 2, Chapter 26, Subchapter C, Rule 16.16 of the Texas Administrative Code requires the holder of a Texas Antiquities Permit to submit a technical report presenting the results of the permitted investigation to the THC for review. The CONSULTANT will provide the CITY with a reasonable opportunity to review, comment upon, and approve the technical report prior to submission to the THC. The CONSULTANT can delay initiating the review process within reasonable limits given project scheduling needs but must allow for sufficient time to complete

the entire review process prior to the expiration date of the Antiquities Permit. This requirement applies even if the development of the project is postponed or canceled.

23. HISTORIC RESOURCES SURVEY

The CONSULTANT shall:

- Define an APE of the proposed project area based on applicable federal and state agency guidelines, taking into account the horizontal extent of the construction footprint, and potential indirect (e.g., viewshed) effects beyond the construction footprint.
- Perform a field survey to confirm the location of previously documented historic-age resources, and identify additional historic-age resources, if present, within the APE.
- Document any cultural resources encountered to a sufficient degree to make preliminary recommendations of the significance of the resources in terms of their eligibility for inclusion in the NRHP.
- Assess the significance of any cultural resources within the project area in terms of their potential eligibility for inclusion in the NRHP.
- Develop a draft technical report detailing the project background, environmental and cultural setting of the project area, research goals and survey methods, survey results, recommendations for any cultural resources documented during the survey, and a bibliography of references cited suitable for review by the THC and any other applicable regulatory agencies.
- Submit a preliminary review copy of historic resources survey report describing the results of the survey in electronic (PDF) format to the client or review. Following approval of the draft report by the client, the CONSULTANT will submit an electronic copy of the report to the THC and any other applicable regulatory agencies for review and comment. The CONSULTANT will coordinate review with the regulatory agencies unless the client would prefer to coordinate agency review directly.
- Respond to any comments on the draft report offered by the THC and any other applicable regulatory agencies and produce a final report.
- Submit the final report to the client and the THC.
- Prepare summary of findings for the NEPA documentation and provide required documentation for NEPA document.

24. ARCHEOLOGICAL SURVEY

The CONSULTANT shall:

Define the Area of Potential Effect (APE) of the proposed project based on applicable federal and state agency guidelines, taking into account the horizontal extent of the construction footprint, the vertical depth of ground-disturbing impacts, and potential indirect (e.g., viewshed) effects beyond the construction footprint.

Perform an intensive archeological survey, consisting of pedestrian walkover with surface inspection and systematic shovel testing and mechanical trenching at a level of intensity sufficient to meet or exceed the Texas State Minimum Archeological Survey Standards (TSMASS) and guidelines established by the CTA unless field conditions warrant excavation of more or fewer shovel tests.

- Document any cultural resources encountered to a sufficient degree to make preliminary recommendations of the significance of the resources in terms of their eligibility for inclusion in the NRHP.
- Inspect the locales of any previously recorded archeological sites within the project area, assess their current condition, and document the sites to a sufficient degree to make preliminary recommendations of the significance of the resources in terms of their eligibility for inclusion in the NRHP.
- Complete and submit State of Texas Archeological Site Data Forms (for new archeological sites) or State of Texas Archeological Site Update Forms (for previously recorded archeological sites) to the Texas Archeological Research Laboratory (TARL). Permanent site trinomials will be obtained from TARL for any new archeological sites documented within the project area during the survey.
- Assess the significance of any cultural resources within the project area in terms of their potential eligibility for inclusion in the NRHP.
- Develop a draft technical report detailing the project background, environmental and cultural setting of the project area, research goals and survey methods, survey results, recommendations for any cultural resources documented during the survey, and a bibliography of references cited suitable for review by the THC and any other applicable regulatory agencies.
- Submit a preliminary review copy of the archeological draft report describing the results of the survey in electronic (PDF) format to the client or review. Following approval of the draft report by the client, Horizon will submit an electronic copy of the report to the THC and any other applicable regulatory agencies for review and comment. Horizon will coordinate review with the regulatory agencies unless the client would prefer to coordinate agency review directly.
- Respond to any comments on the draft report offered by the THC and any other applicable regulatory agencies and produce a final report.
- Submit the final report to the client and the THC.
- Prepare summary of findings for the NEPA documentation and provide required documentation for NEPA document.

25. SECTION (4F)/(6F)

The CONSULTANT shall, in accordance with 23 CFR 771.135 (49 USC 303), US Department of Transportation Act, identify properties within the proposed project area that are protected by Section 4(f) of the US Department of Transportation Act of 1966. Such Section 4(f) properties include parkland, recreational area, wildlife refuges, and historic properties. The CONSULTANT shall evaluate Section 4(f) property impacts for the recommended preferred alternative in the EA.

The CONSULTANT shall identify areas of parkland within the proposed project area that are protected by Section 6(f) of the Land and Water Conservation Act. Such Section 6(f) properties were acquired, or developed and funded, through monies of the Land and Water Conservation Fund of 1965. The CONSULTANT shall not conduct activities to replace impacted Section 6(f) properties under this work authorization. Section 6(f) property replacement activities, if required, will require an **additional services request**.

The CONSULTANT shall document the proposed project's compliance with Chapter 26 of the Texas Parks and Wildlife Code.

26. CONSTRUCTION IMPACTS

The CONSULTANT shall identify potential construction-phase impacts that would result from the proposed project and shall document such impacts in the relevant section(s) of the EA. Construction impacts associated with air quality and noise shall also be assessed.

27. INDIRECT AND CUMULATIVE IMPACTS

The CONSULTANT shall assess the indirect and cumulative impacts that would result from the proposed project. The assessment of indirect impacts shall include induced growth indirect impacts and encroachment alteration impacts. The assessment of cumulative impacts shall include impacts to the environment which result from incremental impacts of the proposed project when added to other past, present, and reasonably foreseeable future actions in the general project area.

28. INDIRECT IMPACTS ANALYSIS

For induced growth indirect impacts, the CONSULTANT shall evaluate the causation connecting a transportation project to future land use changes and the impacts associated with those land use changes. The induced growth indirect impacts analysis would follow a six-step methodology which includes defining or identifying: 1) the methodology, 2) the area of influence (AOI) and study timeframe, 3) areas subject to induced growth in the AOI, 4) if growth is likely to occur in the induced growth areas, 5) resource subject to induced growth impacts, and 6) mitigation (if applicable).

For encroachment alternation indirect impacts, the CONSULTANT shall assess all resources which would be evaluated for direct impacts. Examples of potential encroachment alteration impacts may include the anticipated future impacts after construction of the recommended preferred alternative to the following considerations: habitat fragmentation, neighborhood stability, access to specific goods or services, changes in travel patterns, etc. The Indirect Impacts Analysis would only be completed if required by FHWA.

29. CUMULATIVE IMPACTS ANALYSIS

For cumulative impacts, the CONSULTANT shall conduct a five-step process for considering the cumulative effects on a project. The five steps include: 1) resource project/study area, conditions and trends, 2) direct and indirect effects on each resource from the proposed project, 3) other actions (past, present and reasonably foreseeable) and their effect on each resource, 4) the overall effects of the proposed project combined with other actions, and 5) mitigation of cumulative effects. The cumulative impacts analysis would be conducted for the recommended preferred alternative. The Cumulative Impacts Analysis would only be completed if required by FHWA.

30. RESOURCE AGENCY COORDINATION

The CONSULTANT shall coordinate with applicable resource agencies or coordinate with resource agencies through FHWA. The CONSULTANT understands that the CITY or FHWA may choose to lead selected agency coordination efforts. Resource agency coordination efforts may include, but are not limited to TxDOT, FHWA, USACE, USFWS, TPWD, IBWC, THC and FEMA.

31. TECHNICAL REPORTS

Technical reports and other similar documentation for environmental services may include a report, checklist, form, or analysis detailing resource-specific studies identified during the process of gathering data to make an environmental decision. Technical reports and documentation are produced before an environmental document (e.g., EA) is prepared in order to identify issues early in the project review process. Technical reports and associated documentation shall be prepared by the CONSULTANT with sufficient detail and clarity to support environmental determination(s). All technical reports must be compliant with FHWA guidance, and policy. The environmental document (e.g., EA) must reference the technical reports.

Environmental technical reports and documentation must include appropriate NEPA or federal regulatory language in addition to the purpose and methodology used in delivering the service. Technical reports and forms must include sufficient information to determine the significance of impacts, if any.

Deliverables:

- EA Version 1, 2, 3, 4 and 5 (if required)
- Air Quality Analysis (if required)
- Archeological Survey Report
- Chapter 26, Parks and Wildlife Code
- Community Impacts Assessment
- Farmland Protection Policy Act Forms
- Hazardous Materials Initial Site Assessment
- Historic Resources Survey Report (HRSR)
- Indirect and Cumulative Impacts Analysis (if required)
- Section 6(f) Land and Water Conservation Fund Act coordination (if required)
- Species Analysis Spreadsheet
- Surface Water Analysis
- U.S. DOT Section 4(f) Analysis (if required)
- Public Involvement (Public Meeting and Public Hearing)
- Traffic Noise Analysis Technical Report
- Waters of the US Delineation Report
- Documentation of Public Meeting
- Documentation of Public Hearing

Some technical reports may or may not be required; an analysis of the baseline research for the proposed project study area shall aid in determining the need for selected technical reports. All environmental documents shall be submitted to the CITY electronically. Should any TxDOT-specific reports or form be required, the effort

associated with developing the TxDOT-specific reports shall be considered out of scope and require an additional services request.

D. PUBLIC INVOLVEMENT ACTIVITIES

All public involvement activities shall be conducted in accordance with 43 TAC 2.41-2.52, 23 CFR 771, NEPA and FHWA's current policies, procedures, guidance, and document templates.

1. VIRTUAL PUBLIC MEETING WITH AN IN-PERSON OPTION

The CONSULTANT shall conduct the following public involvement activities for the proposed project.

a. The CONSULTANT shall prepare and present one (1) virtual public meeting with an in-person option. The purpose of the public meeting shall be to inform the public of the proposed project and gather input from the public. The in-person public meeting shall be held in an open house format, anticipating a maximum of 100 attendees. The public would have the opportunity to provide written and verbal comments, but no presentation or open public comment session would be held at this in-person public meeting. The CONSULTANT shall secure the meeting venue for the public meeting.

b. The CONSULTANT shall develop one (1) public meeting notice (in English and Spanish) that will be published at least 15 days prior to the public meeting. The notice will be submitted to the CITY and FHWA for approval. The English and Spanish public meeting notice shall be placed in two (2) local papers (one English text newspaper and one Spanish text newspaper) and shall include a project location map. The public meeting notice shall also be published online on the CITY website and/or applicable social media accounts. Should the CITY request the CONSULTANT to develop and maintain a project-specific website, the effort associated with developing and managing the project-specific website shall be considered out of scope and subject to a separate work authorization.

c. The CONSULTANT shall prepare and mail the public meeting notice (English and Spanish) to landowners, lessees, etc., whose property adjoins the proposed project. The CONSULTANT shall develop a mailing list of landowners located adjacent to the proposed project and others who have requested notification of public involvement activities.

d. The CONSULTANT shall prepare a public meeting letter of invitation for local and state elected officials, which shall be printed and signed by the CONSULTANT. The CONSULTANT shall prepare and update a mailing list of elected officials. The elected officials' letters shall be mailed approximately 45 days in advance of the public meeting.

e. The CONSULTANT shall prepare handouts (i.e., comment form, location map, project summary, etc.), indoor and outdoor directional signage to the public meeting, sign-in sheets, and a series of exhibit boards. Printed handouts shall be presented in English and Spanish.

f. The CONSULTANT shall provide project staff members to attend the in-person public meeting for the purpose of providing information to attendees regarding the proposed roadway project, addressing local concerns regarding the proposed

project, staffing the sign-in table, and managing the in-person public meeting information stations.

g. The CONSULTANT shall prepare documentation for the virtual and in-person public meetings. The CONSULTANT shall provide an electronic copy of the draft public meeting documentation for the CITY's and FHWA's review and approval prior to the public meeting.

Deliverables:

- Draft Notice of Virtual Public Meeting with In-Person Option (English and Spanish)
- Final Notice of Virtual Public Meeting with In-Person Option (English and Spanish)
- Public Meeting Notice/Letter of Invitation to public/elected officials
- Public Meeting Materials (comment form, location map, fact sheet, exhibit boards, etc.)
- Public Meeting Summary Report/Documentation of Public Meeting (to be included in EA)

2. OPPORTUNITY FOR A PUBLIC HEARING

Upon determination of the EA as "satisfactory for further processing" by FHWA, the CONSULTANT shall prepare, in coordination with the CLIENT and FHWA, a public notice to afford an opportunity for a public hearing. The notice shall be written in English and Spanish and shall be published in at least one (1) English text newspaper and in at least one (1) Spanish text newspaper. Both papers are to have circulation in the project area. Additionally, the notice shall be published online on the CITY website and/or applicable social media accounts.

Deliverables:

- Draft Notice Affording the Opportunity for a Public Hearing (English and Spanish)
- Final Notice Affording the Opportunity for Public Hearing (English and Spanish)
- Documentation of the opportunity for a public hearing shall be incorporated into the EA

The CONSULTANT shall develop one (1) letter to adjoining property owners, the general public and stakeholders announcing the opportunity for a public hearing. Letters shall be written in English and Spanish. The CONSULTANT shall send letters to adjoining property owners via the US Postal Service using certified mail with a return receipt. The CONSULTANT shall send letters to the general public and other stakeholders via the US Postal Service using regular mail.

Deliverables:

- Draft Notification Letter for CITY and FHWA review
- Final Notification Letter for CITY, CONSULTANT or FHWA signature

The CONSULTANT shall develop one (1) letter to elected officials announcing the opportunity for a public hearing. The CONSULTANT shall send letters to elected officials via the US Postal Service using regular mail.

Deliverables:

- Draft Notification Letter for CITY and FHWA review

- Final Notification Letter for CITY, CONSULTANT or FHWA signature

3. PUBLIC HEARING

The CONSULTANT shall follow the FHWA guidance for public hearings (similar activities to those outlined in Subtask 120.04.01 – Virtual Public Meeting with In-Person Option). The Public Hearing shall include an open house forum for project information and exhibits followed by a formal presentation. Speakers would be allowed a specified time period (typically 3 minutes) to voice their project comments at the hearing. The CONSULTANT shall make arrangements for one (1) court reporter to provide a verbatim transcript of the Public Hearing presentation and comments. A virtual component of the public hearing would be included as part of the public hearing task as appropriate. Documentation of the Public Hearing would be incorporated into the EA. Public hearing comments would also be addressed in the EA. If (following the opportunity for a Public Hearing) no requests for a public hearing are received by TxDOT, then this task would be eliminated.

E. EXCLUSIONS

The following environmental services are specifically excluded from this scope of work and, if required, shall be subject to an additional services request:

- Antiquities Permit
- Archeological testing, data recovery and monitoring.
- Audio/visual equipment rental.
- Bicycle/pedestrian connectivity study.
- Biological Assessment preparation.
- Construction Emissions Mitigation Plan.
- Disposal or transportation of any hazardous waste that is encountered during site investigations.
- Emergency Response Control Pollution Plan.
- Environmental permitting.
- Historic American Buildings (HABS)/Historic American Engineering Record (HAER) documentation.
- Hazardous materials investigations (Phase II/III) beyond the level of an ISA (ASTM E1527-21).
- Historic resources research design
- Human remains evaluation/coordination/removal.
- Incidental Take Permit activities.
- Meetings with Affected Property Owners.
- Mobile Source Air Toxics (MSAT) quantitative analysis.
- NRHP nominations.
- Phase II hazardous materials due diligence/site assessments.
- Project newsletter or project website development.
- Quantitative MSAT analysis.
- Section 4(f) and/or Section 6(f) evaluations.
- Security officer(s) for public meeting.
- Species-specific Subject Matter Experts for individual critical habitat or species analyses.

- Storm Water permits.
- Storm Water Pollution Prevention Plan.
- Wetland/Stream mitigation.
- Wild and scenic river assessments.

V. TASK 5 SCHEMATIC AND PS&E

A. **ROW SURVEYS, AND DESIGN SURVEYS -** Design Surveys include performance of surveys associated with the gathering of survey data for topography, cross-sections, and other related work to design a project, or during layout and staking of projects for construction. The ROW Surveys will consist of a boundary survey for ROW dedication, and ROW dedication plat.

1. PURPOSE

a. The purpose of the ROW survey is to prepare the appropriate plat and field notes for the acquisition of private property for the use of the construction of a new location roadway arterial for public use.

b. The purpose of a design survey is to provide field data in support of transportation systems design. A design survey is defined as the combined performance of research, field work, analysis, computation, and documentation necessary to provide detailed topographic (3-dimensional) mapping of a project site. A design survey may include locating existing right-of-way, cross-sections, or data to create cross-sections and Digital Terrain Models (DTM), horizontal and vertical location of utilities and improvements, detailing of bridges and other structures, review of right-of-way maps, establishing control points, etc.

2. TASKS TO BE COMPLETED

a. Horizontal and Vertical Control for Field Surveying

i. Set 6 Primary TYPE II Stamped Brass Disks and 6 Secondary Light Duty Control Monuments in English and Metric Units that is accessible in both in NAD 83 and Universal Transverse Mercator Coordinates.

ii. Set aerial control targets.

iii. Verify Existing Horizontal and Vertical survey control.

iv. Digital Level Loop on all Control Points.

v. Set Control Points in US and Mexico.

b. Boundary retracement of Existing ROW and Proposed ROW – The CITY will request a boundary survey for ROW dedication, ROW dedication plat. The tasks will include the following:

i. The CONSULTANT will field survey and perform office work to prepare right-of- way dedication survey including title search by CONSULTANT, deed and plat research, field work, preparation of survey, metes and bounds description, closure, and coordination with surveyor.

- Prepare existing ROW Abstract Map base drawing using researched property and easement deeds.

ii. Identify all easements and property interests for pipelines and other utilities that fall within the proposed route and GSA Facility site.

- Boundary verification of existing property corners and Parent Tracts.

iii. ROW retracement (FM 255) - Collect and draw into base drawing provided and researched TxDOT ROW maps.

iv. Prepare Parcel Plats and Property Descriptions & Set Proposed Property Corners for two (2) parcels.

- ROW DEDICATION PLAT - The CONSULTANT will plat the right-of-way following City of Laredo Land Development Guidelines.

v. Delineate the proposed corridor and GSA Facilities on Abstract Map and on the ground for GSA approval.

vi. The CONSULTANT shall notify the CITY in writing if it is necessary to obtain additional construction easements or rights-of-entry and shall provide justification for such action. The CONSULTANT shall be responsible for identifying and delineating any temporary construction easements in areas outside the proposed ROW. The CITY shall secure the necessary legal instruments.

c. Design Surveys - Aerial LiDAR and Photogrammetric Imagery will be collected of approximately 300 acres lying each side of the Rio Grande River to create a 1-foot interval contour map. Obscured areas will be surveyed using GPS, terrestrial scanning, conventional total station and digital level methods. The CONSULTANT shall perform tasks including the following:

i. Hydrographic Survey of the Rio Grande River shall consist of cross-sections at 100 ft intervals along center of the river. Cross-sections will be taken for minimum distance of 600 ft upstream & downstream of the proposed international bridge crossings. This will be done using a Boat and Staff.

ii. Design survey features to include the following:

- Manholes (inverts and sketch)
- Inlets
- Culverts / headwalls
- Drainage structures or pipe inverts

iii. Survey all surface and visible utilities, including utilities marked by 811 One Call which include the following:

- Water (valves, meter boxes, measure down to top of valve stem)
- Sewer (clean outs, top of manholes, measure down to inverts)
- Overhead telephone
- Underground Telephone markers and paint from Texas 811 Call
- Overhead electric
- Underground Electric markers and paint from Texas 811 Call
- Gas (valves, meter boxes)

iii. Stake and collect Bridge Soil Borings locations

iv. The CONSULTANT's Surveyors shall also prepare a *Survey Control Index Sheet* and a *Horizontal and Vertical Control Sheet(s)*, signed, sealed, and dated by an RPLS for insertion into the plan set. The *Survey Control Index Sheet* shows an overall view of the project control and the relationship or primary monumentation and control used in the preparation of the project; whereas the *Horizontal and Vertical Control sheet(s)* identifies the primary survey control and the survey control monumentation used in the preparation of the project. Both the *Survey Control Index Sheet* and the *Horizontal and Vertical Control Sheet(s)* must be used in conjunction with each other as a set. The following information shall be shown on the *Survey Control Index Sheet:*

- Overall view of the project and primary control monuments set for control of the project
- Identification of the control points
- Baseline or centerline
- Graphic (Bar) Scale
- North Arrow
- Placement of note *"The survey control information has been accepted and incorporated into this PS&E"* which shall be signed, sealed, and dated by a Texas Professional Engineer.
- RPLS signature, seal, and date
- Location for each control point, showing baseline or centerline alignment and North arrow.
- Station and offset (with respect to the baseline or centerline alignments) of each identified control point.
- Basis of Datum for horizontal control (base control monument/benchmark name, number, datum).
- Basis of Datum for the vertical control (base control monument, benchmark name, number, datum).
- Date of current adjustment of the datum.
- Monumentation set for Control (Description, District name/number and Location ties).
- Surface Adjustment Factor and unit of measurement.
- Coordinates (State Plane Coordinates [SPC] Zone and surface or grid).
- Relevant metadata.
- Graphic (Bar) Scale.

xii. The CONSULTANT will perform the following tasks prior to design and the commencement of construction:

- Stake proposed ROW for Environmental purposes with 48" Wooden Lathes
- Stake the proposed ROW prior to start of construction.
- Stake proposed baseline/centerline prior to start of construction.

3. **TECHNICAL REQUIREMENTS**

a. ROW surveys, and Design surveys must be performed under the supervision of a RPLS currently registered with the TBPLS.

b. Horizontal ground control used for design surveys and construction surveys, based on acceptable methods conducted by the CONSULTANT's Surveyor, must meet the standards of accuracy required by the State of Texas. Reference may be made to standards of accuracy for horizontal control traverses, as described in the TxDOT Survey Manual, latest edition, or the TSPS Manual of Practice for Land Surveying in the State of Texas, as may be applicable.

c. Vertical ground control used for design surveys and construction surveys, based on acceptable methods conducted by the CONSULTANT's Surveyor, must meet the standards of accuracy required by the State of Texas. Reference may be made to standards of accuracy for vertical control traverses, as described in the TxDOT Survey Manual, latest edition, or the TSPS Manual of Practice for Land Surveying in the State of Texas, as may be applicable.

d. Side shots or short traverse procedures used to determine horizontal and vertical locations must meet the following criteria:

i. Side shots or short traverses must begin and end on horizontal and vertical ground control as described above.

ii. Standards, procedures, and equipment (may be GPS Equipment, LiDAR, Total Stations, etc.) used must be such that horizontal locations relative to the control may be reported within the following limits:

- Bridges and other roadway structures: less than 0.1 of one foot.
- Utilities and improvements: less than 0.2 of one foot.
- Cross-sections and profiles: less than 1 foot.
- Bore holes: less than 3 feet.

4. **AUTOMATION REQUIREMENTS**

a. Planimetric design files (DGN) must be fully compatible with the TxDOT's *ORD* graphics program without further modification or conversion.

b. Electronically collected and processed field survey data files must be fully compatible with the TxDOT's computer systems without further modification or conversion. All files must incorporate only those feature codes currently being used by TxDOT.

c. DTM must be fully compatible with the TxDOT's *ORD* system without further modification or conversion. All DTM must be fully edited and rectified to provide a complete digital terrain model with necessary break lines.

5. **DELIVERABLES**
   a. See Task 6 Deliverables.

B. **UTILITY ENGINEERING INVESTIGATION AND COORDINATION**
The CONSULTANT shall perform utility engineering investigation and utility coordination as part of this project to identify and all utility conflicts that arise from the proposed improvements and clear the conflicts for the advancement of the project. These tasks are described herein.

1. **UTILITY ENGINEERING INVESTIGATION** - Includes utility investigations subsurface and above ground prepared in accordance with ASCE/CI Standard 38-02 [(http://www.fhwa.dot.gov/programadmin/asce.cfm)] and Utility Quality Levels.
   a. Utility Quality Levels (QL) - Utility Quality Levels are defined in cumulative order (least to greatest) as follows:

   - Quality Level D - Quality level value assigned to a utility segment or utility feature after a review and compilation of data sources such as existing records, oral recollections, locations marked by DIGTESS, and data repositories.
   - Quality Level C - Quality level value assigned to a utility segment or utility feature after surveying aboveground (i.e., visible) utility features and using professional judgement to correlate the surveyed locations of these features with those from existing utility records.
   - Quality Level B - Designate: Quality level value assigned to a utility segment or subsurface utility feature whose existence and position is based upon appropriate surface geophysical methods combined with professional judgment and whose location is tied to the project survey datum. Horizontal accuracy of Designated Utilities is 18" (including survey tolerances) unless otherwise indicated for a specific segment of the deliverable. Quality Level B incorporates quality levels C and D information. A composite plot is created.
   - Quality Level A – Quality level value assigned to a portion (x, y, and z geometry) of a point of a subsurface utility feature that is directly exposed, measured, and whose location and dimensions are tied to the project survey datum. Other measurable, observable, and judged utility attributes are also recorded (per District Best Practices). The utility location must be tied to the project survey datum with an accuracy of 0.1 feet (30-mm) vertical and to 0.2 feet (60-mm) horizontal. As test holes may be requested up front or during the project, test holes done prior to completion of QL D, C, or B deliverables must be symbolized on the QL B deliverable with a call out indicating test holes number. This is in addition to and not in lieu of the test hole.

   b. **Utility Investigations Methodology**

i. Utility Investigation Quality Level D - The CONSULTANT shall perform records research from all available resources. Sources include: Texas811, Railroad Commission of Texas (Texas RRC), verbal recollection, as-built information from plans, plats, permits and any other applicable information provided by the utility owners or other stakeholders.

(1) Document utility owners and contact information.

(2) Create a utility drawing of information gathered.

ii. Utility Investigation Quality Level C – The CONSULTANT shall:

(1) In combination with existing Quality Level D information, utilize surveyed above-ground utility features and professional judgement to upgrade Quality Level D information to Quality Level C. For those utilities unable to be upgraded, retain as Quality Level D.

(2) Overhead utilities information must be gathered and depicted. Sag elevations of lowest utility must be documented at road crossings, per best practices document.

(3) Storm and sanitary sewer information must be gathered from Level D and upgraded to Level C as possible, unless otherwise directed by the CITY.

(4) Mapping of underground vaults may be requested by the CITY.

(5) Create composite utility drawing of information gathered.

iii. 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. Designating (Quality Level B) services are inclusive of Quality Levels C and D. The CONSULTANT shall:

(1) As requested by the CITY, 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 shall examine utility owner's work for accuracy and completeness.

(3) Designate, record, and mark the horizontal location of the existing utility facilities using non-destructive surface geophysical techniques.

(4) Obtain TxDOT permit for Quality Level B operations on TxDOT ROW along FM 1472 and the IH 35 SBFR.

(5) Using both active and passive scans to attempt to locate any additional utilities, including unrecorded and abandoned storm and sanitary sewer facilities, at the direction of the CITY, may be investigated using additional methods such as rodding that would then classify them as Quality Level B. A non-water based pink paint or pink pin flags must be used on all surface markings of underground utilities.

(6) Correlate utility owner records with designating data and resolve discrepancies using professional judgment. The Engineer must prepare and deliver to CITY a color-coded composite utility facility plan with utility owner names, quality levels, line sizes and subsurface utility locate (test hole) locations. The Engineer and CITY acknowledge that the line sizes of designated utility facilities detailed on the deliverable will be 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 which states, "lines sizes are from best available records". All above-ground utility feature locations must be included in the deliverable to the CITY. This information must be provided in the latest version of OpenRoads civil design system used by the CITY. The Engineer shall deliver the electronic file on CD, DVD, or USB flash drive, as requested by the CITY. A hard copy is required and must be signed, sealed, and dated by the registered engineer overseeing the utility engineering investigation. When requested by the CITY, the designated utility information must be over laid on the project design plans.

(7) Determine and inform the CITY of the approximate electronic utility depths at critical locations as determined by the CITY. The limits of this additional information should be determined prior to the commencement of work. This depth indication is understood by both the Engineer and the CITY to be approximate only and is not intended to be used preparing the ROW and construction plans.

(8) Provide a monthly summary, with weekly updates, of work completed and in process with adequate detail to verify compliance with agreed work schedule.

(9) Close-out permits as required.

(10) 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.

(11) Comply with all applicable TxDOT policy and procedural manuals.

iv. Subsurface Utility Locate (Test Hole) Service (Quality Level A) - Locate is the process used 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 CONSULTANT shall:

(1) Review requested test hole locations and advise the CITY 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) Obtain TxDOT permit for Quality Level A operations on TxDOT ROW along FM 1472 and the IH 35 SBFR.

(4) Place Texas 811 ticket 48 hours prior to excavation.

(5) Neatly cut and remove existing pavement material, such that the cut does not exceed 0.10 square meters (1.076 square feet) unless unusual circumstances exist.

(6) 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 of utility tied to the datum of the furnished plan.

(b) Minimum of two benchmarks utilized. Elevations must be within an accuracy of 15mm (.591 inches) of utilized benchmarks.

(c) Elevation of existing grade over utility at test hole location.

(d) Horizontal location referenced to project coordinate datum.

(e) Outside diameter of pipe or width of duct banks and configuration of non-encased multi-conduit systems.

(f) Utility facility materials.

(g) Utility facility condition.

(h) Pavement thickness and type.

(i) Coating/wrapping information and condition.

(j) Unusual circumstances or field conditions.

(7) Excavate test holes in such a manner as to prevent any damage to wrappings, coatings, cathodic protection, and other protective coverings and features.

(8) In the event of any damage to the utility during the locating process, the Engineer must stop work, notify the appropriate utility facility owner, the CITY, and appropriate regulatory agencies. The regulatory agencies may include: the Railroad Commission of Texas and the Texas Commission on Environmental Quality. The Engineer shall not resume work until the utility facility owner has determined the corrective action to be taken.

(9) Back fill all excavations with appropriate material, compact backfill by appropriate mechanical means, and restore pavement and surface material.

(10) Furnish and install a permanent above-ground marker (as specified by the CITY, directly above center line of the utility facility.

(11) 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 CONSULTANT shall return to correct the condition at no extra charge to the CITY.

(12) Plot utility location position information to scale and provide a comprehensive utility plan signed and sealed by the responsible professional engineer. This information must be provided in the latest version of MicroStation and be fully compatible with the OpenRoads civil design system used by the CITY. The electronic file will be delivered on CD, DVD or USB flash drive as requested. When requested by the CITY, the locate information must be over laid on the CITY's design plans.

(13) Return plans, profiles, and test hole data sheets to the CITY. If requested, conduct a review of the findings with the CITY.

(14) Close-out permits as required.

2. **UTILITY COORDINATION** - The CONSULTANT shall perform utility coordination with public and private utility providers (up to 18 meetings assumed) through the City of Laredo utility coordination committee process to determine the location of each existing and proposed utility and discuss potential conflicts with the utility representative attendees that are part of the Laredo utility coordination committee. The existing and proposed utilities shall be represented in a 3D MicroStation model. The utility coordination includes determining extents of existing utilities, as well as proposed utilities. As part of this effort the CONSULTANT will develop a utility conflict matrix to catalog all conflicts, indicate proposed resolutions and track the progress of clearance. For the 30%, 60%, 90% and 100% design phase, CONSULTANT will provide 11x17 existing utility layouts in *.pdf format. As part of this process for the purpose of approval of the ROW plats and replats, The CONSULTANT will work to secure a C3 letter for platting, as required by the City of Laredo.

C. **ACCESS MANAGEMENT**. The CONSULTANT shall coordinate and evaluate access management within the project limits in accordance with the latest TxDOT Access Management Manual or as directed by the CITY.

D. TRAFFIC ENGINEERING ANALYSIS SERVICES

The CONSULTANT shall develop existing and twenty-year projected traffic data for use in the preparation of the Presidential Permit Application and the schematic design of the proposed Colombia Solidarity Bridge Expansion. The data shall be utilized in accordance with the requirements for schematic development and consistent with the policies of the CITY. All designs shall be prepared in accordance with the latest version of: TxDOT Roadway Design Manual, TxDOT Project Development Process Manual, AASHTO Policy on Geometric Design of Highways and Streets, TxDOT Standard Specifications for Construction of Highways, Streets, and Bridges, TxDOT Traffic Operations Manual on Highway Operations, and Highway Capacity Manual - Transportation Research Board, TxDOT Hydraulic Design Manual, TxDOT Freeway Signing Handbook, Standard

Highway Sign Designs for Texas (SHSD), the federal policy statement on Bicycle and Pedestrian Accommodations Regulations and Recommendations by United States Department of Transportation (USDOT), and AASHTO – A Policy on Design Standards Interstate System. The CONSULTANT shall perform the following:

1. **DATA COLLECTION** – The CONSULTANT shall collect the following data from available public sources for traffic on the Colombia Solidarity Bridge.
   a. Traffic data
   b. Freight data
   c. Crossing statistics
   d. Trade data
   e. City of Laredo growth
   f. Laredo MPO data
   g. TxDOT SAM model forecast data
   h. INRIX Data on existing operational delays
   i. BCIS data

2. **REVIEW EXISTING TRAFFIC DATA**
   a. Summary of Lane Configurations
   b. Summary of Transportation Infrastructure (local and nationwide)
   c. Summary of Mexican Infrastructure
   d. Summary of Traffic Volumes
      i. Historic Patterns
      ii. Anticipated growth from various sources
         (1) TxDOT Freight Model
         (2) Regression analysis of Historic traffic data
         (3) Economic Forecasts
         (4) Summarize and identify appropriate growth rate
      i. Develop Traffic projections.
      ii. Document Existing Delay and Forecast Border Delay (INRIX)
      iii. Operational Capacity
   e. Impact of Expansion on Existing system and Nearby Bridges
   f. Conclusion

3. **PROPOSED BRIDGE SUMMARY**
   a. Expected Service Capacity
   b. Proposed Lane Configurations

4. **<u>DELIVERABLES</u>:**
   a. See Task 6 for deliverables.

E. GEOTECHNICAL TESTING, ANALYSIS AND REPORTING

1. **GEOTECHNICAL REPORT –** The CONSULTANT shall develop a substructure recommendation, foundation recommendations, and pavement design for this project

that reflects the traffic forecast, selected bore logs and geotechnical analysis described in the geotechnical report. The CONSULTANT will submit the results of the scope of work in a formalized report prepared by a Professional Engineer licensed by the State of Texas. The report will include the following:

- Describe and assess the site and general soil conditions encountered.
- Computer generated boring logs with soil stratification based on soil classification.
- Summarized laboratory data.
- Groundwater levels if observed during and after completion of drilling.
- Boring location plan.
- Subsurface exploration procedures.
- Encountered soils conditions.
- Earthwork consideration.
- Recommendation of substructure for new bridges.
- Recommendation of construction methods for the placement of underground pipe utilities and temporary bracing during construction.
- Provide appropriate site preparation, fill, backfill and placement criteria necessary to construct the Project.
- Resilient Modulus test results.
- The CONSULTANT will make three (3) recommendations for pavement sections of the proposed roadway for both rigid and flexible pavements using TxDOT design procedures for pavement materials, thicknesses and related construction requirements. Asphalt Pavement Design Recommendations will be based on projected traffic data to be developed as part of this Supplemental Work Authorization. Pavement design alternatives must also consider benefits of including or excluding subgrade stabilization.

2. **DELIVERABLES:**
   See Task 6 for deliverables.

F. POE FACILITY IMPROVEMENTS

1. EXISTING CONDITIONS SURVEYS

a. CONSULTANT shall visit the site to take photos and observe its existing character and understand the layout of the existing facilities.
b. The initial phase involves a thorough site survey and assessment, where the consultants visit the building to inspect its dimensions, layout, structural elements, and any unique characteristics. Detailed measurements are then collected using tools like tape measures and laser distance meters to precisely capture the building's features. Photographs are taken to visually document the building from various perspectives, aiding in the understanding of its overall appearance and specific details. If existing drawings are available, they are reviewed for insights

into the original design but are often verified through physical measurements due to potential discrepancies.

c. As-Built Development - Architects take field notes and sketches to record specific details such as wall thicknesses, door and window locations, and structural elements. For more complex structures, advanced surveying equipment like 3D laser scanners may be used to create accurate digital models. Subsequently, the architect uses computer-aided design (CAD) software to draft the as-built drawings, incorporating all observed changes, renovations, or additions made to the building over time.

2. FACILITY IMPROVEMENT MASTER PLAN CONCEPTS

Using base information provided by the CLIENT, EXISTING CONDITIONS SURVEY and LIDAR survey, CONSULTANT shall define a Master POE Plan scope of work, schedule, and overall items of coordination. CONSULTANT will provide/perform the following Master Planning Phase Services:

a. Analyze the capabilities and limitations of the POE site and prepare descriptive graphics in a study of development feasibility.
b. This effort shall include an investigation of property abutting the subject area to assess the need for property acquisition and/or public easements for review by CITY.
c. Conduct a work session with the CITY to determine a Program of Development for the POE site which includes the Elements referenced above.
d. Prepare conceptual POE development plan alternatives in sketch form.
e. Present the most viable plan alternatives in a work session with the Staff for review and further development.
f. Prepare a first draft of the master plan for staff review and revisions prior to public presentations.
g. Prepare preliminary opinions of probable cost and recommendations for construction phasing. Increments of development will correspond to POE budget plans.
h. Prepare recommendations for maintenance personnel, equipment, and operational budget for the POE improvements.
i. Present the final draft master plan, opinion of probable cost and phasing recommendations once to the CITY.
j. Upon final approval and authorization to proceed, make final revisions to the master plan.
k. Present the final master plan, opinion of probable cost and phasing recommendations once to the CITY and the City Council.

2. SCHEMATIC/ DESIGN DEVELOPMENT PHASE

The documents shall establish the conceptual design & site plan of the project. The Schematic and Design Development Documents shall illustrate and describe the refinement of the design of the project, establishing the scope, relationships, form, size and appearance of the Project by means of plans, sections, elevations and details to the describe the project.

a. CONSULTANT shall prepare, for approval by the CITY, Design Development Documents consisting of drawings and other documents to fix and describe the size and character of the Project with regard to site, architectural, civil, structural, mechanical and electrical systems, materials and such other elements as may be appropriate.
b. Coordinate with appropriate governmental authorities and provide information requested for compliance with applicable codes, ordinances, and laws. If necessary, make revisions necessary to obtain compliance or approval.
b. CONSULTANT shall submit informal plans to CITY via email throughout the process for review/comment.
c. Submit the above plans and opinions of probable cost of construction to the CITY for review.
d. Meet with the CITY to discuss plans and opinions of probable cost of construction.
e. Distribute the plans to local utility companies, if necessary, to obtain information regarding impacts to their facilities. Consider how impacts may affect the project cost.
f. The Consultant will submit the Design Development Documents to the CITY's engineering, planning and public works departments for preliminary review.

3. STAKEHOLKDERS MEETING

CONSULTANT will attend up to three (3) meetings/workshops with the project team and community to discuss project goals, guiding principles, concerns, and concept design progress. The meetings are intended to be interactive and allow stakeholders and community members to provide input and feedback on programming and the concept design.

4. PHASING PLAN & PRELIMINARY BUDGETING

CONSULTANT shall provide support to the project estimator in the preparation of schematic design opinion of probable cost for the overall cost of the development. The team will work with the CITY to analyze the costs in a way that can facilitate efficient phasing in order to accomplish full development over a reasonable period of time as established by the CITY and as funding will allow.

5. CONSTRUCTION DOCUMENTS PHASE

CONSULTANT will provide/perform the following Construction Documents Phase Services:

a. Based upon the approved Design Development, the CONSULTANT shall prepare, for approval by the CITY, Construction Documents consisting of Drawings and Specifications setting forth in detail the requirements for construction of the Project.
b. All completed and approved drawings and details will be produced in AutoCAD. All completed and approved specifications will be produced in Microsoft Word.
c. Prepare preliminary and final opinions of probable construction costs.
d. Submit plans and opinions of probable costs to the CITY for review.
e. Prepare development review submittals as required by the CITY.

f. Prepare final bid documents, bid proposal forms, construction plans, and special conditions.
g. File bid documents for review by the Texas Department of Licensing and Regulation.

G. SCHEMATIC LAYOUT (INTERNATIONAL BRIDGE). A schematic of the preferred location of the international bridge to be coordinated with Mexico Engineer, and the Mexico and US Sections of the International Boundary & Water Commission.

The CONSULTANT shall use Bentley's ORD 3D Design technology in the design and preparation of the roadway plan sheets. The CONSULTANT will utilize ORD for the duration of the project.:

1. Preliminary Geometric Project Layout. The CONSULTANT shall develop a preliminary geometric project layout (Layout) and a preliminary 3D model if requested by the CITY, for the full length of the project to be reviewed and approved by the CITY prior to the CONSULTANT proceeding with the 30% milestone submittal package.

   The Layout must consist of a planimetric file of existing features and the proposed improvements within the existing and any proposed ROW. The Layout must also include the following features: existing and proposed ROW, existing and proposed horizontal and vertical alignment and profile grade line, cross culverts, lane widths, cross slopes, ditch slopes, pavement structure, clear zone, dedicated right turn lanes, corner clips, retaining walls (if applicable) guard rail (if applicable), and water surface elevations for various rainfall frequencies, etc. Existing major subsurface and surface utilities must be shown on the Layout.

2. The CONSULTANT shall develop the proposed alignment to avoid the relocation of existing utilities as much as possible. The CONSULTANT shall consider Americans with Disabilities Act (ADA) requirements when developing the Layout. The Layout must be prepared in accordance with the current TxDOT Roadway Design Manual. The CONSULTANT shall provide horizontal and vertical alignment of the project layout in English units for main lanes and cross streets. Minor alignment alternatives must be considered to provide for an optimal design. The project layout must be coordinated with the CITY and adjacent projects, if any.
3. The CONSULTANT shall also provide proposed and existing typical sections with the profile grade line (PGL), lane widths, cross slopes, ROW lines, ditch shapes, pavement structures and clear zones depicted, etc.
4. The 3D model, if requested by the CITY, must be created using Bentley's ORD tools. The 3D model must have enough details to verify the feasibility of the proposed design.
5. Prior to proceeding with the final preliminary geometric layout, the CONSULTANT shall also present to the CITY for review and approval, alternatives for the design (e.g., flush or raised curb median) with recommendations and cost estimates for each

alternative. The CONSULTANT shall also attend all necessary meetings to discuss the outcome of the evaluations of the study.

6. The CONSULTANT shall provide a schematic roll plot, cross-sections roll plot, and roadway plan and profile drawings using CADD standards as required by the CITY. The drawings must consist of a planimetric file of existing features and files of the proposed improvements. The roadway base map must contain line work that depicts existing surface features obtained from the schematic drawing. Existing major subsurface and surface utilities will be shown as part of the base map. Existing and proposed right-of-way lines must be shown. Plan and Profile must be shown on same sheets. The plan view must contain the following design elements:
    a. Calculated roadway centerlines for the major arterial, turnaround, cross streets, deceleration lane and frontage road. Horizontal control points must be shown. The alignments must be calculated using ORD.
    b. Pavement edges for all improvements (for the major arterial, turnaround, cross streets, deceleration lane and frontage road).
    c. Lane and pavement width dimensions.
    d. The geometrics of the major arterial, turnaround, cross streets, deceleration lane and frontage road.
    e. Proposed structure locations, lengths, and widths.
    f. Direction of traffic flow on all roadways. Lane lines and arrows indicating the number of lanes must also be shown.
    g. Drawing scale shall be 1" =100'
    h. Control of access line, ROW lines and easements.
    i. Begin and end superelevation transitions and cross slope changes.
    j. Limits of riprap, block sod, and seeding.
    k. Existing utilities and structures.
    l. Benchmark information.
    m. Radii call outs, curb location, Concrete Traffic Barrier (CTB), guard fence, crash safety items and American with Disabilities Act Accessibility Guidelines (ADAAG) compliance items.
7. The profile view must contain the following design elements:
    a. Calculated profile grade for the proposed major arterial, turnaround, cross streets, deceleration lane and frontage road. Vertical curve data, including "K" values must be shown.
    b. Existing and proposed profiles along the proposed centerline of the major arterial, the outside shoulder line of the deceleration lane and turn around, and the outside gutter line of the IH 35 southbound frontage road.
    c. Water surface elevations at major stream crossing for 2, 5, 10-, 25-, 50-, and 100-year storms.

d. Drawing vertical scale to be 1" =10'.

8. Typical Sections: The CONSULTANT shall prepare typical sections for all proposed and existing roadways and structures. Typical sections must include width of travel lanes, shoulders, outer separations, border widths, curb offsets, managed lanes, and ROW. The typical section must also include Proposed Profile Grade line (PGL), centerline, pavement design, longitudinal joints, side slopes, sodding or seeding limits, concrete traffic barriers and sidewalks, if required, station limits, common proposed and existing structures including retaining walls, existing pavement removal, riprap, and limits of embankment and excavation.
9. Roadway Design: The CONSULTANT shall provide the design of the major arterial, ramps, deceleration lanes, and frontage road tie-in. The design must be consistent with the approved schematic or refined schematic and the current *TxDOT Roadway Design Manual*.
10. Cross Streets. The CONSULTANT shall provide an intersection layout detailing the pavement design and drainage design at the intersection of each cross street. The layout must include the horizontal and vertical alignments, curb returns, geometrics, transition length, stationing, pavement, drainage details, and American with Disabilities Act Accessibility Guidelines (ADAAG) compliance items. The CONSULTANT shall design for full pavement width to the ROW and provide a transition to the existing roadway.
11. Cut and Fill Quantities. The CONSULTANT shall develop an earthwork analysis to determine cut and fill quantities and provide final design cross sections at 100 feet intervals. Cross sections must be delivered in standard GEOPAK format on 11"x17" sheets and/or roll plots and electronic files, depending on the project design phase. The CONSULTANT shall provide all criteria and input files used to generate the design cross sections. Cross sections and quantities must include existing pavement removals. Annotation shall include at a minimum existing and proposed ROW, side slopes (front & back), and profiles.
12. Plan Preparation. The CONSULTANT shall prepare a schematic roll plot, roadway plans, profiles, and typical sections for the proposed improvements. Prior to the 30% submittal, the CONSULTANT shall submit the schematic roll plot and cross section roll plot to schedule a workshop to review profiles, ORD 3D models (if applicable) and cross-sections with the CITY. The profile and cross sections must depict the 2, 5, 10, 25-, 50-, 100- and 500-year (if available) water surface elevations. The drawings will provide an overall view of the roadway and existing ground elevations with respect to the various storm design frequencies for the length of the project. This will enable the CITY to determine the most feasible proposed roadway profile. The CITY will approve the proposed profiles, 3D models (if applicable), and cross sections before the CONSULTANT continues with the subsequent submittals. This scope of services and the corresponding cost proposal are based on the CONSULTANT preparing plans to construct the major arterial, ramps, deceleration lanes, frontage road tie-in and cross streets at intersections. The roadway plans must consist of the types and be organized in the sequence as described in the *PS&E Preparation manual*.

13. Pedestrian and Bicycle Facilities. The CONSULTANT shall coordinate with the CITY to incorporate the shared use path as required or shown on the project's schematic. All pedestrian and bicycle facilities must be designed in accordance with the latest Americans with Disabilities Act Accessibility Guidelines (ADAAG), the Texas Accessibility Standards (TAS), and the AASHTO Guide for the Development of Bicycle Facilities. Design of the Shared Use Path will consist of plan and profile sheets using a horizontal scale of 1" = 60' and a vertical scale of 1" = 6' on 11"x17" plan sheets. There will not be dedicated cross-sections for the shared use path. Cross-sections of the shared use path will be incorporated into the roadway cross-sections.

I. DRAINAGE

1. **Bridge Waterway**. The Engineer shall perform hydrologic analysis and hydraulic computations (bridge waterway) to the requirements and approval of the Mexico / US IBWC.
    a. Determine/delineate drainage areas
    b. Hydrologic data/discharge determination
    c. Hydraulic Modeling
    d. Hydraulic Report
    e. IBWC / FEMA floodway requirements; IBWC coordination.
2. **Data Collection.** The CONSULTANT shall provide the following data collection services:
    a. Conduct field inspections to observe current conditions and the outfall channels, the cross-drainage structures, drainage easements, the tributary channel, and land development projects that contribute flow to the tributary. Document field inspections with digital photos.
    b. Collect available applicable data including GIS data and maps, site survey data, construction plans, previous reports and studies, and readily available rainfall history for the area. Sources of data collected will include the CITY, TxDOT Laredo District, City of Laredo, Webb County, Federal Emergency Management Agency (FEMA) and International Boundary and Water Commission (IBWC).
    c. Collect available Flood Insurance Rate Maps (FIRMs), Flood Insurance Study (FIS) study data, and models.
    d. Review survey data and coordinate any additional surveying needs with the CITY.
    e. At the CITY's request, existing drainage structures shall be represented in a 3D MicroStation model.
    f. Meet with local government officials to obtain historical flood records. Interview up to 6 residents or local government employees to obtain additional high-water information if available. Obtain frequency of road closure and any additional high-water information.

3. **Hydrologic Studies.** The CONSULTANT shall provide the following services to the requirements and approval of Mexico/ US and IBWC:

   a. Incorporate in the hydrologic study a thorough evaluation of the methodology available, comparison of the results of two or more methods, and calibration of results against measured data, if available.

   b. Calculate discharges using appropriate hydrologic methods and as approved by the CITY.

   c. Consider the pre-construction and post-construction conditions in the hydrologic study.

   d. Obtain the drainage area boundaries and hydrologic parameters such as impervious covered areas, and overland flow paths and slopes from appropriate sources including topographic maps, GIS modeling, construction plans, and existing hydrologic studies. The CONSULTANT shall not use existing hydrologic studies without assessing their validity. CONSULTANT will utilize NOAA Atlas 14 rainfall data for Webb County.

   e. CONSULTANT to employ a 4% Annual Exceedance Probability (AEP) design frequency for the major arterial component of the project. The connecting TxDOT roadways will be analyzed and designed based on the functional classification of the respective roadways as described in the TxDOT Hydraulic Design Manual. All City of Laredo connecting streets will be analyzed and designed for a 4% AEP. All facilities will also be analyzed for the 1% Annual Exceedance Probability (AEP) storm frequency to determine that no adverse impacts occur due to the project improvements (i.e., structures in the existing 1% AEP floodplain have increased flooding or new structures are not added to the 1% AEP). The report must include the full range of frequencies (50%, 20% 10%, 4%, 2%, 1%, and 0.2% AEP).

4. **Bridge Waterway Hydraulic Design & Documentation.** The CONSULTANT shall provide the following services to the requirements and approval of Mexico/ US and IBWC:

   a. Gather information regarding existing drainage facilities and features from existing plans and other available studies or sources.

   b. Perform hydraulic design and analysis using appropriate hydraulic methods, which may include computer models such as HEC-RAS, HY-8, GeoPak Drainage, and InRoads Drainage. 2D Hydraulic modeling will not be performed for this project.

   c. Use the current effective FEMA or IBWC models, where appropriate, as a base model for the analysis. Review the provided base model for correctness and updated as needed. If the provided effective model is not in a HEC-RAS format, convert it to HEC-RAS for this analysis.

   d. If the appropriate hydrologic model requires storage discharge relationships, develop HEC-RAS models or other CITY's approved models that will compute these storage discharge relationships along the channel.

e. Consider pre-construction, present and post-construction conditions.

f. Quantify impacts, beneficial or adverse, in terms of increases in peak flow rates and water surface elevations for the above listed hydraulic conditions and hydrologic events. Impacts will be determined both upstream and downstream of the bridge crossings.

g. Compute right of way corridor 1% AEP flood plain volumes for existing and proposed roadway elevations. The CONSULTANT shall provide mitigation to offset a decrease in 1% AEP flood plain volumes.

h. Use hydrograph calculations and peak flows to determine the storage required.

i. If necessary, present mitigation measures along with the advantages and disadvantages of each. Each method must consider the effects on the entire area. Include approximate construction costs in the report.

5. **Storm Drains:** The CONSULTANT shall provide the following services:

   a. Design and analyze storm drains using software as approved by the CITY.

   b. Size inlets, laterals, trunk line and outfall. Develop designs that minimize the interference with the passage of traffic or incur damage to the roadway and local property in accordance with the TxDOT Hydraulic Design Manual, District criteria and any specific guidance provided by the CITY. Storm drain design software shall be GeoPak Drainage, InRoads Drainage, XP Storm, or another similar software for storm drain design.

   c. Determine hydraulic grade line starting at the outfall channel for each storm drain design. Use the design water surface elevation of the outfall as the starting basis (tailwater) for the design of the proposed storm sewer system.

   d. Calculate manhole head losses. Compute manhole head losses as per FHWA's HEC-22.

   e. Limit discharge into existing storm drains and existing outfalls to the capacity of the existing system, which will be determined by the CONSULTANT. Evaluate alternate flow routes or detention, if necessary, to relieve system overload. Determine the amount of the total detention storage to control storm drain runoff for the design frequency based on hydrograph routing for the full range of frequencies (50%, 20% 10%, 4%, 2%, 1%, and 0.2% AEP), as well as a rough estimate of the available on-site volume. When oversized storm drains are used for detention, the CONSULTANT shall evaluate the hydraulic grade line throughout the whole system, within project limits, for the design frequency or frequencies. The CONSULTANT shall coordinate with the CITY any proposed changes to the detention systems. The CITY will assess the effects of such changes on the comprehensive drainage studies.

   f. Identify areas requiring trench protection, excavation, shoring, and de-watering.

6. **Cross-Drainage Structures:** The CONSULTANT shall provide the following services:

   a. Determine drainage areas and flows for up to 14 cross culvert drainage systems.

b. Determine the sizing of the drainage crossings. The scope includes the installation of proposed culverts for the limits of the project limits. Develop designs that minimize the interference with the passage of traffic or cause damage to the roadway and local property in accordance with the TxDOT Hydraulic Design Manual, District criteria and any specific guidance provided by the CITY. Cross drainage design shall be performed using HY-8 or HEC RAS. HEC-RAS will be required for any cross-drainage structures that meet the criteria for bridge class culverts. Non-bridge class culverts will be designed using HY-8.

7. **Temporary Drainage Facilities:** The CONSULTANT shall provide the following services:

   a. Develop plans for temporary drainage facilities necessary to allow staged construction of the project and to conform with the phasing of adjacent construction projects without significant impact to the hydraulic capacity of the area. Drainage area maps are not required for temporary drainage.

8. **Scour Analysis.** The CONSULTANT shall provide the following services:

   a. Perform a scour analysis for up to 1 proposed bridge class culvert.

   b. Prepare each scour analysis using an CITY-approved methodology. The CONSULTANT shall select the methodology based on the site conditions such as the presence of cohesive or cohesionless soil, rock or depth of rock, proposed foundation type, and existing site performance. The CONSULTANT shall follow the methodology outlined in the TxDOT Geotechnical Manual. The CONSULTANT shall coordinate with the CITY prior to commencing any work on any Stream Migration Study.

   c. Provide the CITY the potential scour depths, envelope and any recommended countermeasures including bridge design modifications and/or revetment.

9. **Plans, Specifications and Estimates (PS&E) Development for Hydraulics:** The CONSULTANT shall provide a Drainage report for submittal to the City of Laredo One Stop Shop (OSS) as part of the plat and re-plat submittals for this project. The CONSULTANT shall provide the Hydraulic Report for the Bridge Waterway for submittal to the IBWC as part of the IBWC coordination. The CONSULTANT shall also prepare the PS&E package in accordance with the applicable requirements of TxDOT's specifications, standards, and manuals, including the PS&E Preparation Manual. Include the following sheets and documents, as appropriate:

   a. Drainage Report

   b. Hydrologic Data Sheets

   c. Hydraulic Data Sheets

   d. Scour Data Sheets (if applicable)

   e. Culvert Layout Sheets

   f. Storm Drain Plan/Profile Sheets

g. Roadway Plan & Profile Sheets including profile grade line of parallel ditches, if applicable.

h. Prepare culvert cross sections and identify each cross-section's station location.

i. Identify areas requiring trench protection, excavation, shoring and de-watering.

j. Prepare drainage area maps.

k. If applicable, prepare plan and profile sheets for storm drain systems and outfall ditches.

l. Select any necessary standard details from TxDOT or District's list of standards for items such as inlets, manholes, junction boxes and end treatments.

m. Prepare details for non-standard inlets, manholes and junction boxes.

n. Prepare drainage details for outlet protection, outlet structures and utility accommodation structures.

o. Identify pipe strength requirements.

p. Prepare drainage facility quantity summaries.

q. Identify potential utility conflicts and, if feasible, design to mitigate or avoid those identified conflicts.

r. Consider pedestrian facilities, utility impacts, driveway grades, retaining wall and concrete traffic barrier drainage impacts.

s. Identify existing ground elevation profiles at the ROW lines on storm sewer plan and profile sheets.

t. Prepare Hydraulic Data Sheets for any bridge class culverts or cross drainage structures at the outfall channel and indicate site location (e.g., station and name of creek or bayou), if applicable.

u. Develop a 3D model of the proposed drainage structures using the SUE or SUEDA capabilities of the Bentley ORD Product, if requested by the CITY.

J. SIGNING, PAVEMENT MARKINGS AND SIGNALIZATION (PERMANENT)

1. **Signing.** The CONSULTANT shall prepare drawings, specifications, and details for all signs. The CONSULTANT shall coordinate with the CITY (and other consultants as required) for overall temporary, interim, and final signing strategies and placement of signs outside contract limits. The CONSULTANT shall:

   a. Prepare sign detail sheets for large guide signs showing dimensions, lettering, shields, borders, corner radii, etc., and shall provide a summary of large and small signs to be removed, relocated, or replaced.

   b. Designate the shields to be attached to guide signs.

   c. Illustrate and number the proposed signs on plan sheets.

   d. Select each sign foundation from TxDOT Standards.

2. **Pavement Marking.** The CONSULTANT shall detail both permanent and temporary pavement markings and channelization devices on plan sheets. The

CONSULTANT shall coordinate with the CITY (and other consultants as required) for overall temporary, interim, and final pavement marking strategies. The CONSULTANT shall select pavement markings from the latest TxDOT standards. If requested by the CITY, the CONSULTANT shall provide a 3D model with the proposed pavement marking stenciled onto the model. The CONSULTANT shall provide the following information on sign and pavement marking layouts:

a. Roadway layout.

b. Center line with station numbering.

c. Designation of arrow used on exit direction signs

d. Culverts and other structures that present a hazard to traffic.

e. Location of utilities.

f. Existing signs to remain, to be removed, to be relocated or replaced.

g. Proposed signs (illustrated, numbered and size).

h. Proposed overhead sign bridges to remain, to be revised, removed, relocated, or replaced.

i. Proposed overhead sign bridges, indicating location by plan.

j. Proposed markings (illustrated and quantified) which include pavement markings, object markings and delineation.

k. Quantities of existing pavement markings to be removed.

l. Proposed delineators, object markers, and mailboxes.

m. The location of interchanges, main lanes, grade separations, frontage roads and ramps.

n. The number of lanes in each section of proposed highway and the location of changes in numbers of lanes.

o. Right-of-way limits.

p. Direction of traffic flow on all roadways.

3. **Traffic Warrant Studies.** The CONSULTANT shall prepare up to one (1) traffic signal warrant studies 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 must include addressing pedestrian signals along with obtaining both traffic and pedestrian counts.

4. **Traffic Signals.** Based upon the results of the Traffic Warrant Studies, the CONSULTANT shall identify and prepare Traffic Signal Plans for up to one (1) warranted traffic signals.

   a. The CONSULTANT shall implement each proposed traffic signal improvement within existing City of Laredo or TxDOT ROW unless otherwise approved by the CITY. The CONSULTANT shall refer to latest version of the *TMUTCD*, *Traffic*

Signal Manual, and the TxDOT roadway (ramp) and traffic standards for work performed for either temporary or permanent traffic signals.

b. The CONSULTANT shall develop and include a timing plan for each signal improvement.

c. The CONSULTANT shall confirm the power source for all new and existing signals and coordinate with the appropriate utility agency. Traffic Signal Plans must be signed and sealed by a Texas Registered Professional Engineer. The CONSULTANT shall develop quantities, general notes, specifications and incorporate the appropriate agency standards required to complete construction. Traffic signal poles, fixtures, signs, and lighting must be designed per the Green Ribbon Report recommendations and standards.

d. The CONSULTANT shall provide the following information in the Traffic Signal Plans:

   i. Layout

      (1) Estimate and quantity sheet

         - List of all bid items
         - Bid item quantities
         - Specification item number
         - Paid item description and unit of measure

      (2) Basis of estimate sheet (list of materials)

      (3) General notes and specification data.

      (4) Condition diagram

         - Highway and intersection design features
         - Roadside development
         - Traffic control including illumination

      (5) Plan sheet(s)

         - Existing traffic control that will remain (signs and markings
         - Existing utilities
         - Proposed highway improvements
         - Proposed installation
         - Proposed additional traffic controls
         - Proposed illumination attached to signal poles.
         - Proposed power pole source

      (6) Notes for plan layout

      (7) Phase sequence diagram(s)

- Signal locations
- Signal indications
- Phase diagram
- Signal sequence table
- Flashing operation (normal and emergency)
- Preemption operation (when applicable)
- Contact responsible Agency to obtain interval timing, cycle length and offset

(8) Construction detail sheets(s)

- Poles (State standard sheets)
- Detectors
- Pull Box and conduit layout
- Controller Foundation standard sheet
- Electrical chart

(9) Marking details (when applicable)

(10) Aerial or underground interconnect details (when applicable)

ii. General Requirements

(1) Contact local utility company

- Confirm power source

(2) Prepare governing specifications and special provisions list

(3) Prepare project estimate

(4) Conduct traffic counts and prepare Traffic Signal Warrant Studies for up to 2 proposed and existing traffic signals at designated locations.

iii. Summary of Quantities

(1) Small signs tabulation

(2) Large signs tabulation including all guide signs

iv. Sign Detail Sheets

(1) All non-standard signs

(2) Design details for large guide signs

(3) Dimensioning (letters, shields, borders, etc.)

(4) Designation of shields attached to guide signs

K. MISCELLANEOUS

1. **Retaining Walls and Miscellaneous Structures.** Retaining walls are not anticipated for this project. If retaining walls become apparent as a need for the project due to the availability of more detailed information or a change in site conditions, an additional services request will be submitted for review and approval by the CITY as a separate supplemental work authorization.
2. **Traffic Control Plan, Detours, Sequence of Construction.** The CONSULTANT shall prepare Traffic Control Plans (TCP) including TCP typical sections, for the project. Up to 4 phases are assumed. The CONSULTANT shall complete Form 2229-Significant Project Procedures along with Page 4 of Form 1002, specifically titled Accelerated Construction Procedures. A detailed TCP must be developed in accordance with the latest edition of the TMUTCD. The CONSULTANT shall implement the current Barricade and Construction (BC) standards and TCP standards as applicable. The CONSULTANT shall interface and coordinate phases of work, including the TCP, with adjacent CONSULTANTs. The CONSULTANT shall:
    - **a.** Provide a written narrative of the construction sequencing and work activities per phase and determine the existing and proposed traffic control devices (regulatory signs, warning signs, guide signs, route markers, construction pavement markings, barricades, flag personnel, temporary traffic signals, etc.) to be used to handle traffic during each construction sequence. The CONSULTANT shall show proposed traffic control devices at grade intersections during each construction phase (stop signs, flag person, signals, etc.). The CONSULTANT shall show temporary roadways, ramps, structures, and detours required to maintain lane continuity throughout the construction phasing. If temporary shoring is required, prepare layouts, and show the limits on the applicable TCP.
    - **b.** Coordinate with the CITY in scheduling a Traffic Control Workshop and submittal of the TCP for approval by the Traffic Control Approval Team (TCAT). The CONSULTANT shall assist the CITY in coordinating mitigation of impacts to adjacent schools, emergency vehicles, pedestrians, bicyclists, and neighborhoods.
    - **c.** Develop each TCP to provide continuous, safe access to each adjacent property during all phases of construction and to preserve existing access. The CONSULTANT shall notify the CITY in the event existing access must be eliminated and must receive approval from the CITY prior to any elimination of existing access.
    - **d.** Design temporary drainage to replace existing drainage disturbed by construction activities or to drain detour pavement. The CONSULTANT shall show horizontal and vertical location of culverts and required cross sectional area of culverts.
    - **e.** Prepare each TCP in coordination with the CITY. The TCP must include interim signing for every phase of construction. Interim signing must include regulatory, warning, construction, route, and guide signs. The CONSULTANT shall interface and coordinate phases of work, including the TCP, with adjacent CONSULTANTs, which are responsible for the preparation of the PS&E for adjacent projects.

f. Maintain continuous access to abutting properties during all phases of the TCP. The CONSULTANT shall develop a list of each abutting property along its alignment. The CONSULTANT shall prepare exhibits for and attend meetings with the public, as requested by the CITY.

g. Make every effort to prevent detours and utility relocations from extending beyond the proposed Right-of-way lines. If it is necessary to obtain additional permanent or temporary easements and Right-of-Entry, the CONSULTANT shall notify the CITY in writing of the need and justification for such action. The CONSULTANT shall identify and coordinate with all utility companies for relocations required.

h. Describe the type of work to be performed for each phase of sequence of construction and any special instructions (e.g., storm drain, culverts, bridges, railing, 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.

i. Include the work limits, the location of channelizing devices, positive barrier, location and direction of traffic, work area, stations, pavement markings, and other information deemed necessary for each phase of construction.

j. Identify and delineate any outstanding ROW parcels.

k. Delineate areas of wetlands on traffic control plans.

l. At the request of the CITY, the TCP phasing shall be designed using Bentley's ORD 3D modeling technology.

3. **Temporary Traffic Signals:** The CONSULTANT shall immediately notify the CITY if the CONSULTANT determines that an existing traffic signal or roadway illumination will be affected by the project. The CONSULTANT shall address the adjustment or realignment of traffic signal heads and the use of detection for main lanes and side streets on the plans as directed by the CITY. The CONSULTANT 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. The CONSULTANT shall address lighting of signalized intersections and shall coordinate with local utilities as approved by the CITY.
4. **Stormwater Pollution Prevention Plans (SW3P).** The CONSULTANT shall develop SW3P, on separate sheets from (but in conformance with) the TCP, to minimize potential impact to receiving waterways. The SW3P must include text describing the plan, quantities, type, phase and locations of erosion control devices and any required permanent erosion control. The CONSULTANT shall also provide an SW3P report for submittal to the City of Laredo OSS as part of the plat and re-plat submittals for this project.
5. **Compute and Tabulate Quantities.** The CONSULTANT shall provide the summaries and quantities within all formal submittals.

6. **Special Utility Details (Water, Sanitary Sewer, *etc*.)** The CONSULTANT assumes that any details or joint bid utility items will be developed by the utility owner or their respective engineering consultant. Any special details developed as part of this project under this Work Authorization will be considered additional services and submitted to the AUHTORITY for review and approval as a separate supplemental work authorization.
7. **Miscellaneous Structural Details.** The CONSULTANT shall provide necessary details (5 special detail sheets assumed) required to supplement standard details.
8. **Estimate.** The CONSULTANT shall independently develop and report quantities necessary to construct the contract in standard CITY bid format at the specified milestones and Final PS&E submittals. The CONSULTANT shall prepare each construction cost estimates using Estimator or any approved method. The estimate shall be provided at each milestone submittal and at the 95% and Final PS&E submittals per TxDOT District requirement.
9. **Contract time determination.** The CONSULTANT shall prepare a detailed contract time estimate to determine the approximate time required for construction of the project in calendar and working days (based on the CITY standard definitions of calendar and working days) at the 95% and Final PS&E milestone. The schedule must include tasks, subtasks, critical dates, milestones, deliverables, and review requirements in a format which depicts the interdependence of the various items and adjacent construction packages. The CONSULTANT shall provide assistance to the CITY in interpreting the schedule.
10. **Specifications and General Notes.** The CONSULTANT shall identify necessary standard specifications, special specifications, special provisions, and the appropriate reference items. The CONSULTANT shall prepare General Notes from the District's *Master List of General Notes*, Special Specifications and Special Provisions for inclusion in the plans and bidding documents. The CONSULTANT shall provide General Notes, Special Specifications and Special Provisions in the required format.
11. **Constructability Review.** The CONSULTANT shall provide Independent Quality Review of the constructability PS&E sets. The CONSULTANT shall perform constructability reviews at major project design milestones (e.g., 30%, 60%, 90%, and final plan) to identify potential constructability issues and options that would provide substantial time savings during construction. The constructability review must be performed for all roadway and structural elements such as Sequence of Work/Traffic Control, Drainage (Temporary and Permanent), Storm Water Pollution Prevention Plan (SW3P), Environmental Permits, Issues and Commitments (EPIC) addressed, identify Utility conflicts; ensuring accuracy and appropriate use of Items, Quantities, General Notes, Standard and Special Specifications, Special Provisions, Contract Time/Schedule, Standards; and providing detailed comments in an approved format. Reviews must be captured in a Constructability Log identifying areas of concern and potential conflict. The CONSULTANT shall provide the results of all Constructability reviews and recommendations to the CITY at major project design milestone submittals.
12. **<u>DELIVERABLES</u>:**

a. See Task 6 for deliverables.

V.TASK 5 BID ADVERTISEMENT AND CONSTRUCTION PHASE SERVICES - The CONSULTANT shall provide Construction Phase Services at the written request of the CITY. The written request must include a description of the work requested, a mutually agreed upon time limit, and any special instructions for coordination and submittal. These services may include the following:

A. BID ADVERTISEMENT SERVICES

1. Coordinate with the TxDOT Laredo District for completion of each design submittal, provide the 100% PS&E package and receive the Letter of CITY and the Federal Project Authorization and Agreement from TxDOT for bid advertisement.

2. Conduct and attend the virtual Pre-Bid Advertisement for the project using Microsoft Teams.

3. CONSULTANT to provide up to 2 Addendums during the bid advertisement.

4. Conduct the Bid Evaluation of the apparent low bidder

5. Provide the letter of recommendation for the low bidder of the project to the CITY.

6. Submit the request to the TxDOT Laredo District for the Memorandum of Concurrence on the winning bid of the project.

7. In the event that the project will need to be re-bid, the CONSULTANT will provide a request for a supplemental work authorization for additional bid advertisement services.

B. CONSTRUCTION PHASE SERVICES

1. Attend preconstruction meeting

2. Attend bi-weekly progress meetings and make visits to site. Estimate up to 36 site visits and field meetings.

3. Review contractor monthly pay applications. Estimate up to 18 pay applications.

4. Review and approval of shop drawings. Estimate up to 30 shop drawings.

5. Review and approval of forming details. Estimate up 30 submittals.

6. Responding to requests for information (RFIs). Estimate up to 80 RFIs for the duration of the project.

7. Calculate quantities and assist the CITY Construction Engineer and Inspection Consultant (CEI) in preparing change orders. Estimate up to 9 change orders.

8. Providing minor redesign which will include changes to the affected plan sheets and an updated copy of the 3D model (if applicable). Estimate up to 18 design revisions. Note that a major redesign of the project (such as removal of a ditch for the installation of a new storm drain system, adding a new intersection not currently planned during design, or other item that is outside the scope during the design phase of this project) will require an additional services request through a supplemental work authorization.

9. Perform 1 final walk-through and punch list.

10. Provide up to 1 set of record drawings to the CITY in *.pdf format.

11. Perform 1 warranty inspection. CONSULTANT to provide a letter stating that the project was built per plan based on the warranty inspection.

12. CONSULTANT assumes that the duration of construction will not exceed 18 months. In the event that construction extends beyond 18 months, the CONSULTANT will submit to the AUHTORITY a request for a supplemental work authorization of construction phase services for additional time and budget.

VI. TASK 6 DELIVERABLES

A. PROGRAM MANAGEMENT/ADMINISTRATION

- Deliverables: Sixty (60) Monthly Progress Reports and Schedule with Invoice.

B. BI-NATIONAL & STAKEHOLDER PROJECT DEVELOPMENT MEETINGS, CONSULTATIONS & COORDINATION

C. PRESIDENTIAL PERMIT APPLICATION SERVICES AND CONCEPTUAL PLANNING

- Environmental constraints map and documentation.
- Submit Draft Preliminary Engineering Report to CITY for comments.
- Submit Draft Preliminary Engineering Report to agencies identified above and obtain Letters of Support.
- Incorporate and/or respond to comments from agencies.
- Prepare / submit Final Preliminary Engineering Report, along with Letters of Support, including EA / EIS Justification Letter.

D. ENVIRONMENTAL ASSESSMENT

For purposes of this scope, it is presumed that the CONSULTANT shall prepare five (5) versions of the EA. All environmental documents shall be submitted to the CITY and TxDOT electronically though a reasonable number of hardcopies shall be accommodated upon request. The versions of the EA are as follows:

- Draft EA for CITY review
- Draft EA incorporating any CITY comments for FHWA review
- Draft EA incorporating any FHWA comment for any additional agency reviews
- Final EA incorporating any agency comments for FHWA review
- Final EA incorporating any FHWA comments

For purposes of this scope, it is presumed that Version 5 shall be the final submittal. The CONSULTANT will make every effort possible to minimize the versions of the EA for CITY and TxDOT review.

E. SCHEMATIC AND PS&E - ROW SURVEYS, AND DESIGN SURVEYS

- 3D Digital Terrain Models (DTM) and the Triangular Irregular Network (TIN) files in a format acceptable by the CITY.
- 2D planimetric CAD file in *.dgn format
- ASCII (X, Y, Z) text file of all the collected survey points and PDF copy of the field notes

- Maps, plans, or sketches prepared by the CONSULTANT's Surveyor showing the results of field surveys.
- Computer printouts or other tabulations summarizing the results of field surveys.
- Digital files or media acceptable by the CITY containing field survey data (ASCII Data files).
- Maps, plats, plans, sketches, or other documents acquired from utility companies, private corporations, or other public agencies, the contents of which are relevant to the survey.
- Field survey notes, as electronic and hard copies.
- Set survey control monument that will have both horizontal and vertical coordinates and will be referenced to official Benchmarks and Datum points on the Texas State Plane South Zone (NAD 83) and (NAVD 88) datum as derived from the TxDOT VRS Real Time Network (RTN).
- An RPLS Signed and Sealed 8 ½ inch by 11-inch survey control data sheet for each control point which must include, but need not be limited to, a location sketch, a physical description of the point including a minimum of two reference ties, surface coordinates, a surface adjustment factor, elevation, and the horizontal and vertical datums used. A pre-formatted survey control data sheet form in Microsoft Office Word 2010 format will be provided by the CITY.
- A digital and hard copy of all computer printouts of horizontal and vertical conventional traverses, GPS analysis and results, and survey control data sheets.
- All ORD files.
- Survey reports in a format requested by the CITY.
- Boundary Survey for R.O.W. Dedication with Survey and metes & bounds description (4 originals)
- R.O.W. Acquisition Plat with the following: Preliminary plat application submittal; City of Laredo OSS submittal; Final plat application submittal; and Record plat.

F. SCHEMATIC AND PS&E - UTILITY ENGINEERING INVESTIGATION AND COORDINATION

- Utility Conflict Matrix that catalogs all utilities in the project limits and shows the progress of conflict resolution for 30%, 60% 90% and 100% Submittal.
- 11x17 Existing Utility Layout Plan Sheets in 1" = 100' Drawing Scale for 30%, 60% 90% and 100% Submittal.
- Existing Utility Layout Map Roll Plot at 1" = 100' Drawing Scale
- City of Laredo Utility Committee Submittal
- Texas Licensed Professional Engineer Signed and Sealed Quality Level A Test Hole Data Sheets for excavated locations.

G. SCHEMATIC AND PS&E – TRAFFIC ENGINEERING ANALYSIS SERVICES

- Traffic Engineering Meeting Minutes (Draft and Final)
- PDF deliverable for the Traffic Engineering Memo with Graphics and Exhibits (Draft and Final)

H. SCHEMATIC AND PS&E - GEOTECHNICAL TESTING, ANALYSIS AND REPORTING

- PDF deliverable of a geotechnical engineering report (Draft and Final)

I. POE FACILITY IMPROVEMENTS

1. **Existing Conditions Surveys –** As-Built Drawings
2. **Facility Improvement Master Plan Concepts**
   a. A colored rendering of the master plan.
   b. An opinion of probable cost
   c. Construction Phasing Plan
   d. A digital file of the Master Plan, Opinion of Probable Cost and Phasing Recommendations in a format specified by the CITY.
   e. Printing costs for the items listed above shall be included in the lump sum fee. Any additional printing shall be provided as an additional service.
   f. 3D Animation: A computer graphic model will be prepared showing the existing conditions, then the proposed improvements to be used by the CITY to educate and inform the public.
3. **Schematic/ Design Development Phase**
   a. Design Development Phase deliverables shall include:
   b. Plan views in appropriate scale
   c. Sections where appropriate
   d. Floor plans and elevations where appropriate
   e. Typical details (architectural and structural)
   f. Preliminary mechanical schematic and design loads
   g. Preliminary electrical schematic with design loads
   h. Preliminary utility schematics
   i. Informal plan submittals via email throughout process for review/comment by City.
4. **Construction Documents Phase**
   a. Plan sheets illustrating plans, elevations, sections, and details of construction. Sections where appropriate. The number of copies shall be as requested by the Owner. Printing cost shall be a reimbursable expense.
   b. Standard City details incorporated into the plans, as required.
   c. Project manual containing technical specifications and bidding documents including City forms such as bid proposal, form of agreement between City and Contractor, and conditions of the contract (provided by City).
   d. Provide the City with files upon award of bid.
   e. Provide graphic products in electronic file format (.pdf).
   f. Provide project manual in Microsoft Word (.doc) format.
   g. All electronic file transfers shall be by email or in PDF format.

J. SCHEMATIC AND PS&E – ROADWAY DESIGN CONTROLS

1. **Schematic and Plans -** The CONSULTANT shall submit 8 sets of drawings at the 30%, 60%, and 90%, and final submittals, respectively. If requested by the CITY, the CONSULTANT shall also submit the current ORD generated 3D model for each submittal**.** The CONSULTANT shall submit the following at each submittal:

a. Schematic Submittal

i. Eight sets of the 36" Schematic Roll Plot for the CITY, City and State District Review.

ii. Eight sets of the 36" Cross-sections Roll Plot for the CITY, City and State District Review.

iii. Estimate of construction cost.

iv. Engineer's internal QA and QC markup set.

v. Form 1002 and Design Exceptions with existing and proposed typical sections, location map and design exception exhibits.

vi. If applicable, a Preliminary 3D model, in DGN format, created using Bentley's ORD tools, and with detail to verify the design of the 30% plan sheets.

b. 30% Plans Submittal

i. Eight sets of 11" x 17" plan sheets for the CITY, City and State District Review.

ii. Estimate of construction cost.

iii. Engineer's internal QA and QC markup set.

iv. Form 1002 and Design Exceptions with existing and proposed typical sections, location map and design exception exhibits.

v. If applicable, a Preliminary 3D model, in DGN format, created using Bentley's ORD tools, and with detail to verify the design of the 30% plan sheets.

vi. If applicable, an updated PDF deliverable for the Geotechnical Engineering Analysis and Report.

c. Between 30% Submittal and 60% Submittal:

i. One set of a roll format TCP phasing layouts, one .pdf of plan sheets for TCP concept, and significant project procedures form (State Form 2229) to present at the TCAT for the CITY review.

ii. For Division Hydraulic Review of existing Bridge Class Culverts, five sets of 11" x 17" Bridge Class Culvert Plan and Profile sheets and Hydrology & Hydraulics sheets, include project title sheet and project layout sheet.

iii. If applicable, a preliminary 3D model, in DGN format, created using Bentley's ORD tools, and with detail to verify the design of the Bridge and Retaining Wall layouts.

d. 60% Plans Submittal

i. Eight sets of 11" x 17" plan sets for the CITY, City and State District review.

ii. Estimate of construction cost.

iii. Engineer's internal QA and QC marked up set.

iv. One set of a roll format TCP phasing layouts, one .pdf of plan sheets for TCP concept, and significant project procedures form (State Form 2229) to present at the TCAT for the CITY review.

v. If applicable, a preliminary 3D model, in DGN format, created using Bentley's ORD tools, and with detail to verify the design of the 60% plan sheets. The level of detail of the surface and subsurface features will be at the direction of the CITY.

e. 90% Plans Submittal

i. 10 sets of 11" x 17" plan sheets for the CITY, City and State District Review.

ii. Estimate of construction cost.

iii. Marked up general notes.

iv. Construction schedule.

v. New Special Specifications and Special Provisions with Form 1814, if applicable.

vi. Engineer's internal QA and QC marked up set.

vii. Other supporting documents.

viii. If applicable, a detailed 3D model, in DGN format, created using Bentley's ORD tools, and with detail to verify the design of the 90% plan sheets. The level of detail of the surface and subsurface features will be at the direction of the CITY.

f. District Review Submittal (95%):

i. 12 sets of 11" x 17" plan sheets for the CITY, City and State district review.

ii. List of governing Specifications and Special Provisions in addition to those required.

iii. Marked up general notes.

iv. Plans estimate.

v. New Special Specifications and Special Provisions with Form 1814, if applicable.

vi. Triple Zero Special Provisions.

vii. Contract time determination summary.

viii. Significant project procedures form.

ix. Right-of-Way and utilities certification.

x. Engineer's internal QA and QC marked-up set.

xi. Project Manual for Advertisement

xii. If applicable, a detailed 3D model, in DGN format, created using Bentley's ORD tools, and with detail to verify the design of the 95% plan sheets. The level of detail of the surface and subsurface features will be at the direction of the CITY.

g. Final submittal (100%):

i. 14 sets of 11" x 17" plan sheets for the CITY, City and State

ii. Revised supporting documents from 95% review comments.

iii. If applicable, a detailed 3D model, in DGN format, LandXML format and other format (as directed by the State) created using Bentley's ORD tools. The level of detail of the surface and subsurface features will be at the direction of the CITY.

2. City of Laredo Coordination

a. SW3P REPORT which will be used for all City of Laredo plat submittals.

3. **Electronic Copies -** The CONSULTANT shall furnish the CITY with the following:

a. A CD or DVD of the final plans in the format of current CADD system used by the State, .pdf format, and in the State's File Management System (FMS) format.

b. The Engineer shall also provide separate CD or DVD containing cross section information (in dgn, XLR, & ASCII formats) for the contractor to use.

c. The Engineer shall provide an electronic copy of Primavera file, or the latest scheduling program used by the State for construction time estimate.

d. With the approval of the State, and in lieu of the above, the Engineer may maintain the project files in the State's ProjectWise container. The handoff of the electronic files will be via email to the State, with a URN link to the project location in ProjectWise provided in the email.

4. **Calculations -** The CONSULTANT shall provide the following:

a. A *.pdf with all quantity and non-structural design calculations.

b. A *.pdf of all engineering calculations, analysis, input calculations, quantities, geometric designs (ORD files), etc. relating to the project's structural elements. Project structural elements include bridges, retaining walls, overhead sign foundations, non-standard culverts, custom headwalls, and drainage appurtenances.

c. Working copies of all spreadsheets and output from any programs utilized on a CD or DVD in a universally reliable format.

d. The .pdf file should be submitted on a CD, DVD, or in ProjectWise applicable).

K. BID ADVERTISEMENT AND CONSTRUCTION PHASE SERVICES

1. Bid Advertisement – The CONSULTANT shall provide the following to the CITY:

a. Provide up to 4 design submittals to the TxDOT Laredo District.

b. Obtain 1 Letter of CITY from TxDOT for bid advertisement.

c. Conduct and attend 1 virtual Bid Advertisement for the project using Microsoft Teams.

d. CONSULTANT to provide up to 2 Addendums during the bid advertisement.

e. Conduct 1 Bid Evaluation of the apparent low bidder.

f. Provide 1 letter of recommendation for the low bidder of the project to the CITY in *.pdf.

g. Submit the request to the TxDOT Laredo District for the Memorandum of Concurrence on the winning bid of the project.

2. **Construction Phase** – The CONSULTANT shall provide the following to the CITY as the Engineer of Record:

   a. Attend 1 preconstruction meeting

   b. Attend bi-weekly progress meetings and make visits to site. Estimate up to 36 site visits and field meetings.

   c. Review contractor monthly pay applications. Estimate up to 18 pay applications.

   d. Review and approval of shop drawings. Estimate up to 30 shop drawings.

   e. Review and approval of forming details. Estimate up 30 submittals.

   f. Responding to requests for information (RFIs). Estimate up to 80 RFIs for the duration of the project.

   g. Calculate quantities and assist the CITY Construction Engineer and Inspection Consultant (CEI) in preparing change orders. Estimate up to 9 change orders.

   h. Providing minor redesign which will include changes to the affected plan sheets and an updated copy of the 3D model (if applicable). Estimate up to 18 design revisions. Note that a major redesign of the project (such as removal of a ditch for the installation of a new storm drain system, adding a new intersection not currently planned during design, or other item that is outside the scope during the design phase of this project) will require an additional services request through a supplemental work authorization.

   i. Perform 1 final walk-through and punch list.

   j. Provide up to 1 set of record drawings to the CITY in *.pdf format.

   k. Perform 1 warranty inspection.

3. **Construction Engineering and Inspection Services (CEI) –**
   This scope does not include CEI Services to the CITY. CEI Services will be performed under a separate Work Authorization or will be performed by another Consultant procured separately by the CITY.