1. **PROJECT CONTEXT**

In 2018, the I-95 Improvements Feasibility Evaluation Study (Greenwich to New Haven) preliminarily identified congestion as a major deficiency in the northbound (NB) direction between Exits 19-27A in Fairfield and Bridgeport, highlighting queues during the PM peak hour which cause significant congestion as far south as Stamford. The 2019 Strategic Implementation Plan, I-95 West Corridor, provided strategies to reduce congestion, improve travel reliability, and improve highway safety based on selective highway widening and interchange improvements targeted to remove or reduce major traffic bottlenecks. A fourth through-lane in the NB direction between Exits 19 and 27A was identified as a potential solution to increase vehicle throughput and reduce travel time in the study area.

This proposed I-95 Exits 19-27A Planning and Environment Linkages (PEL) process will examine alternatives to reduce overall congestion on this section of I-95, serve existing and future needs, and improve traffic operations, travel time, and safety. Root causes of congestion will be identified through analysis of current and projected traffic in relation to current facility deficiencies.

The PEL process will include public involvement. The scope of the planned improvements, as well as purpose and need, will be developed. Alternatives will be identified and analyzed using an appropriate level of traffic studies to develop facility-improvement options. Alternatives for improvements meeting the identified needs will be vetted through stakeholder coordination. The PEL process will conclude with the identification of alternatives and key issues for future analyses, and will propose phases, early-action items, and priorities in a PEL Study Report.

This study area includes many local roadways, bike routes, and rail- and bus-transit corridors. It is adjacent to many well-established neighborhoods and communities, and areas of ongoing or potential redevelopment. Analysis of social, environmental, and economic impacts of alternatives consistent with local plans will be critical for decision-making.

Traffic study limits will need to be defined and may extend well beyond the core study area in the project title to accurately reflect overall transportation mobility within the region and potential effects on local street networks. The study will require consideration of pending roadway improvements and other statewide studies, such as tolling studies.

Within the study limits, the PEL will consider the conclusions of related transportation studies and evaluate if contemplated improvements are still ideal and viable with proposed PEL alternatives. Future private development pursuits within the study area must be considered. Transit considerations may include foreseeing the need for and/or accommodating mass transit service as well as coordination with the nearby Metro North Railroad. Access to and from I-95 as well as improvements to ramp spacing and configuration in the corridor will be an integral part of the study. It is anticipated that improving travel time reliability will be an outcome of the study. The future of connected and autonomous vehicles must also be considered.

2. **PROJECT GOALS**

The primary goal of this PEL process is to develop both short-term and long-term alternatives and identify proposed actions for reducing congestion, improving operational performance, and addressing future transportation needs in this I-95 corridor. As part of the study process, it will be necessary to identify critical public, environmental, and resource concerns and opportunities in the study area, and to use this information and public/stakeholder involvement to develop alternatives which address the overall purpose and need.
The study will involve identifying and working with stakeholders to develop and evaluate improvement alternatives. The study will be completed in accordance with the Federal Highway Administration’s PEL process, including:

- Public outreach
- Outreach to local, state, and federal resource agencies
- Documentation consistent with commonly accepted PEL standards so information developed in this study can be appended or referenced in a later National Environmental Policy Act (NEPA) document
- Assisting CTDOT in completing the PEL questionnaire for submittal to FHWA
- Identification of existing and future needs and deficiencies in the study area from an operational, maintenance, and safety perspective
- Identification of any major environmental and/or resource agency concerns which could have a substantially negative impact on implementing improvements in the project area
- Evaluate and identify needs for intermodal connections
- Assist CTDOT in identifying geometric and Rights-of-Way issues along this segment of I-95 between Exits 19 and 27A;
- Recommend a set of alternatives which provide economical immediate and long-term benefits
- Recommend alternatives for the highway, interchange, and intersection complexes that address both short-term and long-term needs identified by stakeholders and analysis, and which consider available funding sources
- Prepare a prioritized list of all proposed improvements with accompanying evaluation criteria and timelines, identifying possible early break out projects which have standalone independent utility, logical termini, and do not represent connected actions under NEPA.
- Recommend possible phasing of projects which considers funding availability, constructability, and railroad coordination.

In order to meet these objectives, the PEL Study shall:

1. Document the existing transportation system in the study area including highway through lanes, auxiliary lanes, interchanges, interchange spacing, intersections, right of way, arterial lanes, transit, rail and bike/pedestrian facilities.
2. Collect information from other applicable plans and studies in the region.
3. Document the use of the transportation system defined in terms of:
   - Geographic locations of the origins and destinations
   - Vehicle classification (commercial vs passenger)
   - Mode of travel
4. Estimate future travel demands in the study area using the trip and traffic demand forecast 2025 base-year model and a validated and calibrated 2050 out-year model, and using the most current land-use projections.
5. Estimate the present and future travel time reliability, hours of delay and vehicular through-put for roadway segments for peak travel periods in the study area to identify problem locations which operate or may operate in the future at unsatisfactory levels. Traffic simulation models and studies including the impact to the interface with local roadways for the alternatives will be required.
6. Compare future travel demands to existing highway capacity and identify the kinds of travel patterns that are inadequately served.
7. Indicate current highway and interchange complex features, including functional classifications, lane configurations, roadway and right-of-way widths, bicycle and pedestrian facilities, traffic volumes (roadway and intersection counts), utilities, structures, and environmental factors and conditions, and any safety concerns.
8. Survey will likely not be required, with available state-wide Lidar data to be utilized. A need for discrete survey or verification of vertical elevations may be required with scope and methodology to be determined.
9. Identification of environmental concerns discovered during the course of the study which could have a substantial negative impact on immediate and future implementation, or eliminate an alternative from further consideration. This may include the potential for a noise study.

10. Investigate appropriate access, highway, interchange, and intersection alternatives which balance current socio-economic considerations in light of possible future capacity needs and adjoining projects?

11. Consider transportation improvements planned for I-95 and for other adjacent and connecting arterials and modes of transportation.

12. Provide an easy-to-read pictorial summary that helps evaluate costs, benefits, and trade-offs of each alternative to the highway and local systems in a meaningful way for the general public.

3. CONSULTANT RESPONSIBILITIES AND DUTIES

This scope of work was developed to provide guidance to the selected Consultant in managing and conducting a PEL study to provide an improved overview and understanding of I-95, Exits 19 – 27A. The Consultant team (hereinafter referred to as the Consultant) shall evaluate the existing and future operating conditions and features of this segment of I-95. Over the course of this study, the Consultant shall produce an existing-conditions assessment report with the goal of identifying existing and anticipated problem areas. Other interim stand-alone reports and electronic files, such as those related to the traffic-analysis details, may also be required. The Consultant shall ultimately produce a PEL Report for I-95 Exits 19 – 27A with the goal of expressing a common vision for the study area and providing recommended phasing that could be implemented.

The Consultant is responsible for conducting project coordination, public and agency participation, developing conceptual designs, environmental and design data collection, and alternatives analysis as described in the following sections.

4. WORK DURATION

The time period for the work described in this scope is approximately 24 months.

5. WORK PRODUCT

The work in the scope of services for this project will be contracted on a cost plus fixed-fee basis, as determined by the Connecticut Department the Transportation, hereafter referred to as CTDOT. The Consultant work products may include:

1) Project initiation and management plans
2) Project management and quality control plan
3) Agency coordination and public outreach plan
4) Schedules
5) Monthly progress reports
6) Meeting minutes
7) Reports
   • Existing conditions assessment reports
   • Traffic modelling calibration, validation and assumptions report
   • A narrative for each type of model describing how the study area was determined.
   • Traffic-analysis reports
   • Structure type study reports
   • PEL study report
8) Other reports and documentation as described in following work product discussions related to specific tasks.

The Consultant will produce documents and deliverables in a form that can be incorporated by reference, as appropriate, in subsequent NEPA document(s) as outlined in Appendix A to 23 CFR Part 450 - Linking the Transportation Planning and NEPA Processes.

Detailed work product requirements are described in the following sections.
6. **WORK PRODUCT COMPLETION**

All submittals must be reviewed and determined to be acceptable by the CTDOT contract administrator or designee.

7. **SCOPE OF WORK ORGANIZATION**

This draft scope of work has been reviewed by the Department and reflects a plan of approach based on the known goals. One factor determining the selection of a Consultant is the ability of that Consultant to analyze the project goals, evaluate the work elements, and formulate a work plan. This process may produce new approaches or modification to the project work elements. Because of that, all Consultants should be aware that the final scope of work for the project will be produced by the selected Consultant, subject to Department review and approval.
SECTION 2
STUDY WORK TASK DESCRIPTIONS

The study will be conducted in accordance with the Statewide and Metropolitan Planning Regulation 23 CFR 450. The provisions linking planning and NEPA presented in Section 450.318 and Appendix A of 23 CFR 450 are to be followed. The findings of the PEL process will establish the Draft Purpose and Need, early action items and reasonable alternatives, logical termini and independent utility, programming priorities, timeframes, and funding to be used in updating transportation plans and transportation improvement programs (TIPs).

The study will include development and evaluation of alternatives based on a consideration of Purpose and Need, geometric, access, traffic, planning and environmental factors, the location of communities and other developed areas, and public and agency input.

This section establishes a general approach to the Consultant’s individual task responsibilities. The final scope of work will be developed by the Consultant, subject to approval by CTDOT. Proposals will be evaluated for innovative processes and approaches. The Consultant shall maintain the ability to perform all work tasks which are indicated below, in accordance with the forms and conditions contained herein, and the applicable CTDOT standards. The Consultant is also responsible for coordinating the required work schedule for those tasks accomplished by CTDOT and other agencies. The Consultant should review this entire section to identify applicable material. Contact the CTDOT/PM if clarification is required.

A project management plan shall be developed by the Consultant which satisfies the requirements of project development. This plan must be approved by the CTDOT/PM before starting the work. The activities of communication, public and agency outreach, project reviews, conceptual design, data gathering, documentation, and formal public notice should be planned by the Consultant and coordinated with the CTDOT/PM. The times of their accomplishment will overlap, and parallel paths of activity should be planned to finish the development phase in accordance with the shortest possible schedule. The type and number of meetings, documents, etc., will depend on the category and characteristics of the project work.

TASK 1 - PROJECT INITIATION AND CONTINUING REQUIREMENTS

A. Initial Project Meeting

An Assignment Meeting will be held with the appropriate disciplines, coordinated by the Consultant, and conducted by CTDOT. The meeting will review the project management plan, project scope, schedule, key milestones, and project study area boundary. The meeting may include an on-site inspection to familiarize the entire project team (CTDOT personnel, Consultant personnel, and key stakeholders) with the character and conditions of the area. The Consultant shall develop an invitation list in coordination with CTDOT, send notices with a draft agenda, and provide meeting minutes to all those invited.

B. Project Management Plan

The Consultant shall provide a project management plan for management coordination and control to ensure successful and timely completion of this study. The project management plan shall:

1. Include a detailed work plan, including schedule and cost breakdown for each subtask described in this scope of services
2. Identify the method for tracking budget and schedule for the duration of the project
3. Establish key project contacts within the project team and other stakeholders
4. Establish the project milestones
5. Include a quality control plan that describes the quality control process to be used on the project
C. Project Management Communication

1. The Consultant and the CTDOT project manager shall meet biweekly to review the cost, schedule status and progress of the work, as well as address unanticipated problems and potential solutions. The Consultant shall prepare status presentations at key milestones to update CTDOT, stakeholders, and resource agencies on the status and progress of the work. The project milestones include the following: scoping, Purpose and Need Statement, existing conditions assessment report, alternatives development/analysis, proposed action(s), funding/prioritization/phasing, and PEL report. The Consultant shall prepare for and participate in these meetings and shall provide documentation of the meetings such as agendas, presentation materials and meeting minutes.

2. The Consultant shall submit monthly cost and schedule reports to enable project monitoring. The contract budget and schedule shall be regarded as the baseline against which status and progress are measured and reported.

3. The Consultant shall submit working and final drafts on all work products in a timely manner to allow for adequate review and revision prior to final submittal schedules.

D. Public and Stakeholder Outreach

1. Key Stakeholder Interviews: Understanding ideas, perspectives and needs of the key stakeholders in the study area is critical for broadly supported decisions. At the start of the project, as coordinated with and approved by the CTDOT project manager, interviews will be conducted with key stakeholders to understand their respective interests, goals, issues and desired outcomes for the PEL study. An interview template will be prepared prior to conducting interviews. An overall summary of interview issues will be prepared after the interviews take place and results will be part of both the public participation plan and the innovation brainstorming workshop agenda.

The Consultant shall design and conduct a public and stakeholder engagement strategic plan throughout the study area to increase public awareness and establish a vision for the study area. This effort should encompass all of the required stakeholder and agency engagement for this PEL and future NEPA actions. In addition to traditional tactics, this effort should use virtual public involvement strategies where possible. Tasks include:

- Develop and implement a comprehensive stakeholder engagement plan with strategies to fit the needs and context of the study area.
- Include innovative means to engage stakeholders and solicit feedback during key points in the process that avoid redundancy, back tracking, and that promote efficiency in decision-making.
- Meet PEL agency and public scoping requirements

2. The stakeholder engagement plan shall at a minimum include:

- Preliminary identification of critical issues and problems.
- Recommendations of the proper level and means of involvement in the study by the public.
- Identification of stakeholders, resource agencies, community leaders, elected officials and key community groups, including consideration for typically under-represented communities such as environmental justice census blocks and communities with limited English proficiency, and recommendations of the level and means of involvement in the study by those identified.
- Identification of planned community events near the project study area that are scheduled during the study, for project team involvement, ensuring compliance with Title VI requirements.
- Description of participation methods, objectives, and where each fits into the schedule.

3. Public Outreach: Public meetings will be held to educate the public on the PEL process and to collect input about the vision for the highway, interchange, and intersection complex and associated concerns, and later to present the range of short-term and long-term alternatives to the public and collect input for recommendations. The number of meetings will be determined by the project team as the project progresses and in a manner that is sensitive to the study area components. Community coordination and communication efforts will be carried out in conjunction with the meetings. Public outreach could include corridor-wide public notifications such as press releases, post card mailing, social media, telephone town hall meetings, or other methods. Innovative methods and approaches are encouraged.
4. Outreach to Regional Partners and Small Groups: The Consultant will coordinate closely with regional partners and small groups to develop effective strategies for involving their respective constituencies and other key stakeholder groups. Various approaches may be used to engage and interact with the broader community, including utilizing existing communication channels such as planned events or pre-existing meetings when necessary.

5. On-going Outreach and Public Involvement Efforts: The Consultant team will support CTDOT staff by serving as a secondary project point of contact for the distribution of information to key stakeholders, agencies or the general public; to populate and manage the email/mailing lists and the contact database; to create content for CTDOT’s project website if one is established; to support the creation and distribution of media advisories; and, to advertise and communicate the public meetings.

6. Policy Meetings: an appropriate number of elected official / policy committee meetings will be required, to be determined by the project team.

**TASK 1 WORK PRODUCT:**

1. Project management and quality control plan
2. Monthly progress/status reports with cost and schedule reports
3. Stakeholder engagement plan
4. Resource agency, small group, and policy meeting materials, facilitation, and minutes
5. Public meeting materials, facilitation, and minutes
6. Miscellaneous meeting materials, facilitation, and minutes

All of the deliverables discussed in this task must be submitted to the CTDOT project manager once for review, and appropriate revisions must be made.

**TASK 2 - STUDY AREA CONDITIONS ASSESSMENT REPORT**

A. Obtain Necessary Trespass Rights and Permits

   The Consultant must apply for and obtain CTDOT encroachment permits for any work done within CTDOT right of way.

   Some activities may require work on land not controlled by CTDOT. In such cases the Consultant shall prepare the necessary paperwork and coordinate with the property owner or municipal entity in order to obtain the necessary written permission to enter the premises. The Consultant shall obtain any other permits, as required, for fieldwork activities.

B. Traffic Control

   The Consultant shall be prepared to provide traffic control for any of their field activities or for any supplemental survey that the Consultant may perform during the course of this project.
C. Traffic and Infrastructure Data Collection and Reporting

1. The Consultant shall review the Strategic Implementation Plan, I-95 West Corridor performed by CTDOT, discuss applicability of conclusions with the project team, identify potential gaps, and incorporate conclusions as necessary. The Consultant may be required to collect additional data, including crash data and traffic counts, within the project limits and surrounding roadway network impacted by the project. Ultimately the Consultant will prepare a report outlining the safety analysis findings. In the alternatives evaluation portion of the PEL study and any other sections that pertain to safety, the Consultant shall specifically identify how the build alternatives will mitigate the existing safety problems based on the safety assessments and on crash data collected.

2. Available traffic data shall be compiled from various state and municipal sources or counted in the field as required for the purposes of the study. The Consultant shall obtain origin and destination data, lane volume and speed data, and any other data available and applicable to the study. The Consultant shall compile the available traffic data and determine additional data needs, if any. Multiple recordings will likely be necessary to establish a typical condition. Daily vehicle classification counts will be collected at locations determined to be relevant to the study. Intersection turning movement count locations and origin/destination data are to be determined by the Consultant in coordination with CTDOT.

3. The Consultant, with CTDOT staff, shall map the existing lane volumes and speeds on I-95 within the project boundaries. Locations to be evaluated will be determined by the Consultant in coordination with CTDOT, with input from the project stakeholders.

4. Inventory shall be taken of the existing and planned infrastructure in the study area including, but not limited to: highway through and auxiliary lanes; interchanges, accesses, and connecting arterials; right of way widths; major utilities; bicycle and pedestrian facilities; structural constraints; adjacent land ownership characteristics (including future development); railroad facilities; and transit types / service levels including station locations, routes and frequency.

5. Traffic data and infrastructure inventory will be summarized in a report and in graphics in a simple and readily understandable format.

D. Travel Demand Forecasting

1. The Consultant shall document the existing travel markets that use the transportation system by using the CTDOT Cube Voyager travel demand model (not field surveys) to establish:
   a. Geographic locations of the origins and destinations
   b. Trip purpose (commuter/non-commuter trips)
   c. Local versus regional trips

2. The Consultant shall summarize land use and modeling data as provided by the CTDOT travel demand model (years 2025 and 2050). If it is determined necessary to perform any additional travel demand forecasting (e.g. to account for changed planned land use or travel network conditions), the Consultant shall develop a sub-area model specific to the project study area. The primary product of this work will be the 2050 travel demand forecasts approved for study use by CTDOT and FHWA. These forecasts will be used to develop 2050 AADT and peak hour traffic volumes for the corridor and arterial roadways, and as determined to be necessary, peak hour turning movements at signalized intersections and ramp terminals. Previously projected transit utilization may be incorporated into the study without new transit modeling being performed.

3. The Consultant shall perform reasonableness checks on information developed and derived from use of the CTDOT model. The Consultant shall use the approved CTDOT data sets and road network to ensure that the traffic analysis is compatible with the NEPA process.

4. The Consultant will be required to coordinate with CTDOT at determined milestones, which will require full documentation at each step.

5. Modeling shall be used to help understand the regional distribution of traffic, possible network changes in travel patterns for different design alternatives, and to help determine the spatial and temporal limits of the model. Impacts and benefits will also be identified.
E. Traffic Operations

1. Using the most recent data, the Consultant shall perform a study area travel time reliability analysis developed from travel time data that screens crashes, police action, and other incidents, weather events, special events, and establishes travel times for regularly occurring congestion. This will become the travel time baseline for evaluating potential alternatives.

2. The Consultant shall prepare a report identifying the existing AM and PM peak period operational characteristics and roadway geometric assessment along with identified safety issues, and provide a summarized problem statement of existing operational, safety and geometric deficiencies.

3. Measures of effectiveness for proposed traffic-improvement alternatives shall be determined with CTDOT, FHWA, and other stakeholders.

4. The Consultant shall use an appropriate combination of software tools to evaluate the traffic operations of the transportation system and report the agreed-upon measures of effectiveness. The Consultant shall perform study area and site-specific operational analyses using the appropriately calibrated model for the 2050 model volumes to help develop and screen alternatives that provide safety and operational benefits. Future travel demands shall be compared to existing study area capacity, and inadequately served traffic patterns shall be identified (such as the No-Build Alternative).

5. The Consultant will be required to coordinate with CTDOT Traffic at key milestones in the traffic analysis and approval process (i.e. validation and calibration, MOE selections, etc.) before additional work proceeds. Unless otherwise agreed by CTDOT, the Consultant shall use VISSIM, HCS, and Synchro to perform traffic analyses.

6. The Consultant shall prepare a preliminary list of existing and anticipated deficiencies in the study area, describing operational deficiencies of the transportation system in both traffic and roadway design, with description of the growth or changing needs in the study area along with an estimate as to the timeframe in which deficiencies will occur.

7. The Consultant shall identify short-term improvements that may provide operational benefits while remaining consistent with the identified long-term strategies. Specific locations will be determined by the Consultant in coordination with CTDOT.

F. Study Considerations

The consultant should consider the following within the goals and vision of the study:

- Transportation modeling, including the appropriate spatial and temporal limits of the model
- The appropriate level of analysis and Measures of Effectiveness (MOEs)
- Major and minor connections within the study area (access control)
- Transit, rail, bike and pedestrian needs and objectives
- Cross-connectivity for all modes of travel
- Study area functional needs and its influences within the Study model network
- Regional travel benefits

G. Conduct a Planning and Environmental Overview of the Study area

The analysis for this planning and environmental overview shall build from and be consistent with other planning and environmental studies completed or nearing completion in the project area. Environmental overview limits may be reduced or expanded depending upon the alternatives actually being studied. The use of GIS for data collection and data presentation is required. Coordination will be needed with key stakeholders in the study area to gather available data.

The following environmental resources are likely to be inventoried and analyzed. Resource data will be presented in technical memos, through graphics, or other methods determined by the Team during scoping. This list is not all-inclusive and is subject to change based on meetings with project stakeholders. Modifications to the list may be necessary depending on the results of the Innovation Brainstorming
Workshop. The level of effort anticipated for environmental analysis for each resource area will be discussed at the Assignment Meeting:

- Air quality
- Traffic noise
- Water resources and water quality
- Floodways and 100-year floodplain boundaries
- Coastal Resources
- Wetlands and other Waters of the US
- Threatened and endangered species, species of concern
- Parks, open spaces, trails, recreational resources, Section 4(f) and Section 6(f)
- Bicycle and pedestrian facilities
- Historic and archeologic resources
- Visual resources
- Hazardous materials
- Social conditions and environmental justice communities
- Cumulative impacts

Technical memos shall refer to and restate related issues heard from communications with the public, stakeholders, or otherwise.

Agency Data Requests - the Consultant may request that participating local agencies provide existing local land use and transportation plans, traffic counts, roadway striping plans (illustrating widths of lanes, roadway, and right of way), on-street parking inventory/utilization, digital photographs of different roadway segments, information on sidewalk and parkway features, and building set-back, when available.

**TASK 2 WORK PRODUCT:**

Reports must be submitted presenting the findings from the responsibilities described above in a clear and concise manner, including:

1. A stand-alone existing conditions-assessment report that identifies the existing safety, operational, travel time, geometric, and infrastructure issues of the study area.
2. A stand-alone modeling report that describes the approach and methodologies used for modeling. Electronic modeling data may also be provided to CTDOT or local agencies, as requested.
3. Interim lists and documentation of travel-demand forecasting and traffic-operations modeling, including results and effects from proposed improvements in relation to the no-action alternative.
4. Planning and environmental resource technical memos describing the assessment of existing planning and environmental resources and conditions in the study area. A summary of comments and key issues received at public/stakeholder meetings will be included.

The Consultant shall provide thorough QA/QC of documents prior to submittal. All deliverables discussed in this task will be submitted to CTDOT twice for review and revisions will be made, as appropriate. Should initial submittals be of less quality than expected, more than two reviews may be required.

**TASK 3 - DEVELOP A STATEMENT OF DRAFT PURPOSE AND NEED AND IDENTIFY GOALS FOR THE TRANSPORTATION SYSTEM**

The Consultant shall develop the following in collaboration with stakeholders:

A. Documentation and presentation of existing and expected deficiencies in the transportation system serving the study area including access.
B. Identification of goals and visions for the highway and interchanges.
C. Development of logical termini for possible improvements.
D. Production of a written statement of Draft Purpose and Need, to serve as a vision statement for the study area, based on identification of needs and deficiencies. The statement should reflect the sensitivity of the context of the corridor's communities to help reach their transportation goals by encouraging the consideration of land use, transportation, environmental and infrastructure needs in an integrated manner.

**TASK 3 WORK PRODUCT:**

1. Documentation and presentation of existing conditions and deficiencies in a clear and concise manner.
2. A summary of comments and key issues received at stakeholder/public meetings.
3. Memorandums documenting the decisions made regarding goals and visions for the highway, logical termini, and Draft Purpose and Need statement.

All the deliverables discussed in this task will be submitted to CTDOT twice for review and appropriate revisions made. The Consultant should assume that CTDOT Environmental Planning, CTDOT Strategic Planning, and CTDOT Engineering reviews will happen concurrently, and FHWA review will occur subsequently.

**TASK 4 - PLANNING AND ENVIRONMENTAL LINKAGE (PEL) STUDY**

The PEL study must express a common vision between CTDOT and stakeholders for the future operational functionality and access management of the study area.

**A. Alternatives Creation**

The Consultant shall lead efforts to develop basic concepts for alternatives in collaboration with the CTDOT Project Management Team. In addition to the No-Build Alternative, the Consultant shall develop short-term and long-term alternatives at both the interstate and local road levels (where necessary), which:

- Meet the Draft Purpose and Need
- Balance regional mobility with local connectivity needs and access management
- Enhance study area safety
- Consider unconventional and innovative approaches including ITS, ATM and TDM as part of the solution, and reflect on possible developments in the transportation industry
- Consider the most appropriate use of the existing right of way, maximum right-of-way capacity, and need for additional right of way
- Consider context-sensitive solutions and aesthetics

**B. Alternative Development**

The Consultant shall be prepared to perform survey work in specific areas and to the level needed to support design work. Aerial survey that is currently available will largely suffice, supplemented with additional field survey of important features such as hydraulic and utility facilities, as necessary. Additional field survey may use technologies such as LiDAR as approved by the Project Manager. Additional field survey will be considered Extra Work.

It is CTDOT’s intention to participate in the basic roadway engineering for the conceptual level alternatives. More detail will be needed in some areas to support screening, and the Consultant shall be prepared to participate in roadway engineering and provide other design disciplines up to and including performing the full range of basic engineering to establish the feasibility and potential impacts of an alternative.

The conceptual design for the roadway alignments, interchange and intersection configurations, roadway templates, lane additions, pedestrian facilities, bicycle facilities, and major structures (bridges, grade separations, retaining walls, etc.) included in proposed actions will be completed to approximately 5% design so that planning-level cost estimates can be established by the Consultant. This may also include short-term improvements as identified in the analysis.

**Alternatives Screening**

The Consultant shall utilize a screening process appropriate to the PEL process. A two- or three-step screening process through which the level of analysis detail becomes greater as the number of alternatives reduces shall be implemented. Several basic measures shall be used to judge alternatives. This evaluation is
intended to illuminate the issues and provide a coherent discussion prior to selecting a recommended alternative. The Consultant will work with CTDOT and stakeholders to develop evaluation criteria and will submit the criteria to FHWA for review. The following measures shall be included:

- **Operational Effectiveness** - This analysis should identify how each alternative addresses deficiencies and needs as identified in Tasks 2 and 3. The analysis should also identify negative upstream, downstream and any other roadway-network consequences of proposed improvements. For estimating purposes, it is anticipated that a general analysis will be done on initial screening of alternatives and a more detailed analysis will be required for up to 6 short-term alternatives and 3 long-term alternatives. Detailed analysis will consider the AM and PM peak hour to determine how well each alternative addresses the deficiencies and needs identified.

- **Economic Feasibility** - This analysis should compare the alternatives in terms of whether the benefits are commensurate with the costs. It also should consider the availability of funds for construction and operation, as well as equity distribution of costs and benefits.

- **Socio and Environmental Feasibility** - Impacts of each alternative on important environmental resources and feasibility regarding social and environmental issues and regulations shall be analyzed. Conceptual avoidance and minimization measures should be developed following the identification of impacts and concerns.

C. **Documentation of the Recommended Alternative or Packages**

Following screening, the proposed action, or actions, will be documented and the conceptual design refined as needed to avoid impacts and/or provide mitigation. The Consultant shall:

- Provide an easy-to-read pictorial summary guide that helps evaluate the pros and cons of each alternative in a creative and meaningful way.

- Recommend ROW needs in the study area expressed as typical sections and as part of any proposed interchange reconstruction concept. The recommended ROW for proposed actions will be identified.

- A three-dimensional model will be developed where possible for the proposed actions. This will be done by the Consultant as directed by CTDOT. This information shall be sufficient to determine general cut and fill limits, toe of slope locations, right of way needs and easement requirements, earthwork requirements, structural requirements, and water-quality facilities.

D. **Proposed Actions Phasing/Financing/Funding Options**

The Consultant shall establish meaningful project phases and connect them with potential funding packages. Given the variability in the amount and timing of funding, the Consultant will identify and prioritize projects for a range of funding scenarios to ensure that the study area is getting maximum benefit for the available funding. As a part of this, the Consultant will investigate various state and federal funding mechanisms that can be used in part or in combination to develop larger project packages. Other options such as business-improvement districts, tax-increment financing, public/private partnerships, tolling, and new federal programs such as livable communities will also be reviewed for applicability on the study area.

E. **Prepare the PEL Study Report**

The Consultant shall prepare the final PEL report in conformance with current best practices that includes an executive summary and the following chapters:

- Introduction including Draft Purpose and Need Statement
- Alternative Development and Analysis including the No-Action Alternative
- Study Recommendations
- Affected Planning and Environmental Consequences
- Agency Coordination and Public Involvement
- Next Steps

In addition to the PEL Study report, technical memos/reports will be updated to include environmental consequences, and public and agency comments. The level of detail in each technical report will be
determined through coordination with CTDOT. The reports shall be provided in a software format that can be read on an electronic device.

**TASK 4 WORK PRODUCT:**

1. A stand-alone alternatives assessment report that describes the short-term and long-term alternatives screening process used, summarizes the findings of the analyses, and provides a recommendation for a preferred alternative.
2. A PEL Study Report, which presents the findings described above in a clear and concise manner.
3. Traffic, Planning and Environmental Resource technical memos and reports, and a summary of comments and key issues received as a result of the implementation of the public participation work plan described above.
4. FHWA PEL Questionnaire

**TECHNICAL AND PEER REVIEW**

All study reports and design work products will be reviewed, and comments provided by CTDOT.
APPENDIX A
PEL QUESTIONNAIRE
Downloaded July 19, 2019

This questionnaire is intended to act as a summary of the Planning process and ease the transition from planning to a National Environmental Policy Act (NEPA) analysis. Often, there is no overlap in personnel between the planning and NEPA phases of a project, so consequently much (or all) of the history of decisions made in the planning phase is lost. Different planning processes take projects through analysis at different levels of detail. NEPA project teams may not be aware of relevant planning information and may re-do work that has already been done. This questionnaire is consistent with the 23 CFR 450 (Planning regulations) and other FHWA policy on Planning and Environmental Linkage (PEL) process.

The Planning and Environmental Linkages study (PEL Study) is used in this questionnaire as a generic term to mean any type of planning study conducted at the corridor or subarea level which is more focused than studies at the regional or system planning levels. Many states may use other terminology to define studies of this type and those are considered to have the same meaning as a PEL study.

At the inception of the PEL study, the study team should decide how the work may later be incorporated into subsequent NEPA efforts. A key consideration is whether the PEL study will meet standards established by NEPA regulations and guidance. One example is the use of terminology consistent with NEPA vocabulary (e.g. purpose and need, alternatives, affected environment, environmental consequences).

Instructions: These questions should be used as a guide throughout the planning process, not just answered near completion of the process. When a PEL study is started, this questionnaire will be given to the project team. Some of the basic questions to consider are: “What did you do?” “What didn't you do?” and “Why?”. When the team submits a PEL study to FHWA for review, the completed questionnaire will be included with the submittal. FHWA will use this questionnaire to assist it in determining if the study meets the requirements of 23 CFR §§ 450.212 or 450.318. The questionnaire should be included in the planning document as an executive summary, chapter, or appendix.

1. BACKGROUND:
   A. Who is the sponsor of the PEL study? (state DOT, Local Agency, other)
   B. What is the name of the PEL study document and other identifying project information (e.g. sub-account or STIP numbers, long-range plan, or transportation improvement program years)?
   C. Who was included on the study team (Name and title of agency representatives, Consultants, etc.)?
   D. Provide a description of the existing transportation facility within the corridor, including project limits, modes, functional classification, number of lanes, shoulder width, access control and type of surrounding environment (urban vs. rural, residential vs. commercial, etc.)
   E. Provide a brief chronology of the planning activities (PEL study) including the year(s) the studies were completed.
   F. Are there recent, current, or near future planning studies or projects in the vicinity? What is the relationship of this project to those studies/projects?

2. METHODOLOGY USED:
   A. What was the scope of the PEL study and the reason for completing it?
   B. Did you use NEPA-like language? Why or why not?
   C. What were the actual terms used and how did you define them? (Provide examples or list)
   D. How do you see these terms being used in NEPA documents?
   E. What were the key steps and coordination points in the PEL decision-making process? Who were the decision-makers and who else participated in those key steps? For example, for the corridor vision, the decision was made by state DOT and the local agency, with buy-in from FHWA, the USACE, and USFWS and other resource/regulatory agencies.
   F. How should the PEL information be presented in NEPA?
3. AGENCY COORDINATION:
   A. Provide a synopsis of coordination with Federal, tribal, state and local environmental, regulatory and resource agencies. Describe their level of participation and how you coordinated with them.
   B. What transportation agencies (e.g. for adjacent jurisdictions) did you coordinate with or were involved during the PEL study?
   C. What steps will need to be taken with each agency during NEPA scoping?

4. PUBLIC COORDINATION:
   A. Provide a synopsis of your coordination efforts with the public and stakeholders.

5. PURPOSE AND NEED FOR THE PEL STUDY:
   A. What was the scope of the PEL study and the reason for completing it?
   B. Provide the purpose and need statement, or the corridor vision and transportation goals and objectives to realize that vision.
   C. What steps will need to be taken during the NEPA process to make this a project-level purpose and need statement?

6. RANGE OF ALTERNATIVES: Planning teams need to be cautious during the alternative screen process; alternative screening should focus on purpose and need/corridor vision, fatal flaw analysis, and possibly mode selection. This may help minimize problems during discussions with resource agencies. Alternatives that have fatal flaws or do not meet the purpose and need/corridor vision will not be considered reasonable alternatives, even if they reduce impacts to a particular resource. Detail the range of alternatives considered, screening criteria, and screening process, including:
   A. What types of alternatives were looked at? (Provide a one or two sentence summary and reference document.)
   B. How did you select the screening criteria and screening process?
   C. For alternative(s) that were screened out, briefly summarize the reasons for eliminating the alternative(s). (During the initial screenings, this generally will focus on fatal flaws.)
   D. Which alternatives should be brought forward into NEPA and why?
   E. Did the public, stakeholders, and agencies have an opportunity to comment during this process?
   F. Were there unresolved issues with the public, stakeholders, and/or agencies?

7. PLANNING ASSUMPTIONS AND ANALYTICAL METHODS:
   A. What is the forecast year used in the PEL study?
   B. What method was used for forecasting traffic volumes?
   C. Are the planning assumptions and the corridor vision/purpose and need statement consistent with each other and with the long-range transportation plan? Are the assumptions still valid?
   D. What were the future year policy and/or data assumptions used in the transportation planning process related to land use, economic development, transportation costs, and network expansion?

8. ENVIRONMENTAL RESOURCES (wetlands, cultural, etc.) reviewed. For each resource or group of resources reviewed, provide the following:
   A. In the PEL study, at what level of detail was the resource reviewed and what was the method of review?
   B. Is this resource present in the area and what is the existing environmental condition for this resource?
   C. What are the issues that need to be considered during NEPA, including potential resource impacts and potential mitigation requirements (if known)?
   D. How will the planning data provided need to be supplemented during NEPA?

9. List environmental resources you are aware of that were not reviewed in the PEL study and why. Indicate whether or not they will need to be reviewed in NEPA and explain why.

10. Were cumulative impacts considered in the PEL study? If yes, provide the information or reference where the analysis can be found.

11. Describe any mitigation strategies discussed at the planning level that should be analyzed during NEPA.
12. What needs to be done during NEPA to make information from the PEL study available to the agencies and the public? Are there PEL study products which can be used or provided to agencies or the public during the NEPA scoping process?

13. Are there any other issues a future project team should be aware of?

   A. Examples: Controversy, utility problems, access or ROW issues, encroachments into ROW, problematic landowners and/or groups, contact information for stakeholders, special or unique resources in the area, etc.