

## ATTACHMENT C

### SERVICES TO BE PROVIDED BY THE ENGINEER

General Engineering Consultant (GEC) services for I-35 in Williamson, Travis, and Hays Counties, including Mobility35 Program Management and Public/Traveler Information for the entire I-35 corridor described above (CSJ: 0914-00-448).

The Engineer hereinafter identified as the GEC, shall provide professional services in support of I-35 corridor program development within the Project Limits and serve as an extension of State staff. The work to be performed by the GEC shall consist of overall program management, project supervision, oversight of schematic development, oversight of environmental assessments performed by others, management, scheduling, administration, , review and coordination of individual project development documents by others, maintenance of corridor planning documents and website materials, a corridor-wide construction-related traveler information system and Mobility35 communication program, and related engineering services for I-35 projects and efforts. Services for Williamson and Hays County will be for schematic and environmental needs for I-35 in the Austin District. Services for Travis County will be for construction assistance as required by the Area Office.

The following personnel are considered Major Task Leads: Program Manager, Deputy Program Manager, Planning/Preliminary Engineering, Environmental, Public/Traveler Outreach, ROW, and Utility. For the purposes of this contract, the Program Manager is the Project Manager, the Deputy Program Manager is the Deputy Project Manager, and all references should be interpreted accordingly.

The following personnel shall be prepared to co-locate with the State at State discretion and shall be available to the State during the duration of this contract: Program Manager and Deputy Program Manager. Co-location refers to being housed in one of the TxDOT-Austin District Offices or in a field office provided by the State and working for a minimum of three months consecutively at minimum eighty percent full-time on Mobility35; for co-located staff, the overhead rate for field personnel shall apply. The Austin District will require the Program Manager and Deputy Program Manager to be co-located at a minimum of 3 days a week. Others could be requested to be co-located at any given time by the request of the State.

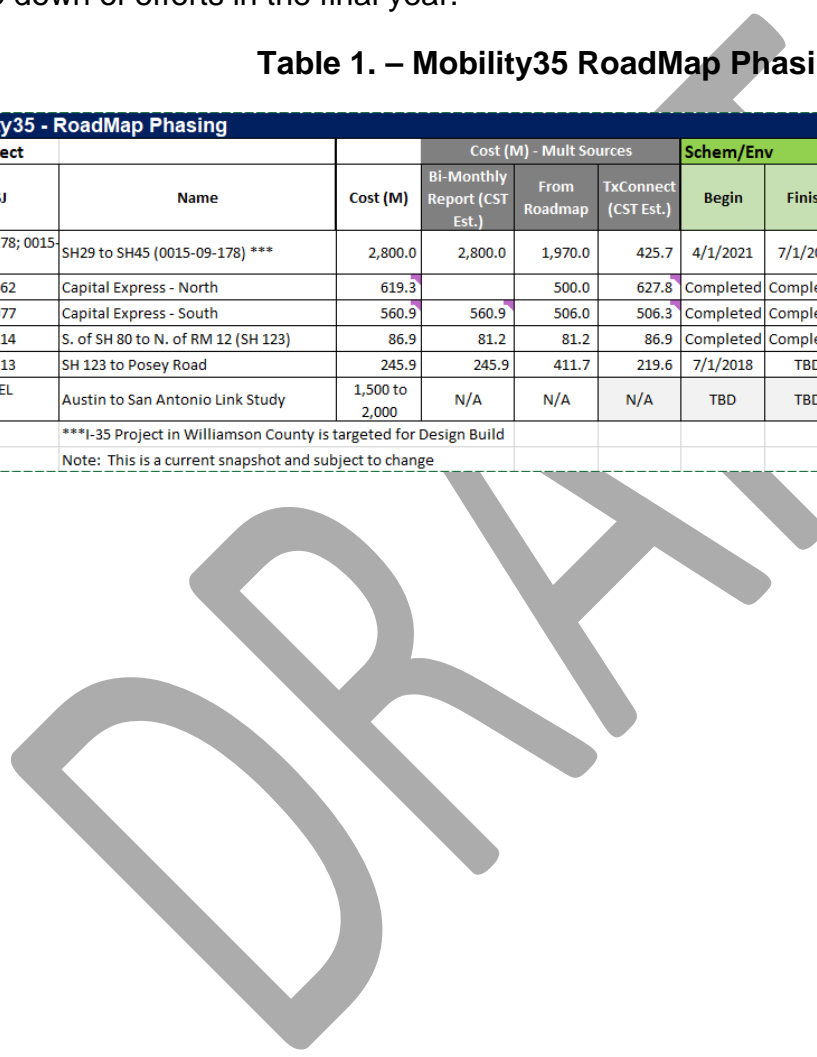
Work performed under this contract shall be in accordance with the applicable laws, rules, regulations and guidelines in effect at the time of contract execution. Work shall comply with current versions of the State's manuals and procedures and shall use the current

version of applicable software programs; references to manuals and software in this document shall refer to the current version of same.

The I-35 corridor program work effort is planned according to the following project timelines for the schematic/environmental, PS&E and construction phases. A year before the expiration of contract, the GEC shall work with TxDOT to establish final year needs by the Austin District. This will help establish whether there needs to be a ramp up or ramp down of efforts in the final year.

**Table 1. – Mobility35 RoadMap Phasing**

Mobility35 - RoadMap Phasing											
Project	Name	Cost (M)	Cost (M) - Mult Sources			Schem/Env		PS&E		Construction	
			Bi-Monthly Report (CST Est.)	From Roadmap	TxConnect (CST Est.)	Begin	Finish	Begin	Finish	Begin	Finish
0015-09-178; 0015-09-183	SH29 to SH45 (0015-09-178) ***	2,800.0	2,800.0	1,970.0	425.7	4/1/2021	7/1/2025	7/1/2025	1/7/2030	1/7/2030	1/7/2033
0015-10-062	Capital Express - North	619.3		500.0	627.8	Completed	Completed	Completed	Completed	8/1/2022	2/1/2029
0015-13-077	Capital Express - South	560.9	560.9	506.0	506.3	Completed	Completed	Completed	Completed	3/1/2023	2/1/2028
0016-03-114	S. of SH 80 to N. of RM 12 (SH 123)	86.9	81.2	81.2	86.9	Completed	Completed	Completed	Completed	4/1/2021	3/1/2025
0016-03-113	SH 123 to Posey Road	245.9	245.9	411.7	219.6	7/1/2018	TBD	TBD	TBD	9/1/2033	9/1/2036
No CSJ (PEL Study)	Austin to San Antonio Link Study	1,500 to 2,000	N/A	N/A	N/A	TBD	TBD	TBD	TBD	TBD	TBD
***I-35 Project in Williamson County is targeted for Design Build											
Note: This is a current snapshot and subject to change											



## 1. GENERAL REQUIREMENTS.

### 1.1. Design Criteria.

The GEC shall review work performed by others in accordance with the latest version (at time of work authorization execution) of applicable TxDOT procedures, specifications, manuals, guidelines, standard drawings, and standard specifications or previously approved special provisions and special specifications, which include:

- A. *PS&E Preparation Manual*, published by TxDOT;
- B. *Roadway Design Manual*, published by TxDOT;
- C. *Hydraulic Design Manual*, published by TxDOT;
- D. *Bridge Design Manual-LRFD*, published by TxDOT;
- E. *Bridge Project Development Manual*, published by TxDOT;
- F. *Geotechnical Manual*, published by TxDOT;
- G. *Texas Manual on Uniform Traffic Control Devices (TMUTCD)*, published by TxDOT;
- H. *Highway Illumination Manual*, published by TxDOT;
- I. *Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges* (latest Edition), published by TxDOT;
- J. *Traffic and Safety Analysis Procedural Manual (TASP)*, published by TxDOT;
- K. *TxDOT Survey Manual*, published by TxDOT;
- L. other TxDOT-approved manuals and guides.

When design criteria are not identified in TxDOT manuals, the GEC shall notify the State and refer to the American Association of State Highway and Transportation Officials (AASHTO), *A Policy on Geometric Design of Highways and Streets*, (latest Edition).

The GEC shall follow the TxDOT district guidelines for the preparation of schematics. The GEC shall work with Austin District staff to establish expectations for deliverables. This includes environmental requirements for the project. The GEC shall develop schedules that show how these projects will successfully be delivered to be ready for PS&E. The GEC shall also seek the Austin District's guidance if the project should be considered for Alternative Delivery.

The GEC shall follow the TxDOT district guidelines for the preparation of plans, specifications, and estimates (PS&E) packages and ensure each PS&E package is prepared in a form suitable for letting through TxDOT's construction contract bidding and awarding process.

The GEC shall oversee the design of the project by others is developed in accordance to the latest TxDOT's design criteria. The GEC shall review project-specific design criteria (e.g., typical sections, estimate, design exceptions) to be inserted into the design elements form for discussion at the design concept conference (DCC).

**1.2. Coordination.**

The GEC shall coordinate issues and communications with TxDOT's internal resource areas through the State's project manager. The State will communicate the resolution of issues and provide the GEC direction through the State's project manager. The GEC shall coordinate with affected counties, cities, and all other governmental agencies only at the State's project manager's direction.

The GEC shall notify the State and coordinate with adjacent engineers on all controls at project interfaces. The GEC shall document the coordination effort, and each engineer must provide written concurrence regarding the agreed project controls and interfaces. In the event the GEC and the other adjacent engineers are unable to agree, the GEC shall meet with the State and each adjacent engineer for resolution. The State will have authority over these disagreements and the State's decision will be final.

**1.3. Progress Reporting and Invoicing.**

The GEC shall invoice according to Function Code breakdowns shown in Attachment C – Services to be Provided by the GEC, of this contract, and Exhibit D – Fee Schedule, of each work authorization. The GEC shall submit each invoice electronically directly to the Professional Engineering Procurement Services (PEPS) Invoice Center using the appropriate method of payment template provided by the State.

On a monthly basis, the GEC shall enter the Historically Underutilized Business (HUB) or Disadvantaged Business Enterprise (DBE) reporting information and Projected vs. Actual information directly into the Professional Services-Contract Administration Management System (PS-CAMS) Consultant Portal.

The GEC shall submit a monthly written progress report to the State's project manager regardless of whether the GEC is invoicing for that month. The GEC's written progress report must describe activities during the reporting period; activities planned for the following period, problems encountered, and actions taken to remedy them; list of meetings attended; and overall status, including a percent complete by task.

The GEC shall prepare a design time schedule using the latest version of Primavera software. The State's project manager may approve the use of an alternate program comparable to Primavera. The GEC must obtain such approval in writing prior to using an alternate program. The schedule must indicate tasks, subtasks, critical dates, milestones, deliverables, and review requirements in a format that depicts their interdependence. The GEC shall assist State personnel in interpreting the schedule. The GEC shall schedule milestone submittals at 30%, 60%, 90% and final project completion phases. The GEC shall advise the State in writing if the GEC is not able to meet the scheduled milestone review date.

**1.4. Level of Effort.**

For each work authorization, the GEC shall base the level of effort at each phase on the prior work developed in earlier phases without unnecessary repetition or re-study. If directed by the State, the GEC shall provide written justification regarding whether additional or repeated level of effort of earlier completed work is warranted,

or if additional detail will be better addressed at a later stage in the project development.

**1.5. Quality Assurance (QA) and Quality Control (QC).**

The GEC shall provide the GEC’s QA and QC manual, guide, or process to the State. The GEC shall provide peer review at all levels. For each deliverable, the GEC shall have some evidence of their internal review and mark-up of that deliverable as preparation for submittal. The State’s project manager may require the GEC to submit the GEC’s internal mark-up (red lines) or comments developed as part the GEC’s quality control step. When internal mark-ups are requested by the State in advance, the State may reject the actual deliverable should the GEC fail to provide the evidence of quality control. The GEC shall clearly label each document submitted for quality assurance as an internal mark-up document.

If, at any time, during the review of a submittal it becomes apparent to the State that the submittal contains errors, omissions, or inconsistencies, the State may cease its review and immediately return the submittal to the GEC for appropriate action by the GEC. A submittal returned to the GEC for this reason is not a submittal for purposes of the submission schedule.

**1.6. Organization of Plan Sheets.**

The GEC shall review the PS&E packages in accordance with the latest edition of the TxDOT *PS&E Preparation Manual*. The GEC shall ensure that the PS&E package is suitable for the bidding and awarding of a construction contract and that the PS&E package is in accordance with the latest TxDOT policies and procedures, and the district’s PS&E checklist.

**1.7. Organization of Project Folder and Files (Electronic Project Files).**

The GEC shall organize the electronic project files in accordance with the State’s file management system (FMS) format. With the approval of the State, the GEC may maintain the project files in the State’s ProjectWise work areas.

**1.8. Limited Access to State’s Transportation Project Lifecycle Management Systems.**

The State may grant to specific individuals designated by the GEC limited access to TxDOT’s Transportation Project Lifecycle Management Systems (TxDOTCONNECT) to update responsible engineer information, develop project construction cost estimates, build specification lists, and seal construction cost estimates. The State may limit the number of individuals granted access to TxDOTCONNECT.

The following are the TxDOTCONNECT security roles currently available for use by the GEC:

Work Performed in Solution	Required License	Security Role
Update Responsible Engineer Information Develop Construction Cost Estimate Build Specifications Lists Seal Project Estimate	Professional Engineer (PE)	Professional Engineer - Consultant

Update Responsible Engineer Information Develop Construction Cost Estimate Build Specifications Lists	None	Engineer's Estimate Coordinator - Consultant
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When requested by the State, the GEC shall obtain completed forms and signatures required by TxDOT to issue a TxDOT network User ID from the individuals it has designated to receive TxDOTCONNECT access. After the TxDOT User ID is issued, those individuals must request access to TxDOTCONNECT.

**1.9. State-Controlled Waters.**

The placement of a new structure or modification of an existing structure within state-controlled waters will require confirmation that the structure lies within the General Land Office (GLO) property and whether the crossing is tidally influenced or not. Consequently, the GEC shall oversee the request, as early in the design process as possible, that the State determine whether the proposed improvements are within a tidal GLO property, a submerged GLO property, or a non-tidal GLO property. The State may request assistance from the GEC to prepare an exhibit demonstrating the location of the proposed improvements on the GLO State Owned Map for the project location of an assigned TxDOT district.

**1.10. Underground excavation.**

If necessary, the GEC shall contact the Texas Excavation Safety System, Inc. (DIGTESS) or call telephone number 811 to have underground utilities marked prior to digging holes for right of way monuments, utility engineering investigation, geotechnical investigation, or other purposes. The GEC shall separately contact utilities that are not a part of the DIGTESS organization. The GEC shall maintain documentation of all notification calls. The GEC shall comply with Texas' excavation laws.

**1.11. Preventative Measures to Prevent the Spread of Oak Wilt Disease Contamination.**

The GEC shall take the following preventive measures while cutting, pruning, or removing oak trees in counties that have confirmed cases of oak wilt disease or when directed by the State:

- A. When possible, employ alternative methods instead of pruning or cutting oak trees.
- B. When possible, perform necessary pruning and cutting of healthy trees during January or February when sap beetles are least active.
- C. Treat wounds with pruning paint in oak wilt disease infected counties to discourage insects, especially during warm weather.
- D. Sterilize all pruning tools between each use on each tree with either Lysol spray or a 70 percent rubbing alcohol solution.
- E. Dispose of the tree cuttings by burning, burying, or another approved method.

**1.12. Personal Protective Equipment (PPE).**

- A. The GEC shall, and shall require its subcontractors to:

1. Provide personal protective equipment (PPE) to their personnel.
  2. Provide business vehicles for their personnel, and
  3. Require their personnel to use PPE and drive only business vehicles while performing work on or near roadways.
- B. The PPE must meet all:
1. Current standards set by the Occupational Safety and Health Administration (OSHA) and
  2. TxDOT requirements (e.g., safety glasses, Type 3 (TY 3) pants for night work).
- C. Each business vehicle must be clearly marked with the GEC's business name, or the name of the appropriate subcontractor, such that the name can be identified from a distance.

### 1.13. Training Requirements.

- A. Each key staff member of the GEC's project team that is performing or overseeing design or plan review tasks must complete the Environmental Management System (EMS) courses prescribed by the State prior to working on the project. The required training for key staff members on the design project team is listed on the EMS training matrix, which may be accessed at: <https://ftp.txdot.gov/pub/txdot-info/env/ems/070-04-fig.pdf>.

The courses listed on the EMS training matrix are e-learning (online), unless otherwise noted as classroom learning. Information about these online courses may be accessed at: <https://www.txdot.gov/inside-txdot/division/environmental/ems-courses.html>.

The GEC shall ensure that each key staff member of the GEC's project team that will be performing or overseeing design or plan review tasks has completed the required training listed on the EMS training matrix prior to working on the project. In addition, the GEC shall ensure that the required training is repeated by each key staff member of the project team based on the repeat requirements stated in the EMS training matrix.

Additional training requirements may be added by District Environmental Staff to comply with project specific federal and state environmental permits. The GEC shall ensure that all staff members comply with any additional environmental training requirements.

- B. Deliverables for Training Requirements:

The GEC shall provide a list, signed by the GEC's Project Manager that includes the following:

1. The names and titles of all key staff personnel performing or overseeing design or plan review tasks
2. The names of the training courses completed by each person on the list
3. The completion dates for the training courses completed by each person on the list

The GEC shall update this list and resubmit it to the State any time new key staff personnel are assigned to the project team and any time training is repeated by key staff personnel on the project.

#### **1.14. Information Resources and Security Requirements.**

The GEC shall perform its work in accordance with TxDOT's Information Resources and Security Requirements. A Contractor-Related Entity might create, access, transmit, store, or use Public TxDOT data in a Contractor-Related Entity Environment. The GEC shall ensure that Contractor-Related Entity Environments comply with the TxDOT Low Security Baseline.

### **GENERAL REQUIREMENTS BY FUNCTION CODE**

The GEC shall perform the services under this contract in accordance with the following general requirements related to each function code.

## **2. GENERAL REQUIREMENTS FOR FUNCTION CODE 120(120) – SOCIAL/ ECON/ENV STUDIES – SOCIAL, ECONOMIC, AND ENVIRONMENTAL STUDIES AND PUBLIC INVOLVEMENT.**

### **2.1. Environmental Services Requirements.**

Each environmental service overseen by the GEC must have a deliverable. The GEC shall review environmental services deliverables prepared by others. Deliverables must summarize the methods used for the environmental services and the results achieved. The summary of results must be sufficiently detailed to provide satisfactory basis for thorough review by the State, and where applicable, the Federal Highway Administration and other agencies with regulatory oversight. All deliverables must meet regulatory requirements for legal sufficiency and adhere to the requirements for reports enumerated in TxDOT's National Environmental Policy Act of 1969 (NEPA) Memorandum of Understanding (MOU) for federal projects and the Texas Administrative Code, Title 43, Part 1, chapter 2 for State projects.

#### **A. Quality Assurance/Quality Control Review**

For each deliverable, all documents must be in accordance with:

1. Current Environmental Compliance Toolkit guidance, documentation requirements, and templates published by the TxDOT Environmental Affairs Division (ENV) and in effect as of the date of receipt of the documents or documentation to be reviewed;
2. Current state and federal laws, regulations, policies, guidance, agreements, and memoranda of understanding between TxDOT and other state or federal agencies; and
3. Guidelines contained in Improving the Quality of Environmental Documents, A Report of the Joint AASHTO/ACEC Committee in Cooperation with the Federal Highway Administration (May 2006) for:
  - a. Readability, and



- b. Use of evidence and data in documents to support conclusions. Upon request by the State, the GEC shall review documentation that the QA and QC reviews were performed by qualified staff.
- B. Deliverables must contain all data acquired during the environmental service and be written to be understood by the public. The format must meet all requirements as specified by the State and in accordance with the TxDOT *Writers Style Guide* published by TxDOT's Communications Division.
- C. Electronic versions of each deliverable must be written in software that is fully compatible with the software currently used by the State and provided in the native format of the document for future use by the State. The GEC shall verify all hard copy deliverables are supplemented with electronic copies in searchable Adobe Acrobat (.pdf) format, unless another format is specified by the State. Each deliverable must be a single, searchable .pdf file that mirrors the layout and appearance of the physical deliverable. The GEC shall verify that electronic files delivered by others are in a format acceptable to the State in both the document's native format and the PDF format.
- D. Review of Deliverables
  1. Deliverables must consist of documentation to support reevaluation, or a categorical exclusion (CE) determination, or documentation in support of an environmental assessment (EA) or an environmental impact statement (EIS), as applicable. Technical reports and documentation must be prepared to support the applicable environmental classification (e.g. CE, EA, or EIS).
  2. All deliverables must comply with all applicable state and federal environmental laws, regulations, procedures, and TxDOT's Environmental Compliance Toolkits, documentation requirements, and templates.
  3. On the cover page of any environmental documentation, the GEC shall ensure the following language is included in a way that is conspicuous to the reader:  
  
"The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by FHWA and TxDOT."
  4. The State will provide the State's and other agency comments on draft deliverables to the GEC. When required, the GEC shall review the revised deliverable:
    - a. To include any State commitments, findings, agreements, or determinations (e.g., wetlands, endangered species consultation, Section 106, or Section 4(f)), required for the transportation activity as specified by the State;
    - b. To incorporate the results of public involvement and agency coordination;

- c. To reflect mitigation measures resulting from comments received or changes in the transportation activity; and
  - d. To include with the revised document a comment response form (matrix) in the format provided by the State.
- E. The GEC shall review photographs and graphics that clearly depict details relevant to an evaluation of the project area. Comparable quality electronic photograph presentations must be at least 1200 x 1600 pixel resolution. The State may request images/graphics be provided in another format or quality.

## **2.2. Environmental Assessment (EA) Content and Format Requirements.**

- A. The GEC shall review any EAs and ensure that:
- 1. The EA meets the requirements of 23 CFR §771.119 and TAC, Title 43, Part 1, Chapter 2 and the EA content is sufficiently detailed to meet regulatory requirements for legal sufficiency and current (at the time of creation) TxDOT ENV guidance and Environmental Compliance Toolkits.
  - 2. Exhibits to be included in reports or EAs must not exceed 11 inches x 17 inches and must be in color. Text pages must be 8.5 inches x 11 inches. Exhibits and text in reports or EAs must be reproducible via photocopying without loss of legibility. The EA documents must be reproduced on plain white paper unless otherwise approved in advance in writing by the State.
  - 3. The EA must use quality maps and exhibits and must incorporate by reference and summarized background data and technical analyses to support the concise discussions of the alternatives and their impacts.

## **2.3. Environmental Reevaluation Content and Format Requirements.**

The GEC shall review reevaluations, as directed by the State, in accordance with TxDOT's Environmental Toolkit and the applicable Federal and State's guidance. A Reevaluation Consultation Checklist (RCC) and supporting documentation must include the project history, addressing the specific changes that have occurred, potential environmental impacts and associated necessary technical studies, with a supported conclusion of the need for further action, or lack thereof

The GEC shall review all necessary technical reports and the environmental re-evaluation form.

## **2.4. Categorical Exclusion (CE) Supporting Documentation Content and Format Requirements.**

The documentation being reviewed by the GEC shall meet the requirements of 23 C.F.R. § 771.119 and 43 Tex. Admin. Code Ch. 2, as directed by the State, and in accordance with TxDOT's Environmental Toolkit and the applicable Federal and State's guidance. Documentation includes providing information about the project and the project area to the State for the completion of the Work Plan Development Screens in the Texas Environmental Compliance Oversight System (ECOS) to determine what technical studies are required. Additionally, an open-ended (d) list categorical exclusion classification request form must be prepared to classify the project as an open ended (d) list CE, if needed.

**2.5. Environmental Impact Statement (EIS) Content and Format Requirements.**

B. The GEC shall review any EIS and ensure that:

1. The EIS meets the requirements of 23 CFR §771.115 and 42 TAC §2.84 and the EIS content is sufficiently detailed to meet regulatory requirements for legal sufficiency, and current TxDOT ENV guidance and Environmental Compliance Toolkits
2. Exhibits to be included in reports or EISs must not exceed 11 inches x 17 inches and must be in color. Text pages must be 8.5 inches x 11 inches. Exhibits and text in reports or EISs must be neat and reproducible via photocopying without loss of legibility. Except as noted in specifications in this attachment, EISs must be reproduced on plain white paper unless otherwise approved in advance by the State in the work authorization.
3. The EIS must use quality maps and exhibits and must incorporate by reference and summarize background data and technical analyses to support the concise discussions of the alternatives and their impacts.
4. The format must meet all requirements as specified by the State and comply with the TxDOT Writers Style Guide published by TxDOT's Communications Division.

**2.6. Environmental Technical Analyses and Documentation Requirements.**

A. Definition of technical analyses and documentation for environmental services

In general, technical analyses and documentation for environmental services might include a report, checklist, form, or analysis detailing resource-specific studies identified during the process of gathering data to make an environmental decision.

The State may determine what technical reports and documentation are necessary for any given project. The GEC shall review all technical reports and documentation for the State with sufficient detail and clarity to support environmental determinations. All technical reports must be in accordance with TxDOT's Environmental Compliance Toolkits, documentation requirements, and templates. The environmental document must reference and be consistent with 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 use templates and documentation standards as applicable and include sufficient information to determine the significance of impacts.

B. The GEC shall review the requested environmental technical analyses and documentation, that may include:

1. Section 4(f) Evaluations

The GEC shall review any Section 4(f) evaluation conforming to the appropriate TxDOT Section 4(f) checklist for exceptions, de minimus, and programmatic evaluations. For individual Section 4(f) evaluations, the format and outline will be approved by the State beforehand. All

Section 4(f) evaluations must meet the requirements set forth in TxDOT's Environmental Compliance Toolkits. The 4(f) Section of the environmental document states the reason a Section 4(f) evaluation is being completed. The 4(f) Section of the environmental document discusses the presence of all Section 4(f) properties located in the project area.

2. Environmental Public Involvement (23 C.F.R. § 771.111) 43 TAC § 2

The GEC shall:

- a. Oversee public involvement activities, including noise workshops, in accordance with applicable federal and state rules, regulations and guidelines, including but not limited to 23 CFR 771.111, 36 CFR 800.2, EO 12898, EO 13166, and TAC Title 43, Part 1.
- b. Review the public involvement plan specifying all activities to be performed and alternatives to be discussed during public involvement activities. Public involvement activities must be carried out in compliance with Attachment A, Article 38, sections J and K of this contract. The plan must discuss outreach strategies for both the general public and targeted strategies for environmental justice and limited English proficiency populations.
- c. Oversee and coordinate the logistics in support of the public meeting(s) and hearing.
- d. Oversee preparation, update, and maintenance of a mailing list that includes public elected officials, adjacent property owners, and other stakeholders identified by the State to be used for the meeting notice.
- e. Review public meeting and hearing notices to the public, elected officials, adjacent property owners, and others identified by the State, at least 15 days prior to the public meeting(s) and hearing to notify them of the public meeting(s) and hearing. Public meeting and hearing notices shall be provided in English and Spanish and any other identified Limited English Proficiency (LEP) populations.
- f. Review public meeting and hearing notices and obtain affidavits of publication. Notices shall be published on the TxDOT project webpage and in local newspapers, including one (1) Spanish newspaper if requested by the State, at least 15 days prior to the public meeting(s) and hearing to notify the public in advance of the meeting or hearing. The GEC shall provide necessary special communication needs or accommodations needs, such as interpreters and/or accessibility requirements.
- g. Oversee preparation of sign-in sheets, comment forms, handouts, and pre-printed nametags for the staff. Sign-in sheets, comment forms, handouts and other public meeting and hearing materials shall be provided in English and Spanish and any other identified LEP populations.

- h. Review public meeting and hearing virtual presentation (including presentation script) and other materials, as requested by the State.
- i. Oversee arrangements for equipment needs (e.g., easels, chairs, tables, and audio-visual equipment) including transportation, set-up, and break down.
- j. Review public meeting and hearing informational and directional signs (registration/sign-in, written comment station, and directional arrows for traffic flow)
- k. Prepare for and attend meetings with the State to discuss and plan for public meeting(s) and hearing.
- l. Ensure a uniformed police officer is provided at the public meeting(s) and hearing.
- m. Ensure a court reporter is provided for public hearing.
- n. Review necessary informational exhibits for display at the public meeting(s) and hearing.
- o. Review comments response matrices for each public meeting and hearing held. Assist the State with the responses to comments raised during the designated comment period of the public meeting or hearing.
- p. Review summary reports following guidance for public meeting and hearing documentation provided on TxDOT's Environmental Toolkit that will include copies of notices, photographs, handouts, sign-in sheets, comment forms, letters, and a comment response matrix. There shall be one draft document and one final document for each public meeting and hearing summary report in Word and PDF formats submitted to the State electronically.
- q. Review legal notices submitted to the State's project manager for review no less than six weeks prior to publication.
- r. Facilitate approval in writing by the State's project manager for all legal notices, exhibits, and other materials.
- s. Not distribute acknowledgement or response letters without prior approval by the State's project manager
- t. Not distribute the newsletter without prior approval by the State
- u. Review materials and information regarding the transportation activity to the State's project manager to be posted on the State-developed website.
- v. Ensure the website conforms to state law, Texas Department of Information Resources requirements, TxDOT policies and procedures, and TxDOT Brand Guidelines.

### 3. Community Impacts Analysis

Community impacts include environmental justice, limited English proficiency, and other issues as addressed in TxDOT environmental guidance. The GEC shall oversee community impact assessments including environmental justice analysis performed by others. The report must follow guidance provided in TxDOT's Community Impacts Assessment Toolkit.

4. Induced Growth Impact Analysis and Cumulative Impacts Analysis

The GEC shall ensure analyses meet the requirements of NEPA and the most current version of TxDOT's *Guidance on Preparing Impact Analyses and Cumulative Impacts Analysis Guidelines* in TxDOT's Environmental Compliance Toolkits.

5. Air Quality Studies

The GEC shall review all required technical reports and the air quality section of all environmental documents in accordance with the current version of the TxDOT's Environmental Handbook for Air Quality and Air Quality Toolkit. The State's project manager may determine what technical reports and documentation are required for any given project.

6. Noise Analysis Technical Reporting

The GEC shall review traffic noise analysis and technical reports to ensure these are developed in accordance with the current version of the State's *Procedures for Analysis and Abatement of Roadway Traffic Noise and Construction Noise* located in TxDOT's Environmental Compliance Toolkits.

The GEC shall verify the use TxDOT's .DGN file coordinate system for all traffic noise modeling, so that all design files and traffic noise modeling software coordinate systems are the same.

The GEC shall review all proposed noise barrier locations for constructability.

The GEC shall oversee necessary noise workshops for proposed noise abatement.

The GEC shall not begin identification of noise sensitive land uses unless TxDOT's Environmental Affairs Division's Historical Studies Branch (ENV-Historical Studies) has approved a Project Coordination Request (PCR).

7. Water Resources Analysis and Documentation

The GEC shall review environmental documentation, and review analysis of biological natural resources for compliance with state and federal regulations as described in the *Environmental Guide: Volume 2 Activity Instructions*, <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/060-06-gui.pdf>, and the associated forms, templates, and guidance found in the Water Resources section of the Natural Resources Toolkit,

<https://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/natural-resources.html>.

At the request of the State, the GEC shall review water resource analyses prepared by others, including but not limited to:

- a. Surface Water Analysis Form, including analysis of:
    - (1) Section 404 of the Clean Water Act
    - (2) Section 303(d) of the Clean Water Act
    - (3) General Bridge Act/Section 9 of the Rivers and Harbors Act
    - (4) Section 10 of the Rivers and Harbors Act
    - (5) Section 401 of the Clean Water Act
    - (6) Executive Order 11990, Protection of Wetlands
  - b. WOTUS Delineation report prepared in accordance with ENV's Documentation Standard for Waters of the U.S. Delineation Report using ENV's Template: Waters of the U.S. Delineation Report including all supporting forms and exhibits
  - c. Section 404/10 Impacts Table prepared in accordance with TxDOT ENV's Section 404/10 Impacts Table and Instructions – Preparing a Section 404/10 Impacts Table
  - d. Section 404/10/9 Permitting Package, including:
    - (1) USACE PCN Permitting Application prepared in accordance with TxDOT ENV's Documentation Standard for PCN
    - (2) USACE IP Permitting Application
    - (3) USACE RGP Permitting Application
    - (4) Conditional/Functional Assessment
    - (5) 401 Certification
  - e. For all WOTUS surveys, the GEC shall:
    - (1) Review the results of the land survey provided by others in electronic DGN file format to be incorporated into the schematic and plans. GIS and KMZ files of the land survey must also be provided.
    - (2) Review the determination of the acres of permanent and temporary impacts and linear feet of impacts at each WOTUS, and provide figures of the WOTUS and associated impacts overlaying the schematic and plan sheets.
8. Initial Site Assessment (ISA) with Hazardous Materials Project Impact Evaluation Report

The GEC shall review ISA with Hazardous Materials Project Impact Evaluation Report in accordance with Statement of Work for Hazardous Materials Processes related to NEPA in the TxDOT Hazardous Materials Management Toolkit (<http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/haz-mat.html>).

9. Biological/Natural Resources Management Analysis and Documentation
- a. The GEC shall review environmental documentation, conduct field surveys, and provide analysis of biological natural resources for compliance with state and federal regulations as described in the *Environmental Guide: Volume 2 Activity Instructions*, <http://ftp.dot.state.tx.us/pub/txdot-info/env/toolkit/060-06-gui.pdf>,

and the associated forms, templates, and guidance found in the Natural Resources Toolkit, <https://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/natural-resources.html>. The applicable natural resource studies must be determined at the work authorization level. In the case that field surveys are required, then the GEC shall contact TxDOT's Project Manager for clearance prior to starting work. TxDOT will verify that approved methods and appropriately permitted and experienced staff will be used. At the request of the State, the GEC shall review the following biological/natural resource analysis:

- b. For all projects within a USFWS Designated Karst Zone or Critical Habitat:
  - (1) A USFWS permitted biologist must perform the habitat assessment for listed karst invertebrates per USFWS protocols.
  - (2) A Texas licensed Professional Geoscientist (P.G.) must perform, sign, and seal the karst features survey. The Texas licensed P.G. must have experience in central Texas karst geology.
10. Initial Site Assessment (ISA) with Hazardous Materials Project Impact Evaluation Report

The GEC shall review the ISA with Hazardous Materials Project Impact Evaluation Report in accordance with Statement of Work for Hazardous Materials Processes related to NEPA in the TxDOT Hazardous Materials Management Toolkit (<http://www.txdot.gov/inside-txdot/division/environmental/compliance-toolkits/haz-mat.html>).
11. Archeological Documentation Services

The GEC shall review all archeological studies to verify they satisfy the current TxDOT Archeological Sites and Cemeteries Toolkit. An archeological background study must be performed prior to field work, unless a background study is provided by the State.

An archeological survey (reconnaissance or intensive) must satisfy state and federal regulations. The GEC shall verify contact has been made with TxDOT's Environmental Affairs Division's Archeological Studies Branch (ENV-ARCH) prior to field and survey work being performed by others. ENV-ARCH will verify that approved methods and appropriately permitted and experienced staff will be used.
12. Historic Resource Identification, Evaluation, and Documentation Services

The GEC shall review all historic resource identification, evaluation, and documentation services for compliance with TxDOT's Environmental Compliance Toolkits. All services, except the historic resource PCR, must have prior approval by TxDOT's Environmental Affairs Division's Historical Studies Branch (ENV-HIST) to be performed. The historic resource PCR must be accepted by ENV-HIST prior to survey field work.



## 13. Floodplain Impacts

The GEC shall review documentation of any Regulatory Zone requirements, and International Boundary Water Commission (IBWC) requirements (transportation activity within the floodplain of the Rio Grande) if the project is within the area covered by these regulations. Studies for floodplain impacts must fulfill the requirements of Executive Order 11988 and 23 C.F.R. subpt. 650.A. Documentation must:

- a. Briefly describe the watershed characteristics of the study area in terms of land uses and changes in land use that affect stream discharge.
- b. Briefly describe the streams in the study area, including evidence of stream migration, down cutting, or aggradations.
- c. Identify the presence and nature (e.g., zone A, zone AE, zone AE with floodway) of any FEMA mapped floodplains; including the panel number.
- d. Indicate the existence of any significant development associated with the mapped area and identify the jurisdiction responsible for the floodplain.
- e. Identify the locations where an alternative might encroach on the base (100-year) floodplain (encroachments), where an alternative might support incompatible floodplain development, and the potential impacts of encroachments and floodplain development. This identification must be included in the text and on a map.
- f. Include a list of all jurisdictions having control over floodplains for each alternative.
- g. Where an encroachment or support of incompatible floodplain development results in impacts, the GEC shall review more detailed information on the location, impacts, and appropriate mitigation measures. In addition, if any alternative (1) results in a floodplain encroachment or supports incompatible floodplain development having significant impacts, or (2) requires a commitment to a particular structure size or type, the report must include an evaluation and discussion of practicable alternatives to the structure or to the significant encroachment. The report must include exhibits which display the alternatives, the base floodplains and, where applicable, the regulatory floodplains.
- h. For each alternative encroaching on a designated or regulatory floodplain, provide a preliminary indication of whether the encroachment is consistent with or requires a revision to the regulatory floodplain. If the preferred alternative encroaches on a regulatory floodplain, the report must discuss the consistency of the action with the regulatory floodplain. In addition, the report must document coordination with FEMA and local flood plain administrator or state agencies with jurisdiction indicating that a revision is acceptable or that a revision is not required.

- i. If the preferred alternative includes a floodplain encroachment having significant impacts, the report must include a finding that it is the only practicable alternative as required by 23 C.F.R. subpt. 650.A. The finding must refer to Executive Order 11988 and 23 C.F.R. subpt. 650.A. In such cases, the report must document compliance with the Executive Order 11988 requirements and must be supported by the following information:
  - (1) The reasons why the proposed action must be located in the floodplain;
  - (2) The alternatives considered and why they were not practicable; and
  - (3) A statement indicating whether the action conforms to applicable state or local floodplain protection standards

14. Stormwater Permits (Section 402 of the Clean Water Act)

The GEC shall review the need for Municipal Separate Storm Sewer System (MS4) notification prepared by others, including a list of MS4 participating municipalities.

**3. GENERAL REQUIREMENTS FOR FUNCTION CODE 130(130) – RIGHT-OF-WAY – SURVEY ACTIVITIES.**

**3.1. Right of Way Mapping Requirements.**

Traditional ROW mapping includes ground surveying and preparation of parcel maps, legal descriptions also known as metes and bounds descriptions, and ROW maps. The GEC shall review ROW deliverables prepared by others.

Standards and deliverables are detailed in the *TxDOT Survey Manual* and the *TxDOT Surveyor's Toolkit*.

The GEC shall ensure that ROW deliverables prepared by others is in compliance with the precision and accuracy requirements set forth by the Texas Board of Professional Engineers and Land Surveyors (TBPELS) rules.

By mutual agreement between the TBPELS and the State, ROW maps need not be signed and sealed by a RPLS.

For purposes of clarity, consistency, and ease of understanding, the State, as an acquiring agency of private property for public use, has adopted standards and formats for a ROW map to facilitate the processes of negotiation, appraisal, relocation assistance, and condemnation. The GEC shall ensure adherence to these standards and formats to every extent possible.

**4. GENERAL REQUIREMENTS FOR FUNCTION CODE 135(135) – RIGHT-OF-WAY – UTILITY ACTIVITIES.**

#### 4.1. Definitions.

In this attachment, the following definitions apply.

- A. "Utility Coordinator" means the individual or entity performing utility-related services that are not required to be performed by a licensed professional engineer under Texas law. The GEC shall ensure that the work is performed as required.
- B. "Utility Engineer" means the individual or entity performing utility-related services that are required to be performed by a licensed professional engineer under Texas law. The GEC shall ensure that the work is performed as required.
- C. "Ensure" means to make certain that something has happened or will happen, and includes an obligation to verify the appropriate level of engineering or other technical expertise, consistent with the complexity, cost, and level of risk associated with a task. The term ensure does not require the completion of any task assigned to another entity by the State under a separate agreement.

#### 4.2. Utility Engineering Investigation Requirements.

Utility engineering investigation includes utility investigations subsurface and above ground prepared in accordance with ASCE/CI Standard 38-02 and Utility Quality Levels.

##### A. Utility Quality Levels (QL)

Utility Quality Levels are defined in cumulative order (least to greatest) as follows:

1. 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, One-Call markings, and data repositories.
2. 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.
3. Quality Level B - 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 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.
4. 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 hole's number. This is in addition to and not in lieu of the test hole.

B. Utility Engineering Investigation Methodology Requirements

The GEC shall:

1. Review utility designating services performed by others. 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 GEC and State 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 that states "line sizes are from best available records". All above-ground utility feature locations must be included in the deliverable to the State. This information must be provided in the latest version of OpenRoads civil design system used by the State. The electronic file will be delivered on USB flash drive or as required by the State. A hard copy is required and must be signed, sealed, and dated by the engineer overseeing the utility engineering (Utility Engineer). When requested by the State, the designated utility information must be overlaid on TxDOT's design plans.

2. Oversee utility locate (test hole) services. Locate means the process used to obtain precise horizontal and vertical position, material type, condition, size, and other data that might 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. Quality Level A test holes that do not encounter an expected utility will not be considered complete until discussed with the TxDOT Project Manager.

Review the following data on an appropriately formatted test hole data sheet that has been sealed and dated by the engineer performing the utility locate services:

- 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 material
- g. Utility facility condition
- h. Pavement thickness and type
- i. Coating/wrapping information and condition
- j. Unusual circumstances or field conditions

Review plotted utility location position information is to scale and review the comprehensive utility plan signed and sealed by the responsible 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 State. The electronic file must be delivered on USB flash drive or as required by the State. When requested by the State, the locate information must be overlaid on TxDOT's design plans.

- 3. Maintain a utility layout in the current approved version of OpenRoads Civil Design system used by TxDOT. This layout must include all existing utilities that are to remain in place or be abandoned, and all adjusted utilities. This layout must be utilized to monitor the necessity of relocation and evaluate alternatives.
- 4. Review and coordinate utility engineering investigation information to be performed by others in the latest version of MicroStation OpenRoads Designer and MicroStation Connect Edition that are implemented at TxDOT at the time the work authorization is executed.
- 5. Verify that there is no conflict between the utility management plan, utility certifications, and special provisions.
- 6. The Utility Engineer's activities must conform with those specified under Texas Administrative Code, Title 43, Part 1, Chapter 21, Subchapter C, Section 21.37, relating to the specified utility types, eligibility requirements, agreements, and approvals.

#### C. Utility Adjustment Coordination Requirements

The GEC is responsible for overseeing communication, coordination, and meetings with any one, combination, or all of the following: individual utility companies, local public agencies (LPAs), State's project manager, TxDOT utility staff, TxDOT right of way project delivery, design engineer, maintenance staff, and area office staff. The GEC's utility coordination duties include, but are not limited to, reviewing utility agreement assemblies prepared by others, including utility agreements, utility reimbursable billings, joint use agreements, assisting utility companies with utility permit submittals, and assisting with documentation for advance funding agreements (AFAs).

- 1. The GEC shall perform utility coordination activities with involved utility owners, their consultants, and the State to achieve timely project notifications. In conjunction with formal coordination meetings, the GEC must create meeting minutes, create and update the utility conflict matrix,

create action item log, perform document control, and assist with conflict analysis and resolution. The Utility Coordinator must act as the "Responsible Party" as indicated in the State's – Utility Cooperative Management Process and Right of Way Utility Adjustment Subprocess (See the TxDOT *ROW Utilities Manual*, Chapter 2).

2. Utility Agreement Assemblies: A packaged agreement consisting of a Utility Joint Use Acknowledgement, Standard Utility Agreements, plans on 11x17 sheets, statement of contract work form, Affidavit form and copy of recorded easement, schedule of work, Buy America compliance Mill Test Reports (MTR's) or certifications, and various attachments as detailed in the Utility Accommodation Rules (UAR) (43 Tex. Admin. Code §§ 21.31-21.57) and the TxDOT *ROW Utilities Manual*.
3. Utility Agreements: If a utility is located within an easement, the utility company might have a compensable interest. The Utility Coordinator must obtain a copy of applicable easements from the utility.
4. Utility Acknowledgement: For this project, all non-reimbursable utility adjustments must be submitted with the Form 1082 Utility Installation Request (UIR) or must be submitted using the current program used by TxDOT such as Right-of-Way Utility and Leasing Information System (RULIS). The term "permit" refers to "Form 1082". The Utility Coordinator must furnish the appropriate form to the utility company. The Utility Coordinator must obtain Form 1082 and adjustment plans from the utility for the Utility Coordinator and Utility Engineer to review.
5. Escrow Agreements: If it is determined that the utility will be adjusted as part of the highway contract, the State's project manager must be notified immediately.
6. The GEC shall coordinate the development of the required advance funding agreement (AFA) with the utility and the State in accordance with TxDOT Contracts Services Division procedures.
7. State Utility Procedure (SUP): When applicable, the GEC shall ensure compliance with the procedures found in Chapter 8, Section 6 in the TxDOT *ROW Utilities Manual*.
8. Local Utility Procedure (LUP): When applicable, the GEC shall ensure compliance with the procedures found in Chapter 8, Section 8 in the TxDOT *ROW Utilities Manual*.
9. All documentation to be included in utility agreements must conform to the requirements of 23 C.F.R. subpt. 645.A.
10. For each utility, the records for all utility owners' costs must be in accordance with the requirements of 23 C.F.R. subpt. 645.A., in a format that is compatible with the estimate attached to the utility agreement, and with sufficient detail for analysis. The totals for labor, overhead, construction costs, travel, transportation, equipment, materials, supplies, and other services must be shown in such a manner as to permit comparison with the approved estimate.

11. The GEC shall not perform engineering of relocation plans relative to a particular utility agreement under this contract as this is a cost of right of way that is subsidiary to the specific utility agreement.
12. The GEC is responsible for ensuring utility agreements comply with UAR (43 Tex. Admin. Code §§ 21.31-21.57) and Buy America (23 U.S.C. § 313; 23 C.F.R. § 635.410; and Tex. Transp. Code § 223.045).

D. Utility Adjustment Monitoring and Verification Requirements

1. Utility adjustment monitoring and verification includes the utility location installation verification, compliance with UAR, monitoring, reporting, and as-built surveying as required by the State for joint bid, non-joint bid, and any utility permits submitted from schematic development through construction.
2. Notification.  
The Utility Engineer must notify the State a minimum of 48 hours before mobilization and demobilization will occur.
3. The GEC is not responsible for inspections related to compliance with utility codes, industry standards, and design of the utility facility.
4. Utility adjustment monitoring and verification valuable final product:  
The GEC shall review full documentation of utility accommodations that adhere to the standards for safety, Buy America, the UAR and the specific approved engineering plan to the State.

**5. GENERAL REQUIREMENTS FOR FUNCTION CODE 145(145) – MANAGING CONTRACT/DONATED PE – PROJECT MANAGEMENT AND ADMINISTRATION.**

**5.1. Contract Management and Administration Requirements.**

The GEC shall:

- A. Perform all work in accordance with TxDOT's latest practices, criteria, specifications, policies, procedures and Standards of Uniformity (SOU). All documents must be sufficient to satisfy the current SOUs available from the State.
- B. Act as an agent for the State when specified in a work authorization.
- C. Produce a complete and acceptable deliverable for each service performed.
- D. Notify the State's project manager of its schedule, in advance, for all field activities.
- E. Notify the State's project manager in writing if at any time during this contract period the GEC encounters unforeseen circumstances that may materially affect the scope, complexity or character of the work authorized by the State. The notification must include a complete description of the circumstances encountered.

## 6. GENERAL REQUIREMENTS FOR FUNCTION CODE 160(150) – ROADWAY DESIGN – DESIGN SURVEYS AND CONSTRUCTION SURVEYS.

### 6.1. General Survey Requirements.

- A. In this attachment, the term “Surveyor” means the firm (prime provider or subprovider) that is providing the surveying services shown in the scope.
- B. Survey Standards and requirements for deliverables are detailed in the *TxDOT Survey Manual* and the TxDOT Surveyor’s Toolkit. The versions in existence at the time the work authorization or supplemental work authorization is executed are applicable to that work authorization and the Surveyor shall comply with those versions unless a written exception is provided by the TxDOT District Survey Coordinator or the TxDOT ROW Division Survey Section Director.

### 6.2. Design Survey, Construction Survey, and As-Built Survey Requirements.

#### A. Definitions

##### 1. Design Survey

A design survey gathers data in support of transportation systems design. A design survey includes the research, field work, analysis, computation, and documentation necessary to provide detailed topographic (3-dimensional) mapping of a project site (e.g., locating existing ROW, surveying cross-sections or developing data to create cross-sections and digital terrain models, horizontal and vertical location of utilities and improvements, collecting details of bridges and other structures, review of ROW maps, and establishing control points).

##### 2. Construction Survey

A construction survey provides data in support of transportation systems construction. A construction survey includes reconnaissance, field work, analysis, computation, and documentation necessary to provide horizontal and vertical positions of specific ground points to establish lines or grades or for the validation of quantities of materials placed or removed. Construction layout and staking is included in this category.

##### 3. As-Built Survey

An as-built survey provides field data documenting utility installation and combines performance of field work coordination, verification, computation, analysis, and documentation of standard utility installation. As-built ITS drawings for all installations, shall be signed and sealed by a Professional Engineer or Professional Surveyor registered in the State of Texas. Sub-foot horizontal accuracy is required. Vertical data is not required. Deliverables will be in GIS format with the correct scale factor applied.

#### B. Requirements

Design surveys, construction surveys, and as-built surveys must be performed under the supervision of a Registered Professional Land Surveyor (RPLS)



currently registered with the Texas Board of Professional Engineers and Land Surveyors (TBPELS).

## 7. GENERAL REQUIREMENTS FOR FUNCTION CODE 160(160) – ROADWAY DESIGN – ROADWAY DESIGN CONTROLS.

### 7.1. Roadway Design Controls Requirements.

The GEC shall inform the State of changes made from previous initial meetings regarding each exception, waiver, design deviation, and variance that might affect the design. The GEC shall cease all work under the roadway design task until the exceptions, waivers, and variances have been resolved between the GEC and the State unless otherwise directed by the State to proceed. The GEC shall review exhibits and all necessary forms for design exceptions and waivers within project limits prior to the 30% Submittal. These exceptions shall be provided to the State for coordination and processing of approvals.

The GEC shall review the design work is performed by others in accordance with the TxDOT *Roadway Design Manual*, the TxDOT *PS&E Preparation Manual*, and the guidance provided by the TxDOT district.

### 7.2. Geometric Design Requirements.

A. The GEC shall review the schematic provided to the State by others to verify completeness and accuracy of the information. The GEC shall review refinement by others of the horizontal and vertical alignment of the design schematic in U.S. customary units of measure for main lanes, ramps, direct connectors, frontage roads, side streets, including grade separation structures. The GEC shall review vertical clearances at grade separations and overpasses, taking into account the appropriate percent grade and super-elevation rate. Modifications in the alignment must be considered to provide optimal design. Modifications must be coordinated with the State's project manager and adjacent engineers. The State must approve the refined schematic prior to the design engineer proceeding to the 30% milestone submittal and prior to starting on the bridge layouts.

#### B. Preliminary Geometric Layout.

1. The GEC shall review the preliminary geometric layout consisting of a planimetric file of existing features and the proposed improvements within the existing and any proposed ROW. The layout must include features listed in the TxDOT *Roadway Design Manual* Chapter 1, Section 3.:
2. The GEC shall review the proposed alignment to avoid the relocation of existing utilities as much as possible. The GEC shall consider Americans with Disabilities Act (ADA) requirements and *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)* when developing the preliminary geometric layout. The preliminary geometric layout must be prepared in accordance with the current TxDOT *Roadway Design Manual*. The GEC shall review horizontal and vertical alignment of the preliminary geometric project layout in U.S. customary units for

main lanes and side streets. Minor alignment alternatives must be considered to provide for an optimal design. The project layout must be coordinated with the State's project manager and adjacent Engineers, if any. The GEC shall also review proposed and existing typical sections depicting the following:

- a. profile grade line (PGL)
  - b. lane widths
  - c. cross slopes
  - d. ROW lines
  - e. ditch shapes
  - f. pavement structures
  - g. clear zones.
3. Review the 3D corridor model developed by others which must have enough details to verify the feasibility of the proposed design.
  4. Prior to proceeding with the final preliminary geometric layout, the GEC shall present to the State's project manager for review and approval, alternatives for the design (e.g., flush or raised curb median) with recommendations and cost estimates for each alternative. The GEC shall attend all necessary meetings to discuss the outcome of the evaluations of the alternatives analysis.
  5. Review a safety analysis performed by others utilizing State approved tools to ensure safety-driven decisions are taken into account during the project development and design process.

### **7.3. Roadway Design Requirements.**

- A. The GEC shall ensure Bentley's current design technology in the design and preparation of the roadway plan sheets, using the version of MicroStation OpenRoads Designer and MicroStation Connect Edition that are implemented at TxDOT at the time the work authorization is executed. However, TxDOT may approve the use of other versions.
- B. The GEC shall ensure roadway plan and profile drawings developed by others use CADD standards as approved by the State's project manager. 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 must be shown if requested by the State. Existing and proposed right-of-way lines must be shown. Plan and profile must be shown on separate or same sheets (this depends upon width of pavement) for main lanes, frontage roads, and direct connectors.

### **7.4. Plan and Profile Drawing Requirements.**

The GEC shall review plan and profile drawings prepared by others that include the following:

- A. Plan view

1. Calculated roadway centerlines for mainlanes, ramps, side streets, and frontage roads, as applicable. Horizontal control points must be shown. The alignments must be calculated using OpenRoads horizontal geometry tools.
2. Pavement edges for all improvements (mainlanes, direct connectors, ramps, side streets, driveways, and frontage roads, if applicable).
3. Lane and pavement width dimensions.
4. The geometrics of ramps, auxiliary lanes, and managed lanes.
5. Proposed structure locations, lengths, and widths.
6. Sidewalks and shared use paths.
7. Direction of traffic flow on all roadways. Lane lines and arrows indicating the number of lanes must also be shown.
8. Drawing horizontal scale must be 1" =100'
9. Control of access line, ROW lines, and easements.
10. Begin and end superelevation transitions and cross slope changes.
11. Limits of riprap, block sod, and seeding.
12. Existing utilities and structures.
13. Benchmark information.
14. Radii call outs, curb location, Concrete Traffic Barrier (CTB), guard fence, crash safety items and *American with Disabilities Act Accessibility Guidelines (ADAAG)* compliance items.

B. Profile view

1. Calculated profile grade line (PGL) for proposed mainlanes (cite direction), direct connectors, ramps, side streets, and frontage roads, if applicable. Vertical curve data, including "K" values must be shown. The profiles must be calculated using OpenRoads vertical geometry tools.
2. Existing and proposed profiles along the proposed centerline of the mainlanes, the outside shoulder line of ramps, and the outside gutter line of the designated (north, south, east or west) bound frontage roads.
3. Water surface elevations at major stream crossing for 2, 5, 10, 25, 50, and 100-year storms.
4. Calculated vertical clearances at grade separations and overpasses, taking into account the appropriate superelevation rate, superstructure depth and required clearance.
5. The location of interchanges, mainlanes, grade separations and ramps, and cross sections of any proposed or existing roadway, structure, or utility crossing.
6. Drawing vertical scale must be 1" =10'

**7.5. Typical Section Requirements.**

The GEC shall review typical sections prepared by others. The typical sections must include the following:

- A. width of travel lanes
- B. shoulders
- C. outer separations
- D. border widths
- E. curb offsets
- F. managed lanes
- G. ROW
- H. proposed profile gradeline (PGL)
- I. centerline
- J. pavement design
- K. longitudinal joints
- L. side slopes
- M. sodding or seeding limits
- N. concrete traffic barriers
- O. Sidewalks and shared use paths (if required)
- P. station limits
- Q. common proposed and existing structures including retaining walls
- R. existing pavement removal
- S. riprap
- T. limits of embankment and excavation.

**7.6. Mainlane and Frontage Road Design Requirements.**

The design must be consistent with the approved schematic or refined schematic and the current TxDOT *Roadway Design Manual*.

**7.7. Interchange Requirements.**

The interchange design must be consistent with the schematic design and must include a plan and profile of the crossroads, intersection layout, drainage structures, sidewalks and shared use paths, geometrics, signalization, turnaround details, and transitions to existing roadway.

**7.8. Plan Preparation Requirements.**

Prior to the 30% submittal developed by others, the GEC shall verify a workshop has been scheduled by the designer to review profiles, OpenRoads 3D corridor models, and cross-sections with the State. The profile and cross sections must depict the 2-, 5-, 10-, 25-, 50-, 100-, and 500-year (if available) water surface

elevations. The drawings must 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. The designer shall not proceed with developing subsequent submittals until the State has approved the proposed profiles, 3D corridor models, and cross sections. The roadway plans must consist of the applicable types of sheets necessary for the project and be organized in the sequence as described in the TxDOT *PS&E Preparation Manual*.

#### **7.9. Pavement Design Requirements.**

- A. The GEC shall review pavement designs developed by others for the project in accordance with the latest edition of TxDOT's *Pavement Manual*. Proposed pavement designs include permanent pavement, interim condition transition pavement, and temporary detour pavement.
- B. The pavement design report must be reviewed and approved by the State prior to its implementation. The pavement design report must document assumptions and design considerations. The pavement design report must include the following:
  1. Cover sheet with highway designation, district, county, project control-section-job (CSJ) number, geographical limits, and signatures of persons involved in the preparation and approval
  2. Existing and proposed typical sections
  3. Soils map of the project area with a brief description of each type of soil located within the project area
  4. Design input values and output
  5. Conclusion consisting of recommended pavement design or designs based on the data, analyses, and procedures included in the report
  6. Pavement design details specified for each location that includes structural layer materials, general specifications, and layer thicknesses
  7. Relevant pavement evaluation data (structural and functional) and condition information on adjacent roads
  8. Site conditions that might influence the design and performance of pavements
  9. Relevant geotechnical data and drainage requirements including boring logs, laboratory soil test results, active or passive drainage system design, ground penetrating radar (GPR) data, falling weight deflectometer (FWD) data, dynamic cone penetrometer (DCP) data, pavement coring and report log (up to 5-foot depth), and soil classifications with Atterberg limits
  10. Results of the field explorations and testing of pavement sections
  11. Recommended pavement rehabilitation methods and designs for new pavements

12. Design criteria used in determining pavement designs, including traffic loads, pavement material characterization, environmental conditions, and pavement design life
13. Design summary from the program used to design the pavement structure (e.g., FPS 21, DARWin, TxCRCP-ME, MODULUS 6.1)
14. Life-cycle cost analysis, as required by TxDOT's *Pavement Manual*, including the periods for resurfacing, reconstruction, and other rehabilitation measures and what these activities are likely to entail
15. Traffic control plans required for subsurface geotechnical and pavement investigations
16. Other considerations used in developing the pavement designs, including subgrade preparations and stabilization procedures

#### **7.10. Bicycle Facilities Requirements.**

The GEC shall coordinate with the State to consider incorporation of appropriate bikeways as required or shown on the project's schematic. All bikeways must be designed in accordance with the latest *AASHTO Guide for Development of Bicycle Facilities*. All bikeways that will also accommodate pedestrian such as shared use paths, must also be designed in accordance with the latest *PROWAG*, Americans with Disabilities Act Accessibility Standards (2010) or the Texas Accessibility Standards (TAS). Bikeways include but are not limited to, separated bicycle lane, shared use paths, buffered bicycle lanes and on-street bicycle lanes. Shared lane markings and shoulders may be considered where appropriate.

#### **7.11. Pedestrian Facilities Requirements.**

The GEC shall coordinate with the State to consider pedestrian facilities as required or shown on the project's schematic. Consult the State pedestrian access inventory (TxDOT Comprehensive Accessibility Program - TCAP) and include any known deficiencies in the project design. All pedestrian facilities must be designed in accordance with the latest *PROWAG*, Americans with Disabilities Act Accessibility Standards (2010) or the Texas Accessibility Standards (TAS).

Pedestrian facilities include, but are not limited to, sidewalks, curb ramps, sidewalk ramps, pedestrian bridges, driveway crossings, street crossings, access to pedestrian push buttons and signal heads, pedestrian hybrid beacons, transit stops, and street furniture.

### **8. GENERAL REQUIREMENTS FOR FUNCTION CODE 160(161) – ROADWAY DESIGN – DRAINAGE DESIGN.**

#### **8.1. Hydrologic Studies Requirements.**

The GEC shall:

- A. Review the hydrologic study performed by others which includes 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. Review considerations by others of the pre-construction and post-construction conditions in the hydrologic study. Review the drainage area boundaries and hydrologic parameters (e.g., impervious covered areas, overland flow paths and slopes) from appropriate sources including: topographic maps, GIS modeling, construction plans, and existing hydrologic studies. The GEC shall not use existing hydrologic studies without assessing their validity. If necessary, obtain additional information such as local rainfall from official sites such as airports.
- C. Review the “design” frequency to be specified in the design and the 1% annual exceedance probability (AEP) storm frequency. The report prepared by others must include the full range of frequencies (50%, 20%, 10%, 4%, 2%, 1%, and 0.2% AEP).
- D. Review comparison developed by others of calculated discharges to the effective Federal Emergency Management Agency (FEMA) flows or best available models where a detailed study exists. If calculated discharges are to be used in the model instead of the effective FEMA flows, full justification must be documented.

#### **8.2. Hydraulic Studies Requirements.**

The GEC shall:

- A. Review designs developed by others that minimize the interference with the passage of traffic or cause damage to the highway and local property in accordance with the TxDOT *Hydraulic Design Manual*, TxDOT district criteria and any specific guidance provided by the State. Cross drainage design must be performed using HY-8, or HEC RAS computer models unless otherwise approved.

#### **8.3. Complex Hydraulic Design and Documentation Requirements.**

The GEC shall:

- A. Review the hydraulic design and analysis performed by others to verify use of appropriate hydraulic methods, which may include computer models such as HEC-RAS, unsteady HEC-RAS, 2D models or Storm Water Management Model (SWMM). The GEC shall not develop 2D models without the express permission of the State.
- B. Confirm that the current effective FEMA models are used, where appropriate, as a base model for the analysis or best available model where a detailed study exists. If a model is provided by the local floodplain administrator, it must be utilized accordingly for this analysis unless otherwise approved by the State. Review the provided base model for correctness and update as needed. If the provided effective model is not in a HEC-RAS format, converting to HEC-RAS for this analysis will be required unless otherwise approved by the State.
- C. Review consideration of existing and post-construction conditions, as well as future development, as required the current TxDOT *Hydraulic Design Manual*.

#### **8.4. Scour Analysis Requirements.**

The GEC shall:

- A. Review each scour analysis performed by others using a State-approved methodology. The GEC shall verify that the selected methodology by others was 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 GEC shall verify use of the methodology outlined in the latest *TxDOT Scour Analysis Guide* and *TxDOT Scour Evaluation Guide*. The GEC shall coordinate with the State prior to others commencing any work on any stream migration study. This coordination must include consultation with the appropriate State's technical expert.
- B. Review the scour form completed by others in accordance with the latest *TxDOT Scour Evaluation Guide* and submit to the State. Scour forms are available at <https://www.txdot.gov/inside-txdot/forms-publications/consultants-contractors/forms/bridge.html>.

#### 8.5. Drainage Reports Requirements.

The GEC shall review letter reports and hydraulic reports developed by others have been prepared in accordance with the requirements listed below.

- A. Letter Report Requirements
  - 1. A letter report must include the preliminary findings. The report must also include conceptual and generic discussions of the alternatives considered, along with a comparative cost associated with each alternative and a recommended solution.
  - 2. Recommendations at this point must be generic and conceptual in nature, mainly for discussions with the State and the local government entities. The recommended solution must be analyzed in detail to reflect the mitigation requirements for the roadway development.
  - 3. Storm drains discussion must include the preliminary sizing of the storm drain, requirement for line rerouting, preliminary detention storage volumes (if required) based on hydrograph, and initial recommendations on mitigation of impacts on the receiving streams.
  - 4. Bridge-Class and Cross-drainage Structure reports must include existing hydraulic conditions, FEMA floodplain status, proposed structure design, proposed hydraulic conditions, and preliminary detention storage volumes (if required) based on hydrograph and initial recommendations on how to mitigate the storm impact on the receiving streams.
- B. Hydraulic Report Requirements

The hydraulic report must document and justify all data, boundary conditions, assumptions, methodologies, and results. The text, tables, exhibits, and appendices must document clearly and concisely the work performed and results found. The report must provide recommendations for critical review by the State. Such recommendations may include the need for further detailed analysis such as an unsteady model analysis or the development of mitigation measures. The report must be signed and sealed by a professional engineer.



**8.6. Requirements for Electronic Copies of Hydrologic and Hydraulic Models.**

The GEC shall ensure there are fully functioning hydrologic and hydraulic models in a format that allows the State to open, maneuver, and perform QA and QC of the models.

**9. GENERAL REQUIREMENTS FOR FUNCTION CODE 160(162) – ROADWAY DESIGN – SIGNING, PAVEMENT MARKINGS, AND SIGNALIZATION (PERMANENT).****9.1. Signing and Pavement Markings.**

- A. The GEC shall review the permanent pavement markings and channelization devices on plan sheets developed by others. The GEC shall coordinate with the State (and other Engineers as required) for overall interim, and final pavement marking strategies.
- B. The GEC shall ensure the following information is provided on sign and pavement marking layouts:
  - 1. Roadway layout
  - 2. Center line with station numbering
  - 3. Designation of arrow used on exit direction signs
  - 4. Culverts and other structures that present a hazard to traffic
  - 5. Location of utilities
  - 6. Existing signs to remain and to be removed, relocated, or replaced
  - 7. Proposed signs (illustrated, numbered, and showing sign size)
  - 8. Proposed overhead sign bridges to remain, to be revised, removed, relocated, or replaced
  - 9. Proposed overhead sign bridges, indicating location by plan
  - 10. Proposed markings (illustrated and quantified) which include pavement markings, object markings and delineation
  - 11. Quantities of existing pavement markings to be removed
  - 12. Proposed delineators, object markers, and mailboxes
  - 13. The location of interchanges, mainlanes, grade separations, frontage roads, and ramps
  - 14. The number of lanes in each section of proposed highway and the location of changes in numbers of lanes
  - 15. Right of way limits
  - 16. Direction of traffic flow on all roadways
  - 17. Existing and proposed crosswalk markings
  - 18. Pedestrian related signage

**9.2. Traffic Warrant Studies.**

The GEC shall refer to latest version of the *TMUTCD*, *TxDOT Traffic Signal Manual*, and TxDOT's roadway (ramp) and traffic standards for review of work performed for either temporary or permanent traffic signals.

**9.3. Traffic Signals.**

Traffic signal plans developed by others must be signed and sealed by a Texas Registered Professional Engineer.

**9.4. Intersection Safety Scoring Tool.**

- A. The GEC shall verify use of the Intersection Scoring Tool spreadsheet developed by TxDOT. The Intersection Scoring Tool may be accessed at: [https://tntoday.dot.state.tx.us/des/Documents/Intersection\\_Tool\\_V0228\\_1.0.xlsm](https://tntoday.dot.state.tx.us/des/Documents/Intersection_Tool_V0228_1.0.xlsm).
- B. The internal quality assurance and quality control (QA and QC) checks of the analysis for each of the intersections in the project must include a review of the intersection scoring tool spreadsheet for each intersection to verify that the analysis includes an evaluation of traffic volumes, crashes, geometric design elements, traffic control elements, pedestrian elements, bicycle elements, and alternative intersections as needed.

**10. GENERAL REQUIREMENTS FOR FUNCTION CODE 160(163) – ROADWAY DESIGN – MISCELLANEOUS ROADWAY.****10.1. Utility Engineering Requirements.**

- A. The GEC must maintain a utility layout developed by others in the current approved version of OpenRoads Civil Design system used by the State. This layout must include all existing utilities which are to remain in place or be abandoned, and all adjusted utilities. This layout must be utilized to monitor the necessity of relocation and evaluate alternatives.
- B. The GEC is responsible for verifying that there is no conflict between the utility management plan, utility certifications, and special provisions.

**10.2. Utility Design Requirements.**

The GEC's utility design activities must conform with 43 Tex. Admin. Code § 21.37.

**10.3. Geotechnical Borings and Investigation Requirements.**

- A. The GEC shall coordinate and review laboratory tests, other than field tests, performed by others at State certified facilities or State certified commercial laboratories.
- B. All geotechnical work must be performed by others in accordance with the latest version of the *TxDOT Geotechnical Manual*. All testing must be performed in accordance with TxDOT's Test Procedures, which are available at <https://www.txdot.gov/business/resources/testing.html>. American Society for Testing Materials (ASTM) test procedures may be used only in the absence of

TxDOT procedures. All soil classification must be done in accordance with the Unified Soil Classification System.

- C. The GEC shall ensure that all foundation exploration, drilling, testing, and logging is performed by others in accordance with the latest version of the TxDOT *Geotechnical Manual* and TxDOT's Test Procedures, which are available at <https://www.txdot.gov/business/resources/testing.html>, and perform lane closures in accordance with the latest version of the *TMUTCD*.
- D. All drilling logs and test data must be reviewed and evaluated by a registered professional engineer. Reports must be signed, sealed, and dated by a registered professional engineer.
- E. The GEC shall coordinate all drilling and testing with the State prior to initial sampling and drilling operation to avoid re-drilling.
- F. The GEC shall coordinate the submittal of draft logs to the State as necessary to assist in selection and assignment of tests.
- G. The GEC shall verify each drilling location for all utilities are cleared prior to beginning drilling operations to avoid damaging properties and utilities.
- H. Draft logs for all barge drilling must be submitted to the State within 48 hours. The GEC shall notify the State of conditions that warrant standby charges on the same day.
- I. The soil boring log sheets developed by others must be created using the TxDOT WINCORE software, which can be found on the TxDOT website or other software as specified by the State. The preparation of soil boring log sheets must be in accordance with TxDOT standards. Spacing and depth of soil borings must be in accordance with the TxDOT *Geotechnical Manual*.
- J. Geotechnical Report Requirements  
Geotechnical reports must include:
  - 1. Complete foundation exploration drilling logs using the latest version of WINCORE, or other software as specified by the State. Each log must include the following:
    - a. Elevation, coordinate information acquired with a GPS unit, a sketch noting the relative location of each boring to the structure or other pertinent features on the site, and, when available, bore hole station, offset and elevation using survey readings.
    - b. Soil and rock descriptions of all layers
    - c. Groundwater conditions and depth to groundwater
    - d. Texas cone penetration test blow counts
    - e. Pocket penetrometer values for cohesive soils and standard penetration test (SPT) blow counts for granular soils. Indicate the hammer used for the SPT in the logs.
    - f. Rock quality designation (RQD) and percent recovery for all rock layers

2. Analyses and recommendations for foundation design and construction, potential settlement, design soil parameters, and slope stability
3. Grain size distribution curves with D50 value, when scour analysis is performed;
4. Skin friction tables and design capacity curves
5. Pertinent lab test results (e.g. triaxial test, index tests)
6. Photographs of rock cores
7. Driller, logger, and the company or organization performing the drilling.
8. A conclusions and recommendations section that summarizes the evaluation of the data and recommendations to the State.
9. A report transmittal letter summarizing the work performed under the given work authorization, along with a summary of the conclusions and recommendations.

#### **10.4. Retaining Wall Requirements.**

- A. The GEC shall review each retaining wall design developed by others and review determination of the location of each soil boring needed for the foundation design of each retaining wall in accordance with the TxDOT *Geotechnical Manual*.
- B. Retaining wall analysis and design must meet the requirements of the TxDOT *Geotechnical Manual*.
- C. For projects that have retaining walls, the GEC shall verify that the retaining wall layouts developed by others are included in the 3D corridor model.
- D. For retaining wall submittals, the GEC shall ensure the design follows the current requirements shown on the TxDOT Bridge Division website and the TxDOT *Geotechnical Manual*.
- E. The GEC shall review the retaining wall layouts submitted by others to obtain approval from the State early in the plan preparation process. The GEC shall ensure incorporation of all necessary information from above referenced manuals and respective checklists into the retaining wall layouts. For phase construction, the GEC shall review indicated limits of existing retaining walls for removal and reconstruction and review limits of temporary retaining walls or temporary special shoring shown on the traffic control plan (TCP) and retaining wall layouts.
- F. The approximate limits of each retaining wall must be based on station or length. The GEC shall review the type of retaining walls that will be used for each cut and fill location.
- G. Retaining wall types considered by the designer must include:
  1. Spread Footing Walls. A spread footing wall shall be selected for a fill situation when considerable room behind the walls is available for forming, constructing, and backfilling the footings and stem. The GEC shall notify the State when the quantity is less than 1000 square feet to

have as an option in the plans to cast in place a spread footing wall design. This selection must be approved by State.

2. Mechanically Stabilized Earth (MSE) Walls. The GEC shall review the retaining wall layouts prepared by others showing plan and profile or retaining walls for design by a TxDOT-approved vendor. The GEC is responsible for reviewing design of geometry and wall stability. The GEC shall verify design developed by others incorporate a slope of 4:1 or flatter from the existing and finished ground line elevation to the face of the retaining wall.
  3. Concrete Block Walls (Structural and Landscape)
  4. Tied Back Walls
  5. Soil Nailed Walls
  6. Rock Nailed Walls
  7. Drilled Shaft Walls
  8. Temporary MSE Walls
- H. The GEC shall review architectural standard drawings incorporated by others into the design details.
- I. The retaining wall plans must include the following information:
1. Layout Plan
    - a. Designation of reference line
    - b. Beginning and ending retaining wall stations
    - c. Offset from reference line
    - d. Horizontal curve data
    - e. Total length of wall
    - f. Indication of face of wall
    - g. All wall dimensions and alignment relations (alignment data as necessary)
    - h. Soil boring locations
    - i. Drainage, signing, lightning, or other appurtenances that are mounted on or passing through the wall
    - j. Subsurface drainage structures or utilities that could be impacted by wall construction
  2. Elevation
    - a. Top of wall elevations
    - b. Existing and finished ground line elevations
    - c. Vertical limits of measurement for payment

- d. Type, limits, and anchorage details of railing (only required if traffic railing foundation standard is not being used on the project)
  - e. Top and bottom of wall profiles plotted at correct station & elevation
  - f. Underdrains
  - g. Any soil improvement, if applicable
  - h. Drainage, signing, lighting, or other appurtenances as noted above
  - i. Drainage structures and utilities as noted above
3. Sectional View
    - a. Reinforced volume
    - b. Underdrain location
    - c. Soil improvements, if applicable

#### **10.5. Traffic Control Plan, Detours, and Sequence of Construction Requirements.**

- A. A detailed traffic control plan (TCP) must be developed by others in accordance with the latest edition of the *TMUTCD*. The GEC shall ensure implementation of the current barricade and construction (BC) standards and TCP standards as applicable. The GEC shall verify interface and coordination of phases of work, including the TCP, with adjacent engineers.
- B. The GEC shall:
  1. Ensure proposed traffic control devices are shown for at-grade intersections during each construction phase (e.g., stop signs, flag personnel, signals). Show temporary roadways, ramps, structures (including railroad shoo-fly), 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.
  2. Coordinate with the State in scheduling a traffic control workshop and submittal of the TCP for approval by the traffic control approval team (TCAT). Assist the State in coordinating mitigation of impacts to adjacent schools, emergency vehicles, pedestrians, bicyclists, and neighborhoods.
  3. Review each TCP to provide continuous, safe access to each adjacent property during all phases of construction and to preserve existing access. Notify the State in the event existing access must be eliminated and receive approval from the State prior to elimination of any existing access.
  4. Review horizontal and vertical location of culverts and required cross sectional area of culverts.
  5. Review interim signing for every phase of construction. Interim signing must include regulatory, warning, construction, route, and guide signs.
  6. Review maintenance of continuous access to abutting properties during all phases of the TCP.

7. 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, notify the State in writing of the need and justification for such action.

#### **10.6. Temporary Traffic Signals and Illumination Requirements.**

The GEC shall immediately notify the State if the GEC determines that an existing traffic signal or roadway illumination will be affected by the project.

#### **10.7. Illumination Requirements.**

- A. The GEC shall verify design work by others is in compliance with the TxDOT *Highway Illumination Manual* and other applicable TxDOT-approved manuals for design of continuous lighting and safety lighting for all conventional, high-mast, and underpass lighting.
- B. The GEC shall verify safety lighting is included as part of each design on each flashing beacon and traffic signal.
- C. The GEC shall verify inclusion of underpass lighting when required on structures within each project.

#### **10.8. Contract Time Determination Requirements.**

The contract time schedule developed by others must include tasks, subtasks, critical dates, milestones, deliverables, and review requirements in a format that depicts the interdependence of the various items and adjacent construction packages. The GEC shall review the Primavera file or the file from the latest scheduling program used by the State for the construction time estimate.

#### **10.9. Constructability Review Requirements.**

The constructability review must be performed for all roadway and structural elements such as sequence of work and traffic control, drainage (temporary and permanent), storm water pollution prevention plan (SWP3), environmental permits, issues and commitments (EPIC) addressed, identification of 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 GEC shall provide the results of all constructability reviews and recommendations to the State at major project design milestone submittals.

### **11. GENERAL REQUIREMENTS FOR FUNCTION CODE 160(170) – ROADWAY DESIGN – BRIDGE DESIGN.**

#### **11.1. Bridge Design Requirements.**

The GEC shall verify compliance with all relevant sections of the latest edition of the TxDOT *Bridge Design Manual - LRFD*, TxDOT *Bridge Project Development Manual*, TxDOT *Bridge Detailing Guide*, and AASHTO *LRFD Bridge Design Specifications*, and respective checklists.

**11.2. Bridge Layout Requirements.**

- A. The GEC shall review the preliminary studies conducted by others as necessary prior to bridge layouts being developed. Preliminary studies include the following:
1. Determine the locations of utilities that affect placement of bridge substructure elements.
  2. Determine extents of right of way.
  3. If necessary, review existing documentation and information for rehabilitation, widening, or replacement of existing structures. Available information may include:
    - a. Original plans and shop drawings
    - b. Existing specifications
    - c. Documentation of previous repairs
    - d. Routine bridge inspection report
    - e. Inspection reports/condition surveys. Conduct additional inspections as required to fully determine extent of repairs, structural adequacy, and existing condition of structure. Coordinate with the State's project manager to arrange any necessary inspections.
    - f. Load rating reports
    - g. Soil borings and pile driving record
- B. The GEC shall ensure the submittal of a bridge layout for each structure early in the plan preparation process to obtain approval from the State.
- C. Each bridge or bridge class culvert layout information listed on the Layout checklists in the TxDOT *Bridge Detailing Guide*.
- D. The GEC shall review the location of each soil boring needed for foundation design in accordance with the TxDOT *Geotechnical Manual*.

**11.3. Bridge Replacement, Bridge Widening, and Bridge Class Culvert Structural Detail Requirements.**

The GEC shall review each structural design developed by others and verify detailed structural drawings contain all required details in compliance with the TxDOT *Bridge Design Manual - LRFD*, TxDOT *Bridge Detailing Guide*, TxDOT *Preferred Practices for Steel Bridge Design, Fabrication, and Erection*, and *AASHTO LRFD Bridge Design Specifications*. The GEC shall review any project-specific modified standards necessary for inclusion in the PS&E package.

**11.4. Requirements for Seismic Analysis of Bridge Projects.**

If indicated in the work authorization, the GEC shall review seismic analysis of bridge structures performed by others. The bridge design notes shall indicate the seismic zone and checks performed to ensure that AASHTO criteria are met.



**11.5. Requirements for Documentation of Calculations.**

The GEC shall review the following documentation of calculations provided by others to the State:

- A. All quantity and non-structural design calculations.
- B. All engineering design calculations, load rating calculations, analysis, input calculations, quantities, and geometric designs (OpenRoads Designer and OpenBridge Designer files), relating to the project's structural elements. Project structural elements include bridges, retaining walls, overhead sign structures, high-mast illumination structures, non-standard culverts, custom headwalls, and drainage appurtenances.
- C. Working copies of all spreadsheets and output from any programs utilized in a format acceptable to the State in a universally reliable format.

**11.6. Archiving File for Bridge Design Calculations and Notes.**

The GEC shall verify the design notes (or convert electronic files) prepared by others is submitted as a single PDF file for each bridge in accordance with the TxDOT *Bridge Design Manual – LRFD*. In the case of a single design done for twin structures, verify submittal of the same notes under two separate NBI numbers.

**12. GENERAL REQUIREMENTS FOR FUNCTION CODE 300 (320) – GENERAL FUNCTION – INSPECTION OF WORK IN PROGRESS AND PROJECT RECORDS.****12.1. Utility Construction Management and Verification.**

- A. The GEC shall provide a utility coordinator to coordinate all activities with the State, or the State's designee, for the orderly progress and timely completion of the State construction phase.
- B. The GEC shall provide a utility coordinator to perform non-engineering utility coordination services consisting of coordinating with State, or State's designee, all utility-related activities for the orderly progress and timely completion of the construction phase of the project.

**TASK DESCRIPTIONS AND FUNCTION CODES**

The GEC shall categorize each task performed to correspond with the Function Codes (FC) and Task Descriptions.

**Function Code (FC) 145 (previously 145, 164) Project Management****145.1 Program Management****145.1.a Program Management Plan**

The GEC shall conduct an initial review of the existing Program Management Plan for new sections and update and maintain the existing Program Management Plan (PMP) as

a living, electronic document in a central and immediately accessible location for the State and all sub-consultants. In the PMP, the GEC shall outline items including but not limited to: project team organization, roles and responsibilities; escalation decision ladder, program and project-level scheduling and cost expectations; coordination and communication procedures; document and graphics formatting protocols; filing protocols, project close-out procedures, and other important operational information pertaining to project team and State collaboration.

#### Deliverables

- (1) Updates (as necessary) to PMPs in electronic format, accessible to STATE and sub-consultants

#### 145.1.b Quality Assurance/Quality Control Plan

The GEC shall conduct an initial review of the existing Quality Assurance/Quality Control Plan for new sections, and update and maintain the existing program Quality Assurance / Quality Control (QA/QC) Plan to document the quality control program to be implemented by the project team. The GEC shall conduct Quality Control procedures under respective work tasks and sub-tasks.

The GEC shall conduct spot-check reviews to verify that the PDE teams and others are submitting QC documentation and complete redlines by product (including milestones for design products). Upon satisfactory spot-check reviews, the GEC shall issue formal acceptance of deliverables. The GEC shall schedule and work with GEC Project Coordinator and Subject Matter Leads to facilitate the completion of provider evaluation forms (as requested by TxDOT) and documentation as needed to support the evaluations, at a general timing of at least every milestone submittal for design products and quarterly for non-design products. The GEC shall report upon the respective project's quality in a quality briefing.

#### Deliverables

- (1) Initial review of QA/QC Plan
- (2) Updates (as necessary) to QA/QC Plan in electronic format, accessible to STATE and sub-consultants' Formal acceptance of deliverables
- (3) PDE Provider Evaluation Log and Redlines Spot Check Log and Documentation in summary briefing

#### 145.1.c Coordination Meetings

The GEC shall hold a kickoff meeting with the STATE, including major task leads and all sub-consultants, within four weeks of the agreement execution notification. At the kick-off meeting, the GEC shall walk through an updated, living Project Management Plan in electronic format. The GEC shall conduct coordination meetings with the State weekly. The GEC shall attend and participate in other coordination meetings with the State, regional jurisdictional entities, affected stakeholders and regulatory agencies. For each meeting, the GEC will essential attendees, prepare agendas, sign-in sheet, presentation materials, and meeting minutes detailing decisions/action items.

#### Deliverables

- (1) Agenda, presentation materials, sign-in sheet, meeting minutes detailing decisions/action items

#### 145.1.d Sub-consultant Management

The GEC shall manage sub-consultants assigned to the agreement, including assigning, managing and reviewing work products, holding team project meetings and periodic individual sub-consultant meetings, and reviewing and approving sub-consultant schedules, progress reports, invoices, and work deliverables.

#### Deliverables

- (1) GEC internal meetings will be monitored with a weekly progress reports and deliverables table
- (2) Agenda, sign-in sheet, decisions/action items list for each individual sub-consultant meeting

#### 145.1.e Management of Work Activities

The GEC shall proactively manage its own work activities, providing daily management, coordination and oversight of work performed for this contract. The GEC shall manage the progress of the project to assure it is in accordance with Federal and State statutes, regulations, guidelines and the State's latest codes, practices, criteria, specifications, policies, and procedures as well as on schedule within project scope and budget while meeting quality expectations. The GEC shall take ownership and be accountable for managing the program, proactively balancing program needs and resources. The GEC shall manage work using tools including but not limited to:

Monthly Invoice Review Meeting – The GEC shall prepare, schedule, and discuss with the State on a monthly basis an assessment of where the program stands. The GEC shall include an assessment of burn rate of team and individual team members through the end of each invoice period, risks, and mitigation strategies to address those risks. The

GEC shall proactively schedule and facilitate this discussion with the State including a revisit of prior action items upon submittal of the invoice.

GEC Progress Report and Deliverables Table/Action Item Log - The GEC shall manage their effort by maintaining a detailed progress report and deliverables table, using an action item log to tracking progress cumulatively throughout each invoice period. The GEC shall be prepared to submit the weekly products upon request by the State and shall submit the period-end products to the State within 7 days after the end of the invoice cycle. The GEC shall include in the progress report the following: Progress Reporting Period, Progress Summary, Problems Encountered, Future Progress Expected, Schedule Status, Physical Percent Complete, Financial Percent Complete, Physical Ahead/Behind Financial Percent Complete, HUB/DBE Status. The Progress Report shall include progress for the entire GEC team for the month (regardless of invoice progress). The deliverables table shall include all deliverables. A Snapshot Deliverables Table shall be extracted for each invoice reporting period including deliverables anticipated for the next invoice period. The GEC shall use the format provided by the State for these products.

Program-wide Templates and Tools - The GEC shall provide program-wide templates, tools, and updates to project teams and provide support in their use consistently across the program. These tools include: checklists, logs, templates, reports, policies and procedures, special request forms, for example for QA/QC procedures, progress report, deliverables table, project schedule, technical memorandum, and reports. The GEC shall start with tools and templates provided by the State and coordinate refinements to these tools with the State as necessary to ensure consistency across the program.

Program Management Tools - The GEC shall maintain program-wide management tools including: checklists, logs, templates, reports, policies and procedures, and special request forms as applicable to facilitate management of a complex, broad program.

#### Deliverables

- (1) GEC Progress Report
- (2) GEC Deliverables Table/Action Item Log
- (3) Updates as needed to program-wide project-development templates and tools in SharePoint, including but not limited to checklists, logs, templates, reports, policies and procedures available upon request by the State and for delivery to project teams as needed

The GEC shall support the State in coordination with and develop inter-local agency agreements, memorandums of understanding or agreements, and advance funding agreements, including exhibit preparation and supporting document preparation and assembly as requested by the State.

The GEC shall support the State in coordination with external partners with the development of contractual documents including base contract documents and supplemental agreements.

### Deliverables

(1) Draft, final, and updated documents

#### 145.1.g GEC Invoice Preparation and Submittal

The GEC shall invoice according to Function Code. The GEC shall submit each invoice no later than 30 days after the end of the reporting period in a format acceptable to the State. The GEC shall utilize the invoice template provided by the State and shall ensure that each sub-consultant invoice submitted follows the same invoice template. The GEC shall submit timesheets to support invoice submittals only upon request by the State.

With each invoice, the GEC shall include:

- Cover Sheet/Activity Summary organized by Function Code
- Budget Summary Table (developed under separate task)
- Projected vs. Actual Contract Invoices form (developed under separate task)
- Progress Report (developed under separate task and, if necessary, updating the financial percent complete)
- Snapshot Deliverables Table (developed under separate task)
- Table of hours charged by Function Code by all individuals to the project for the invoice period

### **145.2 Program/Project Controls**

#### 145.2.a Master Program Table and Roadmap

Mobility35 Master Program Table – The GEC shall maintain this table to track all projects including construction costs, right-of-way costs, utilities costs, ITS costs, project development (external consultant) costs, inflation, total project costs, funding, funding delta, program categories, and other program-level information.

Road Map Table – The GEC shall maintain the Road Map Table, a high-level, one-page wide summary version of the Master Program Table reporting TxDOTCONNECT versus Master Program Table let dates and costs.

Road Map – The GEC shall maintain a Road Map, a Geographic Information System-based tabloid which serves as a high-level, summary version of the Master Program Table. Road Map will include future candidate projects. This product is managed by publication date and is not a live product.

### Deliverables

(1) Master Program Table (live)

(2) Road Map Table (live), Road Map (Quarterly) & Candidate Projects

#### 145.2.b Project Status Process

The GEC shall provide daily support, coordination and oversight of work for the Mobility35 program, continuing and optimizing current support activities. The GEC shall prepare program support documents including but not limited to the following:

The program management process is specifically used for program management for the duration of the project and will not be purchased at contract termination.

Mobility35 Program Management Process – The GEC shall implement a program management process for tracking project development and other task deliverable status across the program with, in some cases, information provided by others. The process shall utilize suitable software. The GEC shall utilize the process for live tracking of project progress and status. The program management process will use an accessible database supporting unique inquiries as well as regularly published reports including but not limited to:

Mobility35 Program Leadership Report – The GEC shall maintain and tailor this report to meet regular reporting needs for State internal leaders overseeing the Mobility35 program. The GEC shall evolve this report with the needs of the program.

Program-wide Project Development Status Report - The GEC shall maintain a living project status report which addresses high-level progress, updates, and action and risk items for each project under development, as well as status of upcoming projects.

Special Requests and Other Efforts Status Report – The GEC shall track special requests and other tasks not related to specific projects. The GEC shall work under this task only to assemble and report on the special requests and other efforts. Example special requests include presentation preparation, project tabloids, top 100 mitigation plans, grant applications and special program tracking.

Project Decisions and Commitments Report - The GEC shall maintain, with concurrence from the State, a process and report, including mapping capability for tracking decisions and commitments made at the program level that must be communicated to project development teams and at the project development level that must be communicated and institutionalized at the program level for subsequent project development purposes. The GEC shall work with the State to develop a protocol for determining the type of activities to be maintained in the report, including but not limited to: right-of-way commitments, access commitments, bicycle and pedestrian accommodations, design waivers/exceptions, project limits and project scoping decisions. The GEC shall maintain this report and data live with this information accessible to the State at any time and the map shall be printed to an electronic snapshot twice annually.

Program expenditure forecast/cash flow analysis – To support District wide budgeting activities. The GEC shall track and maintain a program expenditures to-date and forecast across the program using a State-identified mechanism.

#### Deliverables

- (1) Project Development Status Report (live)
- (2) Special Requests and Other Efforts Status Report (live)
- (3) Project Decisions/Commitments Report (live)
- (4) Program expenditure forecast/cash flow analysis

#### 145.2.c Program Schedule

The GEC shall update and maintain the existing program schedule using Primavera P6 or more current version as specified by the State. The GEC shall maintain the schedule for key milestones and critical path for the duration of the program from information provided by others. The GEC shall include each individual project under development on the corridor by the State or other entities. The GEC shall depict the order and interdependence of various tasks, subtasks, milestones and deliverables. The GEC shall indicate the primary functional area, such as design, environmental, public involvement, right-of-way/utility, general administration, etc. for each activity. The GEC shall indicate when another party is responsible for completion of an activity such as review by the State. The GEC shall maintain the program schedule from execution through GEC contract completion. The GEC shall review progress during program- and project-level coordination meetings and update the schedule as necessary. The GEC shall identify issues that need resolution or action items in the Progress Report and in program- and project-level coordination meetings.

The GEC shall review, assess, monitor, and update monthly detailed schedules and other scheduling documents produced by others including utility companies and third party agencies, and shall integrate critical milestone elements within the program master schedule.

#### Deliverables

- (1) Draft, final and updates to program schedule (live)
- (2) Schedule output tables to show deliverables and tracking (live)

#### 145.2.d Program Budget

The GEC shall maintain a live budget with current information available up through the most recent invoice concerning overall budget, tracking and managing all expenditures by task/sub-task and project (by project ID number) to the level defined in the fee estimate. The GEC shall submit with each invoice an overall budget summary table including sub-totals, positive or negative difference from the Fee Schedule amount, and percent expended, by invoice period. The GEC shall immediately advise the State any areas of concern. GEC shall be responsible for ensuring that project expenditures are maintained within overall function code and direct expense allocation by the agreement for all firms on the GEC team. The GEC shall include Projected vs. Actual Contract Invoices form for each invoicing period until the termination of the contract. The GEC shall maintain this item in a format agreed upon by the State and location immediately available to the State at any time and updated no less than 30 days following the end of the previous invoice period, including information on the status of sub-consultant invoices being included in the budget (for example, invoice is included or a month behind).

#### Deliverables

- (1) Budget summary table (monthly)
- (2) Projected vs. Actual Contract Invoices form for each invoicing period

#### **145.3 Document Control**

The GEC shall utilize an electronic document management system in a location agreed upon with the State to collect, assemble, manage and maintain all documents pertinent to the program and projects

Upon notice to proceed (NTP) by the State, the GEC shall proactively and progressively transition on-going program and project files and program and project files from prior program efforts to ProjectWise or other platform directed by the State and shall maintain



a log of deliverables. Standard State file management and file retention practices shall be used for all information and data.

The GEC shall maintain, as well as collect, review, catalogue and periodically update data for the study area, using a storage platform designated by the State. The GEC shall maintain a log documenting information gathered and source. Data library shall include but not be limited to: existing plans, schematics, right-of-way maps, planimetric mapping, environmental documents, existing geotechnical data and boring logs, traffic counts, crash data, pavement management information (PMIS) data, environmental information of record, drainage studies, flood plan information and studies including graphics for drainage basin delineation, hydrologic and hydraulic models, roadway inventory information of record from the State, applicable cities and counties, adopted land use maps and plans, subdivision plots, permits, and public and private utility information. The GEC shall transmit the data library in electronic format to the State when requested.

#### Deliverables/Expectation

- (1) Updating and maintaining electronic data management system
- (2) Updating and maintaining websites at the discretion of the State.
- (3) Log updated monthly, provided to the State upon request

#### **145.4 Developer Request Tracking**

Permitting and Developer Requests – Coordinate and track access and utility permit requests and developer requests, including mapping capabilities to track action items and status of various requests for information. Coordinate meetings with the appropriate District staff as needed and conduct a monthly Program-level permit meeting with Program and Area Office Staff.

#### Deliverables

- (1) Permit (access and utility) and Developer Request Tracking
- (2) Facilitate monthly meeting including agenda, sign-in sheet, decisions/action items list

#### **145.5 Construction Multi-Project Coordination**

The GEC shall coordinate with the State and, as approved by the State, with project-specific Construction Engineering and Inspection (CE&I) public information representatives or mobility coordinators to deliver the construction coordination component across Mobility35 construction projects.

MOBILITY COORDINATION – The GEC shall provide one full-time during the construction phase, on-site Mobility35 Mobility Coordinator Task Lead for I-35 construction coordination. The Mobility Coordinator shall be responsible for:

- Reviewing and implementing traffic management protocols and approaches responsive to stakeholder and public concerns
- Provide oversight and status updates on active construction projects
- Evaluate potential traffic impacts due to construction
- For major lane closures and anticipated construction phase changes, providing input for communication of traffic impacts through GEC Public Information Officer (PIO) or Traveler Information System under separate task
- Support communicating traffic impacts to the public and stakeholders and agency partners via close coordination with the State /GEC's PIO and the GEC's Traveler Information System under separate task
- Support communicating traffic impacts to internal stakeholders and partners and being available on-call to resolve issues

MEETINGS - The Mobility Coordinator Task Lead shall conduct or participate in the following meetings:

- Weekly strategy sessions with the State to discuss current and upcoming messaging, upcoming public involvement activities, construction project milestones, and planning efforts
- Constructability and maintenance review meetings at the 60 percent PS&E stage for every project and track implementation through final PS&E
- Weekly update meetings with the Director of Construction (DCO)
- Quarterly safety meetings, discuss agenda in advance with the DCO and safety office

SCHEDULE REVIEWS – The GEC shall:

- Analyze construction project and corridor-wide scheduling, including scheduling, analyzing, monitoring and evaluating highway construction project progress using the critical path method technique for projects when schedules are provided and directed by the State for review. (Construction schedules for individual projects shall be managed by the State's CE&I contracts. When no CE&I contract exists, review as requested by the State.) Activities include:
  - Identifying potential construction conflicts and providing recommendations to resolve them
  - Identifying the schedule activities that control the overall construction time or the critical path for program construction or high-profile project areas

- Identifying and measuring the impact a system-wide change has on an individual project schedule
- Reviewing upcoming traffic switches to coordinate alignments and phasing between adjacent projects and preparing plan revisions to coordinate traffic control
- Reviewing multiple lane closures, contra flow, and full closure request for conflicts with adjacent projects or other events
- Analyze schedule impacts and strategies related to system-wide construction planning including but not limited to Mobility35 construction projects or major projects on other corridors within the region or on I-35 within the state but outside of the Mobility35 program

CONSTRUCTION INFORMATION CLEARINGHOUSE – The GEC shall assemble, maintain, and update an on-line construction information repository to provide:

- Milestone summary of the current planned construction-related activities (active projects, lane closures, contact information, etc.)
- Produce a summary of project key dates, project status including contact information and program-level construction key dates (each updated when projects have major events, shift phases or achieve milestones)

OTHER SERVICES – The GEC shall:

- From a constructability and maintenance perspective, review Austin District Master General notes and Designers Guide quarterly and provide suggested updates to improve future Mobility 35 projects
- Advise on technical aspects of the mobility aspect of construction including but not limited to:
  - Lane closure notices and distribution
  - Google maps interaction
  - Drive major events to review impacts to traffic/queue times
- Develop lane closure information or log, to include:
  - Maintain automated Lane Closure Notification (LCN) service
  - Review for fatal flaws (holidays, events, other jobs, etc.)
  - Coordinate LCN information with PIO

#### Deliverables

- (1) Centralized digital location for construction information tools listed below (an on-line construction/traffic information system)

- (2) Program-level construction key dates summary including impacts and strategies related to system-wide construction planning
- (3) Meeting materials and decisions/action items lists
- (4) Project key dates summary (live)
- (5) Project Status Summary including but not limited to: percent complete, number of accidents, percent and dollars spent, completion date, percent of DBE goal, etc. (live)
- (6) Quarterly updates to Austin District Master General Notes and Designers Guide
- (7) Technical advisory services (including project evaluation reports documenting lessons learned, summary of comments from plan review meeting by project, decisions/action items list for constructability and maintainability review meeting by project)

#### **145.6 Project-Specific Financial Plans**

The GEC shall prepare and conduct annual updates of the financial plan(s) for Mobility35 projects (as needed) per FHWA and State -provided guidance and criteria.

The GEC shall coordinate with the State and conduct one FHWA Cost Estimate Review (CER) within 12 months prior to submitting each Financial Plan (as needed).

The GEC will coordinate with and support the State in responding to FHWA comments on the initial financial plan submittal and annual updates.

##### Deliverables

- (1) CER Meetings
- (2) Initial Financial Plans (draft, final) and Annual Financial Plans Updates (draft, final)
- (3) Responses to FHWA comments on financial plans and updates

**Function Code (FC) 102 Feasibility, Route & Design Studies****102.1 Preliminary Studies****102.1.a Preliminary Studies**

The GEC shall provide oversight and coordination for the preparation of feasibility studies and related activities. The GEC shall review documents prepared by others within these limits and shall provide written comments and recommendations. The GEC shall track comments provided and resolution.

Deliverables

- (1) Review comments and documentation for resolution for preliminary studies prepared by others

**102.1.b Preliminary Cost Estimates**

As directed by the State, the GEC shall prepare preliminary cost estimates for the corridor utilizing current State cost data. The GEC shall break down preliminary cost estimates by major cost elements and utilize a State -approved template including breakdowns for a construction cost subtotal, inflation to let year, right-of-way cost, utilities cost, tolling cost, and total project cost. Appropriate contingencies shall be defined along with applicable back-up supporting recommended value of contingency for a specified cost element as appropriate. Potential cost increase based upon anticipated construction year shall also be considered and noted.

Deliverables

- (1) Draft, final, and updates to preliminary cost reports

**102.1.c Conceptual Design Layout**

The GEC shall prepare exhibits/renderings or update exhibits/renderings prepared by others and used for public involvement activities with design data provided by others to reflect significant design changes that occur during PS&E or construction. Exhibits are to be used for informational purposes only and shall be considered a graphical representation of the actual design.

Deliverables

- (1) Develop or updates to exhibits/renderings

**102.1.d Design Criteria**

The GEC shall review, refine, and maintain FHWA and project-specific design criteria as a corridor Design Summary Report (DSR). The GEC shall provide project-specific design

criteria to guide Developers or project design teams for providing uniformity throughout the corridor as applicable. Criteria will also include shared use path criteria, clear zone, and design exception issues. The GEC shall manage the design exception review process under 102.7.

The GEC shall review DSRs developed by others for specific projects for consistency with this corridor wide document and provide comments specific to each individual project. The GEC shall attend and participate in each project's initial Kick-Off Meeting to establish and agree on fundamental aspects and concepts and to establish the basic features and design criteria for the project. The GEC shall examine and provide comment to the State regarding design consistency or overlap with adjacent projects to ensure continuity.

#### Deliverables

- (1) Updates to the existing corridor Design Summary Report
- (2) Comments on project-specific DSRs provided by others and tracking of comment resolution for these comments and comments by the State

#### 102.1.e Design Division Support

The GEC shall provide Design Division review support, as requested, for design exceptions, IARJ's, and other program related documents.

#### Deliverables

- (1) QC review comments

### **102.2 Special Studies, White papers, and Research Documentation**

As directed by the State, the GEC shall undertake special studies and development of white papers concerning program issues to investigate and develop recommendations for specialty items including, but not limited to:

- Design or implementation best practices
- Current legislation and federal and state regulations
- Alternative project delivery methods
- Third party proposals such as from, but not limited to, developers, local toll agencies, local transit agencies, and local or regional freight agencies
- Third party proposals from private parties such as, but not limited to, utility companies

Deliverables

- (1) Draft, final and updates of white papers, memos and research documentation

**102.3 Traffic Evaluations, Analysis and Projections Oversight**

The GEC shall review traffic studies performed by others, including Traffic Impact Analyses (TIAs) and Driveway Permit Applications, and provide comments for State consideration.

The GEC shall review Interstate Access Justification Reports (IAJRs) prepared by others. The GEC shall review other design consultant's proposed contract documents for the preparation of IAJRs by others, provide comments, and assist the State with the preparation of final scope. The GEC shall review IAJRs prepared by others. The GEC shall develop a comment/resolution matrix for the reviewed IAJRs and provide to the State.

Perform scratch level operational analysis on project improvements and develop TP&P traffic data and associated traffic volumes for individual projects for use in traffic analysis, environmental analysis, and pavement design.

The GEC shall oversee and review other consultants' work of updating the corridor-wide Travel Demand Model. The GEC shall provide general guidance and review the TDM methodology, input and output performance measures.

The GEC shall review TPP traffic data, including that prepared by others.

The GEC shall provide oversight, coordination and participation with the State in project meetings with Federal, State, and Local Agencies as necessary.

Deliverables

- (1) Draft and final comment-response matrices of comments on traffic studies performed by others including TIA and Driveway Permit Applications

Develop TP&P traffic data and associated traffic volumes for individual projects for use in traffic analysis, environmental analysis, and pavement design

Perform scratch level operational analysis on project improvements

Schedule, facilitate, and produce decisions/action items list for weekly Mobility35 IAJR Coordination meetings

- (2) Draft and final technical memoranda documenting review of IAJR prepared by others
- (3) Draft and final comment-response matrices on Travel Demand Model update and scenario runs performed by others
- (4) Analysis of TP&P traffic data and associated traffic volumes prepared by others for individual projects for use in environmental analysis and pavement design
- (5) Schedule, facilitate, and produce decisions/action items list for weekly meetings with State's traffic Subject Matter Expert

#### **102.4 Subject Matter Management and Coordination**

To support key decisions and commitments, as well as support their follow-through at the project development level, the GEC shall provide subject matter experts (SME) and maintain, in a format agreed upon by the State, program- and project-related data related to specific technical subject matters and attend coordination meetings with the State and other agencies as required through the project life-cycle regarding each subject matter.

Across all areas, the GEC shall ensure that key decisions and commitments are tracked using a Project Decisions/Commitments tool and shall coordinate, prepare for, attend, and document meetings between the State and other local agencies and partners.

Subject matters include but are not limited to:

102.4.a Structures – The GEC shall coordinate with the State regarding structural reviews by project including structural reporting and lead and asbestos abatement investigations.

102.4.b Railroad – The GEC shall coordinate program-wide railroad activities across the program, including but not limited to supporting the State in advancing railroad agreements.

102.4.c Bicycle/Pedestrian/ADA – the GEC shall coordinate program-wide bicycle/pedestrian/ADA activities including but not limited to specific project-related coordination related to accommodations as part of Mobility35 projects.



102.4.d Hydrology/Hydraulics - The GEC shall maintain the previously developed drainage plan at the corridor-level and share and monitor application of the established Mobility35 drainage design criteria and standards. The GEC shall coordinate review of proposed adjustments to the previously developed corridor drainage plans and any new drainage plans with the State and other jurisdictional entities, including the FEMA flood plain coordinator. The GEC shall coordinate with the State's water pollution abatement plan (WPAP) SME.

The GEC shall provide oversight and coordination for hydraulics, hydrology, water quality, planning, modeling and design and related activities for multiple projects within the corridor as assigned by the State. Development shall be in accordance with current TxDOT Hydraulic Design Manual, District and Corridor specific policies, AASHTO, FHWA, FEMA, Texas Commission on Environmental Quality, Edwards Aquifer Protection Program and State guidelines and policies in effect at the time of development. The GEC shall provide oversight, coordination and participation with the State in project meetings with Federal, State, and Local Regulatory and Resource Agencies as necessary.

For assigned projects or corridors, as requested by the State, the GEC shall provide review, oversight and coordination of hydraulics, hydrology, modeling and design prepared by others including developers, consultants, or State personnel, and shall provide written comments and recommendations.

As requested, the GEC shall provide oversight and coordination for the preparation of hydraulics and hydrology planning, modeling and design, and related activities in support multiple projects within the corridor.

102.4.e Pavement - the GEC shall coordinate between the State and project-specific design teams regarding Mobility35 assumptions for pavement design. The GEC shall facilitate State provision of pavement design optimization or provide pavement design optimization services upon approval by the State. The GEC shall hold monthly, one-hour pavement design meetings with the State to coordinate decision-making and approvals on pavement designs. The GEC shall provide coordination activities related to pre-cast concrete and its application to projects.

102.4.f Aesthetics & Aesthetics Elements Maintenance – the GEC shall coordinate the application of the existing Mobility35 program aesthetic guidelines through projects across the program and coordinate with the State and local agencies regarding maintenance provisions for these elements and others associated with the maintenance of I-35 facilities at monthly, one-hour meetings with the State.

102.4.g Traffic/ITS – the GEC shall coordinate between the State and project-specific design teams to review and provide oversight of traffic elements and Intelligent Transportation System (ITS) planning, design and implementation.

102.4.h Constructability – the GEC shall perform constructability reviews by means of a traffic control review meeting prior to the 30 percent, 60 percent, and 90 percent plan reviews to identify constructability issues and concerns including appropriate work areas and traffic control plan accommodations. The GEC shall capture constructability reviews in the meeting decision/action item list and technical memoranda by project and update as applicable to identify areas of concern and potential conflict. The GEC shall provide recommendations for implementation or identification of potential risks. The final approval of the incorporation of any recommendations shall be made by the State.

102.4.i Maintenance – the GEC shall coordinate between the State and project-specific design teams to ensure maintenance considerations are incorporated into the project planning, design, and implementation.

102.4.j Quality Review Lead – the GEC shall coordinate quality review of all submittals provided by project-specific design teams to ensure the submittals meet all requirements described in their respective work authorizations.

Deliverables

By subject matter area: the GEC shall maintain institutional information, track issues and deliver upon action items, prepare agendas, materials, sign-in sheet, and decisions/action item list for each meeting attended.

- (1) Structures
- (2) Railroad
- (3) Bicyclist/pedestrian/ADA
- (4) Hydrology/hydraulics/WPAP coordination
- (5) Pavement
- (6) Aesthetics & Aesthetic Elements Maintenance
- (7) Traffic/ITS
- (8) Constructability

(9) Maintenance

(10) Quality Review Lead

### **102.5 Coordination of Schematic Engineering Development**

The GEC shall provide oversight and coordination for the preparation of schematic engineering documents and related activities for multiple projects within the corridor and shall conduct project coordination meetings as necessary to achieve this work. The GEC project managers shall provide assistance to the State by reviewing invoices by others to assess progress in project development activities. The GEC shall proactively report issues and recommend invoice payment.

The GEC shall only provide program coordination assistance on projects managed by the State as shown in Table 1, or as directed by the State. For projects managed by the GEC, the GEC shall manage conceptual and geometric schematic documents prepared by others including developers, consultants, or State personnel, and shall provide written comments and recommendations, addressing topics including but not limited to:

- Contract time/schedule and management of activities to meet the identified “Ready to Let” date
- Design Criteria and Design Summary Report
- Survey data and mapping
- Typical Sections
- Avoidance, minimization or mitigation of environmental constraints
- Avoidance or minimization of right-of-way impacts
- Avoidance or minimization of utility conflicts
- Optimization of design to address transportation need and purpose while minimizing impacts including cost
- Design elements including but not limited to roadway alignments, structures, control-of-access limits, large guide signs, lane and shoulder lines and arrows, signals, lighting, horizontal and vertical data, and clearances
- Drainage including complex hydrology and hydraulics analysis—external and internal, temporary and permanent, mitigation, and water quality impacts and mitigation as applicable over the Edwards Aquifer
- Design Exceptions, Waivers, and Variances
- Engineering Summary Report
- Illumination Study
- Geotechnical Engineering Report
- Environmental Report

- Agency coordination and public involvement documentation
- Local government and stakeholder coordination
- Traffic projections and operational analysis
- ROW/Property Base Map
- ROW needs associated with hydraulic detention and water quality as applicable and as identified for environmental study and potential mitigation purposes
- Right of Way Memorandum
- Utility Base Map
- Interstate Access Justification Report (IAJR)
- Construction sequencing and traffic control
- Temporary and permanent Intelligent Transportation System (ITS)/Transportation Management System (TMS) elements
- Bicycle and pedestrian accommodations
- Cost estimates
- Right-of-entry letters
- Checklists and formats in State-specified formats
- Verification that the Value Engineering Study was performed by others at an approximate Schematic Review Stage.

The GEC shall consider as applicable the schematic elements in the context of the Mobility35 Implementation Plan, adjacent projects under construction and in development, including projects outside the direct purview of the GEC, projects in adjacent Districts, projects by local governments, and projects abutting I-35 on other roadways. The GEC shall track the comments and resolution of comments in log format.

The GEC shall work with the State to level Mobility35 demands on State review staff.

**Project Progress Reporting** - The GEC shall QC review weekly the project updates submitted by others in program-wide Progress Report template.

**Project Status Reporting** - The GEC shall maintain the Project Status Report as a living document documenting key commitments and decisions by the project design engineer and the State, as well as milestone events. The GEC shall utilize a format provided by the State. This document will follow the project through its lifecycle: at the appropriate time, the GEC shall transition this report for use in the final design stage. The GEC shall also report key project commitments, decisions and recommendations of the Value Engineering study, if applicable, to the program level for tracking.

### Deliverables

- (1) Documentation of QC reviews of project updates submitted by others in program-wide Progress Report template and Project Status Report (live)
- (2) Tracking logs for comments and resolution of same, maintain Program commitments/decisions tracking, including recommendations of the Value Engineering Study if applicable
- (3) Agenda, materials, sign-in sheet, meeting notes, and action item list for project coordination meetings

### **102.6 Review of Schematic Engineering Development**

The GEC shall provide an Independent Review of conceptual and geometric schematic documents prepared by others including developers, consultants, or State personnel, and shall provide written comments and recommendations to ensure they meet the purpose and need identified in the associated environmental document and address activities necessary for projects to meet the State's "Ready to Let" definition by the State-directed date.

The GEC shall consider as applicable the schematic elements in the context of the Mobility35 Implementation Plan, adjacent projects under construction and in development, including projects outside the direct purview of the GEC, including projects in adjacent Districts and projects abutting I-35 on other roadways. The GEC shall review the conceptual schematic based on established criteria for each stage of schematic development required for the individual project. The GEC shall perform a QA/QC review of the draft and final schematics, including a review for constructability, maintainability, ROW determination, traffic control, and associated deliverables by milestone.

The Subject Matter Experts will participate in project reviews. In addition to the SME's and to maintain independence and objectivity, when appropriate, the GEC shall provide independent individuals conducting Review tasks (for Schematic and Plan Sets) that these are the only tasks that Independent Review individuals perform for the program.

The GEC shall work with the State to level Mobility35 demands on State review staff.

### Deliverables

- (1) Meeting attendance, review comments and documentation for resolution of same for documents prepared by others.

**Function Code (FC) 120 Social/Economical/Environmental Studies****120.1 Environmental Document Oversight and Reviews**

The GEC shall provide oversight for the preparation of environmental documents by others, including environmental impact statements, environmental assessments, categorical exclusions, supplemental environmental documents, environmental reevaluations of existing documents, and other State and federal environmental documents as assigned by the State. Environmental documents shall be in conformance with National Environmental Policy Act of 1969 (NEPA), the Environmental Affairs Division's Environmental Compliance Toolkits as well as current legislative, state, and FHWA requirements. The GEC shall provide oversight, coordination and participation with the State in project meetings with Federal, State, and Local Regulatory and Resource Agencies as necessary in support of environmental document preparation and environmental clearance activities. The GEC shall work with the State to level Mobility35 demands on State review staff.

**ENVIRONMENTAL DOCUMENT REVIEW AND RECOMMENDATIONS** - The GEC shall provide experienced environmental professionals for assigned projects as requested by the State, to review environmental documents prepared by others including developers, consultants, or State personnel, and shall provide written comments and recommendations on such documents. The GEC will assist the State, as directed, in interpretations and associated research of state and federal guidance, rules and regulations.

**CONTRACT DOCUMENT REVIEW AND RECOMMENDATIONS** – The GEC shall provide scope and fee reviews pertaining to environmental work for contract documents by others.

**STATUS REPORTING** - Maintain program-wide synthesis report in format accessible by STATE.

Deliverables

- (1) Attend project-specific meetings led by others and schedule, attend and run bi-weekly meetings with the State
- (2) Maintain/track current status of projects through environmental, PS&E and construction phases and single program-wide synthesis report for bi-weekly meeting

- (3) Provide recommendations/comments based on review of environmental documents
- (4) Scope and fee reviews for contract documents by others
- (5) Special requests to support environmental analysis
- (6) Monthly schedule reviews for projects in the schematic/environmental phase of development

## **120.2 Environmental Document Support Services**

**TECHNICAL STUDIES** - The GEC shall provide experienced environmental professionals for assigned projects as requested by the State, to conduct document review and preparation and associated technical studies as directed by State personnel according to current rules, regulations and guidance. This may also include preparation and review of geological assessments and water pollution abatement plans (WPAP).

**RE-EVALUATIONS** - The GEC shall develop re-evaluations in accordance with 23 CFR 771.129 and the Environmental Affairs Division's Environmental Compliance Toolkits.

**ENVIRONMENTAL PERMITS** - The GEC shall prepare exhibits and supporting documentation including permit applications as directed by the State for any permits that may be required such as with the United States Army Corps of Engineers (USACE), Texas Commission on Environmental Quality (TCEQ), Texas Parks and Wildlife, U.S. Fish and Wildlife, Federal Aviation Administration (FAA) for flight path clearance, local floodplain administrators, and other State or local jurisdictional permit agencies including local cities. Permit coordination shall include coordination or completion of Environmental Permit Issues and Commitments Sheets (EPIC Sheets) for State signature and processing.

**ENVIRONMENTAL PERMIT ISSUES AND COMMITMENTS (EPIC)** – The GEC shall develop and/or review EPIC language as requested by the State.

### Deliverables

- (1) Re-evaluations and associated documents
- (2) Environmental Permit Issues and Commitments Sheets (EPIC) Oversight

## **120.3 Public Involvement – Projects**

### 120.3.a Public Involvement for Environmental Documents

To support environmental activities conducted by the GEC or, as needed, by the State, the GEC shall:

- Use public involvement templates, checklists, and other tools as applicable
- Conduct meetings with affected property owners and stakeholders as applicable and provide meeting minutes and summaries
- Conduct public involvement meetings, open houses or hearings including scheduling the event and preparing all materials
- Document the public involvement meetings, open houses or hearings in a format to be provided by the State and refined as applicable to meet current environmental study guidelines
- Produce and publish legal notices and advertisements, as needed and approved by the State
- Prepare for and conduct noise workshops
- Complete actions as assigned by the State

To support environmental activities conducted by the State or others, the GEC shall:

- Recommend, and upon concurrence by the State, send at least one (1) public involvement team member and one (1) technical expert to public events
- Monitor the progress and performance of public involvement activities, including ensuring the consistency and conformance of materials with the program guidance.

The GEC shall assist the State with general, non-specific public inquiries regarding the environmental process and environmental document. The GEC shall coordinate scheduling all meetings with the other GEC and the State to avoid program schedule conflicts.

The GEC shall work with the State to level Mobility35 demands on State review staff.

#### Deliverables

- (1) Review comments and documentation of resolution for public involvement documents prepared by others
- (2) Attend project specific meetings by others
- (3) Develop materials, procure locations, staff, host and document public outreach meetings or events for environmental activities conducted by GEC
- (4) Meeting summaries and minutes



- (5) Agenda, meetings, sign-in-sheet, decisions/action item list for each project coordination meeting
- (6) Public involvement documentation for public involvement events
- (7) Legal notice and/or advertisements
- (8) Public inquiry responses
- (9) Develop materials, procure locations, staff, host and document noise workshops

#### **120.4 Public Involvement - Program**

##### **120.4.a Program-wide Communications Plan (PCP)**

The GEC shall update and maintain the Mobility35 Program Communications Plan (PCP). The GEC shall address internal and external communications regarding program-level messaging and its nexus with project-level public involvement activities during project development, and construction-related traveler information. The GEC shall focus the PCP on program-level communications and messaging appropriate for dissemination through all Mobility35 activities, including project development activities and construction information, each covered under separate tasks. The GEC shall routinely revisit roles and responsibilities previously identified and recalibrate the plan details based upon lessons learned. The GEC shall update the PCP quarterly for the first year and up to twice a year thereafter to address an evolving program.

##### Deliverables

- (1) Updates to the Program Communications Plan

##### **120.4.b Program-level Public Involvement and Information Activities**

In support of program-level Public Involvement, the GEC shall implement the Mobility35 Program Communications Plan (PCP), providing proactive public information and communications support at the program level, including coordinating program-level messaging with project-development and implementation stages. The GEC shall update information and keep the public and media informed during the life-cycle of a project from planning through construction completion.

The GEC shall work with the State to level Mobility35 demands on State review staff.

WEEKLY STRATEGY SESSIONS - The GEC shall conduct weekly strategy sessions with the State to discuss current and upcoming messaging, upcoming public involvement activities, construction project milestones, and planning efforts.

ACTIVITIES - In support of program-level public involvement activities, the GEC shall perform activities including but not limited to:

- Meeting/event planning and logistics and scheduling program-wide
- Soliciting feedback from the public and stakeholders (using surveys, focus groups, etc.) and compiling responses
- Field all public inquiries received by the program and route them to the appropriate team responsible for tracking, logging, and, if appropriate, responding (directly unless otherwise directed by the State)
- Create and maintain a live tracking database for all public responses for Mobility35 at the program (non-project-specific) level that is available for State use and updating by others
- Support the PIO office in maintaining an editorial calendar for when and how to communicate key message, news/updates and information to the public
- Develop, produce and publish/distribute, as needed and approved by the State:
  - Monthly email newsletter, including graphics
  - Email blasts for meetings and milestone events
  - Press releases and media kits
  - Social media update materials
  - Advertisements
  - Outreach materials for minority and under-represented populations
- Consistently and regularly monitor the program website and coordinate with project teams to ensure site information is up-to-date. The GEC shall coordinate the updates with project development teams and the State, providing new webpages and updates in a format specified by the State to the State for updating to the State-owned and managed website. As applicable, the GEC shall develop program-level website materials
- Monitor and track GEC-managed website(s) and social media activity and analytics for performance measurement
- Upon explicit Notice to Proceed, develop State -owned and managed program website in a format specified by the State and to the State if requested
- Coordinate, support, make presentations or facilitate, prepare handouts, and document outreach for various groups, including but not limited to:
  - small groups of internal stakeholders, agencies, local jurisdictional entities and public officials (generally under 10 external attendees)

- small groups of external stakeholders such as community groups and seminars/industry events (generally under 30 attendees)
- large-groups such as community associations, business groups, or other entities at table-top and town hall type meetings (30-100 external attendees)
- Represent the State at fairs, festivals, community events, etc., to provide project and program information to the public
- Provide audio-visual equipment including laptop, projector, screen, speakers, microphone, etc. as needed
- Provide materials, supplies, and development of multi-media tools including set-up and disassembly where applicable of multi-media tools, as approved by the State, including but not limited to: kiosks, video, iPads, screen displays
- Provide, host, and maintain the program's State -owned Virtual Open House tool, an interactive public involvement website (mobility35openhouse.com) and public e-mail addresses (including but not limited to info@mobility35.org) for logging comments and inquiries as a supplemental site to the My35.org site which does not have this capability
- Update the web-site on assigned projects or corridors and monitor and modify the web-site for compliance with the State's communications procedures and guidelines
- Define and implement a digital media campaign potentially leveraging local media advertising, sponsored content, e-blasts, search engine optimization, and social media management and promotion activities via local media outlets

PRODUCTS - The GEC shall update, maintain, and apply existing program-level communications products and develop new communications products to support communications, with an emphasis upon products that communicate complex concepts clearly and understandably for a public audience.

OTHER ACTIVITIES - The GEC shall assist the State in conducting quarterly program outreach activities including but not limited to Technical Steering Committee (TSC) meetings, Legislative Briefings, and Media Outreach Events targeted at an established list of approximately 40 local partner agencies. The GEC shall develop agenda, presentation, handouts, and other materials and document the meetings, as well as attend and facilitate. The GEC shall also assist the State with coordination of cap and stitch initiatives with partner agencies and stakeholders and Be Safe Be Seen and Initiatives to Address Homelessness associated with the Mobility35 Program limits.

The GEC shall work collaboratively with an extensive team across various public and private partners to develop and maintain up-to-date information, descriptions and

distributions, seek opportunities to communicate the “Mobility35 story,” and assure information is correct, free of composition errors, and released professionally.

The GEC shall host, update, and maintain the Mobility35 construction web-site on assigned projects or corridors and monitor and modify the web-site for compliance with the STATE’s communications procedures and guidelines.

### Deliverables

- (1) Master slide deck used as the basis for program- and project-level presentations
- (2) One-page topical tabloid summaries using Adobe Design suite, Illustrator, and Geographic Information System-based maps (12)
- (3) Database of stakeholders by projects of interest or program-interest, including correspondence received through public email address (info@Mobility35.org)
- (4) Log (mechanism open for use by State, other I-35 GEC and PIO) of phone calls, emails, and written correspondence received and made to external stakeholders and the public
- (5) Meeting attendance
- (6) Agenda, sign-in sheet, decision/action item list for project coordination meetings, to include:
  - Attend CEI project meetings bi-weekly and receive minutes prepared by others. For non-CEI projects, attend and prepare meeting minutes
- (7) Schedule, set up, prepare, attend, take down, and document internal and agency stakeholder outreach meetings (2 per year)
- (8) Schedule, set up, prepare, attend, take down, and document external small-group stakeholder outreach meetings (12 per year)
- (9) Schedule, set up, prepare, attend, take down, and document external large-group stakeholder outreach meetings (2 per year)
- (10) Public-friendly program-level communications products (2 per year)

- (11) Agenda, presentation, materials, sign-in sheet, minutes and action item list for Technical Steering Committee meetings (quarterly)
- (12) Draft and final website updates
- (13) Draft and final email blasts
- (14) Draft and final media releases (56)
- (15) Website and social media analytics reports

### **120.5 Public/Traveler/Business Construction Information**

The GEC shall be responsible and accountable for closely coordinating public information and traffic management support to deliver a seamless construction information program for the Mobility35 program under the umbrella of the Mobility35 Communications Strategy (CCS). The GEC shall implement the work outlined in the CCS with the State (Public Information Officer, Area Offices, Mobility35 program, and others). And, as approved by the State, the GEC shall coordinate with project-specific Construction Engineering and Inspection (CE&I) public information representatives to ensure coordination with the program-wide comprehensive, cohesive messaging for construction- and incident-related information within the Mobility35 construction “smart work zone” (defined as the I-35 corridor from the northernmost active Mobility35 construction project to the southernmost active Mobility35 construction project).

The GEC shall attend weekly construction meetings and provide construction updates to the State and participate in weekly construction strategy sessions with the State to discuss current and upcoming messaging, upcoming public involvement activities, construction project milestones, and planning efforts.

The GEC shall organize and prepare public-friendly materials for project workshops and meetings, groundbreakings and ribbon-cuttings.

The GEC shall develop and maintain a direct project/program information line which shall be answered by a communications coordinator who shall be available to answer calls and respond to concerns during regular business hours (Monday-Friday from 8 AM to 5 PM).

The GEC shall develop and use outreach materials and methods to communicate project impacts on traffic mobility to road users, the general public and all other stakeholders and partners such as CAMPO, the city of Austin, and other municipalities along the corridor. The GEC shall integrate public information and communications efforts with the technology-side framework and effort and other State efforts advancing a Traffic

Management System for the region. This effort shall include the GEC coordinating with traffic management centers and other TxDOT districts along I-35, as directed by the State.

The GEC shall be responsible for coordinating changes to the portable, changeable messaging signs along the corridor to notify the traveling public of upcoming construction changes at least one week before construction starts.

The GEC shall assist with lane closure updates, review and approval of requests, and posting information to project websites.

The GEC shall measure the effectiveness of PI efforts and products and improve communications as warranted.

The GEC shall work with the State to level Mobility35 demands on State review staff.

#### Deliverables

- (1) Videos (outline, scripts, storyboards, voiceover recordings, final videos)
- (2) Infographics and content documents
- (3) Meetings
- (4) Record of calls received from direct project/program information line
- (5) Events
- (6) Social media paid
- (7) Social media un-paid
- (8) Door-to-door communication

### **Function Code (FC) 130 Right-of-Way (ROW) and Utilities**

#### **130.1 Review and Coordination of ROW and Utilities**

The GEC shall provide oversight and coordination for ROW and utility engineering services, including monitoring, verification, and related activities for multiple projects within the corridor. The GEC shall maintain the existing TxDOT utility coordination process for the corridor for individual projects within the corridor, including the identification of utility conflicts, utility coordination, compliance with the Utility Accommodation Rules (UAR), resolution of utility conflicts, and coordination of monitoring

and verification activities by others. The GEC shall oversee preparation of utility agreements by others for the State.

The GEC shall coordinate all I-35 utility efforts within the extent of this program to ensure State-authorized contractors conducting sub-surface investigations have contacted the State's designated contact to ensure that fiber, ITS, or other resources are not in conflict.

The GEC shall maintain overall existing and proposed utilities base maps for the program incorporating detailed information obtained by others throughout the project development process.

The GEC shall work with the State to level Mobility35 demands on State review staff.

#### Deliverables

- (1) Review comments and documentation resolution for ROW and utilities deliverables prepared by others
- (2) Record of actions on utility coordination, including tracking logs for comments and resolution of same
- (3) Agenda, presentation materials, sign-on sheet, and decisions/ action item list for each meeting attended
- (4) Updates to program utility base map maintained electronically in .dgn format

### **130.2 Utility Engineering Investigation**

The GEC shall provide oversight of utility engineering investigation including utility investigations subsurface and above ground prepared in accordance with current standards. The GEC shall review and provide oversight of utility activities including schedules, SUE plans, test hole locations and datasheets and shall participate in meetings with the State and utility owners as needed. GEC shall ensure the PDE is obtaining utility designs, schedules and agreement.

#### Deliverables

- (1) Decisions/action items list from meeting with the State and/or utility owners
- (2) Review comments and tracking log

### **130.3 Right-of-Way Acquisition and Map Review**

All standards, procedures and equipment used by the GEC's Surveyor shall be such that the results of the survey shall be in accordance with Board Rule 663.15, as promulgated by the Texas Board of Professional Land Surveyors.

If needed, the GEC shall review and evaluate the proposed or existing ROW maps prepared by others to verify that all construction staging and alignment considerations have been taken into account. The GEC shall notify the State in writing if it is necessary to obtain additional construction easements or ROE and shall provide justification for such action. The State will secure the necessary legal instruments.

If needed, oversee and manage the work by others to develop ROW Acquisition packets. Provide oversight and coordination of the acquisition packet preparation and review in accordance with the Uniform Standards of Professional Appraisal Practice (USPAP). Quality review of acquisition packets shall be performed within three (3) working days of receipt.

The GEC shall work with the State to level Mobility35 demands on State review staff.

#### Deliverables

- (1) Review comments on ROW maps, acquisition packets or other work which may include providing ROW parcel maps, contract reviews, surveying estimates and/or anything else requested by the State and/or GEC

### **130.4 Access Management**

The GEC shall coordinate, evaluate, and submit access management requests within the project limits in accordance with the latest State Access Management Manual or as directed by the State.

#### Deliverables

- (1) Technical memorandum documentation of access management coordination and evaluation.

## **Function Code (FC) 150 (150) Field Surveying and Photogrammetry**

### **150.1 Review and Coordination of Field Surveying and Photogrammetry**

The GEC shall provide oversight and coordination for the preparation of field surveying and photogrammetry and related activities for project within the corridor as assigned by



the State. The GEC shall provide oversight, coordination and participation with the State in project meetings with Federal, State and local regulatory and resource agencies as necessary. The GEC shall review field surveying and photogrammetry prepared by others including developers, consultants, or State personnel, and shall provide written comments and recommendations on such documents. The GEC shall share, distribute, and analyze past survey data and consolidate the information. The GEC shall transmit available processed survey data files to others working on project development tasks in the corridor.

The GEC shall work with the State to level Mobility35 demands on State review staff.

#### Deliverables

- (1) Review comments and documentation of resolution for field surveying and photogrammetry documents prepared by others
- (2) Processed survey data files for others

### **Function Code (FC) 160 Roadway Design**

#### **160.1 PS&E Development and “Ready to Let” Activities**

The GEC shall provide oversight, coordination and related services for the preparation of plans, specifications and estimates for multiple projects within the I-35 corridor.

#### **160.2 Design Exceptions, Waivers, and Variances Support**

The GEC shall take the lead to monitor, guide, and track design exceptions, waivers, and variances required within the Mobility35 program. The GEC shall provide examples, guidance, and review of these documents performed by others. The GEC shall inform the State of program and project-level direction that increases risk of necessitating these documents and recommendations to remove or mitigate these situations. The GEC shall maintain and disseminate the standards for these documents adhering to State guidance and materials developed for the on-going Mobility35 Program. The GEC shall also report these key documents to the program level for tracking. The GEC shall be responsible for obtaining the review of District Leadership and bringing key reviewers together (FHWA and Design Division) to review and evaluate.

#### Deliverables

- (1) Program-wide documentation/examples/guidance repository

(2) Document decisions via memo and include background information. Also include in Decision/Commitment Tool

(3) Documentation of support activities by project as part of program reporting under the FC 145 task

### **160.3 Intelligent Transportation System (ITS) Planning, Design and Implementation**

The GEC shall support project-specific High Mast lighting and Intelligent Transportation System (ITS) implementation as part of the Mobility35 program, including but not limited to:

- Maintain and update as necessary the existing database of existing ITS infrastructure, proposed ITS improvements by each Mobility35 construction project for the program, and completed ITS improvements
- Maintain and update as necessary the existing database of ITS plan sheet specifications for elements identified for implementation in the State's ITS 5-Year Master Plan
- Schedule, prepare for, and facilitate monthly Mobility35 ITS Coordination meetings including staff directed by the State and to cover program-wide ITS topics as well as project-specific ITS issues and reviews
- Schedule, prepare for, and conduct ITS kick-off meetings for each new project under development for each phase of preliminary schematic and final design to inform the project-specific consultant or in-house designer of program-level ITS plans for the project, share ITS specifications and other guidance and discuss any issues
- Develop, maintain, and update as necessary the database of existing, designed, constructed, and proposed High Mast lighting by each Mobility35 construction project for the program

The GEC shall manage the development of ITS improvements for a completed, functional system, optimizing existing elements as they come on-line. The GEC shall make recommendations to ensure ITS plan is functional and practical for the project and the District ITS system.

#### Deliverables

- (1) Agenda, materials, sign-in sheet, and decisions/ action items list for each meeting; Project-specific ITS kick-off meetings; Updates to existing ITS guidelines; Updates as needed for High Mast lighting plan

#### **160.4 Coordination of PS&E Development and Other “Ready to Let” Activities**

The GEC will oversee the Project Management Plans prepared by Project Development Engineers (PDE). The GEC project managers shall review invoices by others within one week and then submit for final approval and PEPS Invoice Center to assess and concur with progress in project development activities. The GEC shall proactively report issues and recommend invoice payment.

The GEC will consider all elements of design and construction with utility relocation and traffic control interdependency in preparation for letting. The PS&E package should be comprehensive with outstanding items clearly mitigated.

The GEC shall ensure that PS&E materials are in accordance with current AASHTO, FHWA, and State guidelines and policies in effect at the time of development and shall be coordinated with appropriate environmental action by the GEC. The GEC shall provide oversight, coordination and participation with the State in project meetings with Federal, State, and Local Regulatory and Resource Agencies as necessary in support of PS&E preparation.

**Design Review Plan:** The GEC shall prepare a design review plan outlining what design controls shall be used in each of the various stages of plan review (30, 60, 90 and 100 percent). Design controls shall incorporate Austin District’s PS&E review process, documents and checklists. These design controls shall be used to review multiple PS&E projects within the IH-35 corridor. The GEC shall attend meetings and facilitate design workshops with the State and developer to aid in the review of milestone plan submittals or interagency design approvals.

##### **A. Roadway Design Controls**

- a. **Plan Profile Sheets:** The GEC shall review final plan profile sheets.
- b. **Typical Sections:** The GEC shall review final typical section sheets.
- c. **Roadway Details:** The GEC shall review final roadway detail sheets. Alternate designs shall be submitted, and the GEC shall review plan sheets in the design and construction phases. This task shall include reviewing environmental mitigation and storm water pollution prevention plan (SW3P) controls.

##### **B. Drainage**

The GEC shall review final plan sheets. Alternate designs shall be submitted by the developer as the design progresses, and the GEC shall review plan sheets in the design and construction phases. Drainage items in this task include bridges, culverts, storm sewer systems and channelization. All work shall conform to the State’s Hydraulic Design Manual, methods and procedures.

### C. Traffic Engineering

The GEC shall review preliminary and final sheets including intelligent transportation systems (ITS), traffic signals, illumination, electrical details, signing and pavement markings. The GEC shall review each for accuracy and completeness at the 60, 90 and 100 percent stages of development. The GEC shall also assist with City of Austin Signal coordination.

### D. Miscellaneous (Roadway)

- a. Traffic Control Plan, Detours, and Sequence of Construction: The GEC shall review preliminary and final sheets including traffic control plans and construction phasing details for the project. The GEC shall review each for accuracy, completeness and compliance with the latest Texas Manual of Uniform Traffic Control Devices (TMUTCD) at the 30, 60, 90 and 100 percent stages of development. The GEC shall work with the PDEs and Area Office to manage driveway reconstruction that extends beyond the right of way and oversee the development Temporary Driveway License Agreements.
- b. Retaining Walls: The GEC shall review all retaining wall layouts and details, both temporary and permanent. Resources the GEC shall utilize include, but are not limited to the State's geotech manuals and State standards and procedures.
- c. Miscellaneous Items: The GEC shall review all miscellaneous roadway sheets, details and supporting documentation. Items include, but are not limited to: general notes, estimates, specifications, provisions, joint bid work, railroad exhibits.
- d. Constructability/Maintainability Reviews: The GEC shall perform constructability/maintainability reviews by means of a traffic control review meeting prior to the 30 percent, 60 percent, and 90 percent plan reviews to identify constructability/maintainability issues and concerns including appropriate work areas and traffic control plan accommodations, acceleration opportunities, TCP impacts to surrounding roadways, milestones, and substantial complete dates. Verify lane closure items. Review project for overall duration and provide recommendations to minimize. Review will also include expected utility clearance dates. The GEC shall capture constructability/maintainability reviews in the meeting decision/action item list and technical memoranda by project and update as applicable to identify areas of concern and potential conflict. The GEC shall provide recommendations for implementation or identification of potential risks. The final approval of the incorporation of any recommendations shall be made by the State.
- e. The GEC shall invite construction contractors to attend a plan review workshop during the project development process to receive feedback from contractors

- regarding project costs, constructability, and fatal flaws. The GEC shall provide recommendations to the State with the GEC's opinion for implementation of mitigation strategies for identified potential risks. The GEC shall invite TXDOT Maintenance Supervisors to attend a plan maintainability review meetings during the project development process to receive feedback on known issues in the area and fatal flaws. The GEC shall provide recommendations to the State design team with the GEC's opinion for implementation of mitigation strategies for identified potential risks.
- E. Traffic Management Systems (Permanent)  
The GEC shall review permanent and interim traffic management systems including computerized traffic management systems (CTMS) for proposed systems or modifications to existing systems. The GEC shall review each for accuracy, completeness and compatibility with State systems at the 60, 90 and 100 percent stages of development.
- F. Bridge Design
- o. Bridge Design (General): The GEC shall review all bridge design plans developed, bridge load rating, and structural modifications or bridge inspection reports and fixes. All deviations from the final schematic and established design criteria shall be documented and included in a Master Design Summary Report. Resources the GEC shall utilize include, but are not limited to the State's bridge manuals, the Bridge Detailer's Manual and State standards and procedures.
  - p. Bridge Layouts: The GEC shall review all bridge layouts.
  - q. Bridge Details: The GEC shall review all bridge details.

The GEC shall coordinate partner agency reviews including local jurisdictions. The GEC shall also support the State in maintaining external project-level information current through approved mechanisms and support in responding to information requests or comments on the projects.

The GEC shall verify pre-letting commitments to the public, elected officials and other stakeholders are included and detailed in the plans for bidding purposes. The GEC shall review contractor RFI's during construction, to coordinate with the appropriate construction phase services contract held by others.

The GEC shall consider as applicable the design elements in the context of the Mobility35 Implementation Plan, adjacent projects under construction and in development, including projects outside the direct purview of the GEC, including projects in adjacent Districts and projects abutting I-35 on other roadways.

Project Progress Reporting - The GEC shall QC review weekly the project updates submitted by others in program-wide Progress Report template.

Project Status Reporting - The GEC shall maintain the Project Status Report as a living document documenting key commitments and decisions by the project design engineer and the State, as well as milestone events. The GEC shall utilize a format provided by the State. This document will follow the project through its lifecycle: at the appropriate time, the GEC shall transition this report for use in the construction stage. The GEC shall also report key project commitments and decisions to the program level for tracking.

Assist the State in plan set final processing prior to submittal to Design Division.

Develop, maintain and coordinate risk workshops.

Deliverables (tracked by 0914-00-448)

- (1) Review of the PMP
- (2) Review comments and documentation of resolution for materials prepared by others
- (3) Record of actions on PS&E review milestones, including tracking logs for comments and resolution
- (4) Agenda, presentation materials, sign-on sheet, decisions/action item list for each meeting attended
- (5) Track and maintain project decision log (live)
- (6) Review comments and documentation of resolution for railroad exhibits and layout sheets prepared by others Risk matrix maintenance

### **160.5 Review of PS&E Development**

The GEC shall provide an Independent Quality Review of the Plans, Specifications, and Estimates (PS&E) packages prepared by others to ensure the packages meet all requirements and to ensure constructability of all roadway and structural elements, including activities necessary for projects to meet "Ready to Let" definition by the State-directed date. Reviews will be performed in a cloud-based, collaborative review software platform provided by the GEC. Comments will be extracted from the collaborative review, exported to spreadsheet format and provided to designers for comment resolution.

The GEC shall work with the State to level Mobility35 demands on State review staff.

The Independent Quality Review of the Plan preparation and Ready to Let activities shall include: any environmental clearance and mitigation completed; project agreements in place; railroad coordination complete and agreement in place; utility agreements in place and relocations in progress (cleared sufficiently to proceed into construction without delays); reviewing Roadway and Structures elements, Sequence of Work/Traffic Control, Drainage (Temporary and Permanent), Storm Water Pollution Prevention Plan (SW3P), Environmental Permits, Issues and Commitments (EPIC) addressed, identifying Utility conflicts, etc.; ensuring accuracy and appropriate use of Items, Quantities, General Notes, Standard and Special Specifications, Special Provisions, Contract Time/Schedule, Standards, Management Plan; and Financial Plan, and contractor RFI questions and responses during the letting phase; etc.; and providing detailed comments in an approved format.

#### Deliverables

- (1) QC review comments, including tracking logs for comments and documentation of resolution