

SCOPE OF WORK BASIC CONTRACT
I-270 AND VASQUEZ BLVD INTRCHANGE, AND
US 85/E. 60TH AVE/E. PARKWAY DR INTERSECTION

PEL STUDY

CONTRACT TYPE

- Specific Rate of Pay
- Cost Plus Fixed Fee
- Lump Sum

CONTRACT DATE: TBD

PROJECT NUMBER: CO 2706-040

PROJECT LOCATION: I-270/ Vasquez Blvd, and US 85/E. 60th Ave/E. Parkway Dr

PROJECT CODE: 21083

THE COMPLETE SCOPE OF WORK INCLUDES THIS DOCUMENT (ATTACHED TO THE CONTRACT FOR CONSULTANT SERVICES) AND, IF REFERENCED,

SECTION 1 PROJECT SPECIFIC INFORMATION	Dated:
SECTION 2 PROJECT MANAGEMENT AND COORDINATION	Dated:
SECTION 3 EXISTING FEATURES	Dated:
SECTION 4 REFERENCE ITEMS NEEDED BY THE CONSULTANT	Dated:
SECTION 5 GENERAL INFORMATION	Dated:
SECTION 6 STUDY WORK TASK DESCRIPTIONS	Dated:
APPENDIX	Dated:

SECTIONS 3, 4, AND 6 ARE AVAILABLE AS SEPARATE DOCUMENTS AND APPLY TO THE CONTRACT ONLY BY REFERENCE

Comments regarding this scope may be directed to:

David Wells

CDOT Agreements Office,

(303)757-9480

TABLE OF CONTENTS

SECTION 1 PROJECT SPECIFIC INFORMATION..... 3

1 PROJECT LOCATION..... 3

2 PROJECT BACKGROUND..... 4

3 PROJECT GOALS..... 4

4 PLANNED IMPROVEMENTS..... 6

5 WORK DURATION..... 6

6 CONSULTANT RESPONSIBILITIES AND DUTIES..... 6

SECTION 2 PROJECT MANAGEMENT AND COORDINATION..... 8

SECTION 3 EXISTING FEATURES..... 9

SECTION 4 REFERENCE ITEMS NEEDED BY THE CONSULTANT..... 9

1 CURRENT CDOT MANUALS, SPECIFICATIONS, STANDARDS, PEL HANDBOOK, ETC. . 9

SECTION 5 GENERAL INFORMATION..... 9

1 NOTICE TO PROCEED..... 9

2 PROJECT COORDINATION.....10

3 ROUTINE REPORTING AND BILLING.....10

4 PERSONNEL QUALIFICATIONS.....10

5 CDOT COMPUTER/SOFTWARE INFORMATION.....10

6 COMPUTER DATA COMPATIBILITY.....11

7 PROJECT DESIGN DATA AND STANDARDS.....11

SECTION 6 STUDY WORK TASK DESCRIPTIONS.....12

TASK 1 - PROJECT INITIATION AND CONTINUING REQUIREMENTS.....12

TASK 2 – STUDY AREA CONDITIONS ASSESSMENT REPORT.....16

TASK 3 DEVELOP A STATEMENT OF PURPOSE AND NEED AND IDENTIFY GOALS FOR THE STUDY AREA.....20

TASK 4 – PLANNING AND ENVIRONMENTAL LINKAGE (PEL) STUDY.....21

TASK 5 PUBLIC INVOLVEMENT COORDINATION.....22

APPENDIX A REFERENCES.....24

Federal Highway Administration.....27

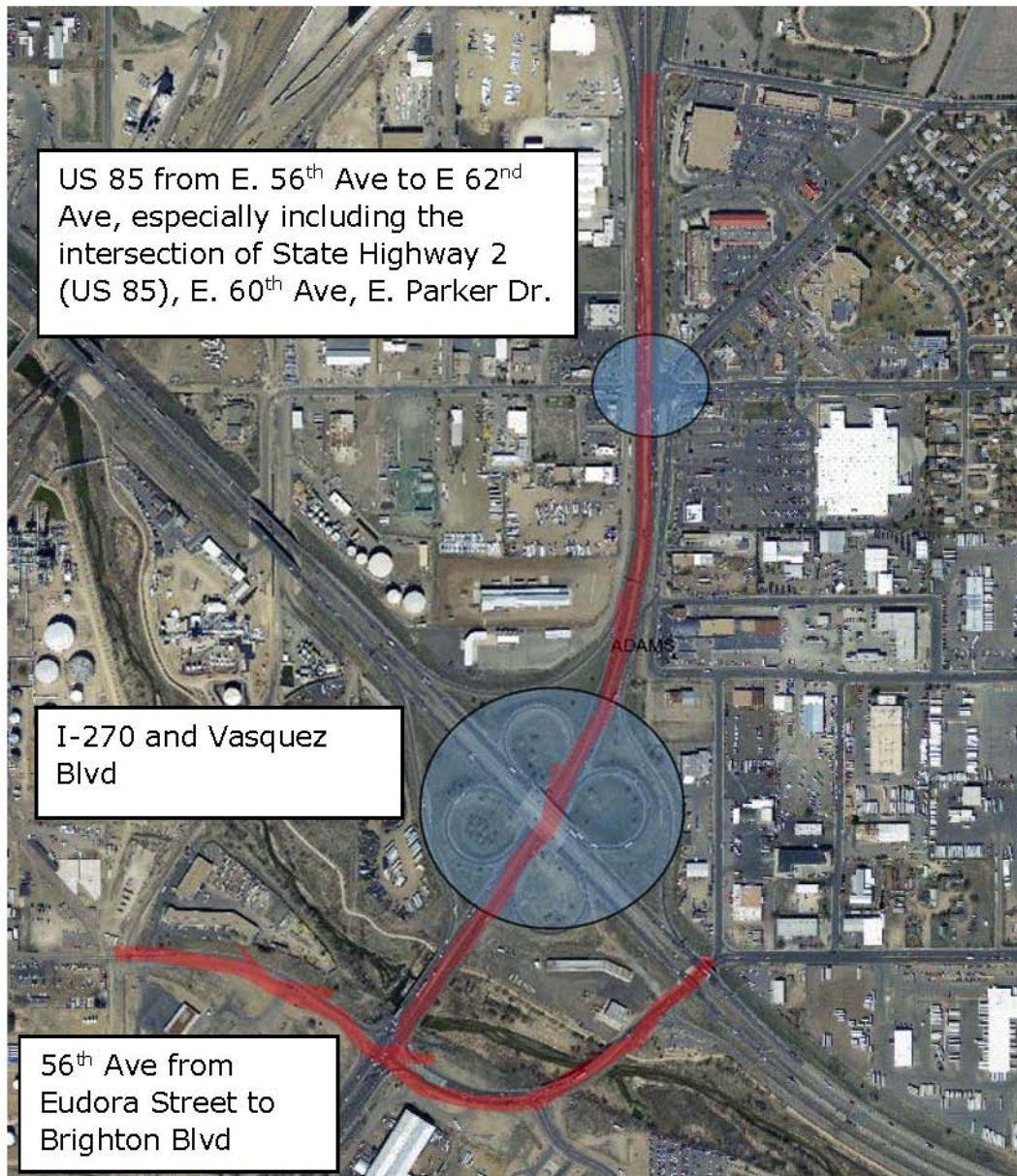
Planning/Environmental Linkages Questionnaire.....27

Traffic Modeling Sample Scope of Work Micro-Simulation Analysis.....30

SECTION 1 PROJECT SPECIFIC INFORMATION

1 PROJECT LOCATION

The Study Area for this project includes three elements, the interchange of I-270 and Vasquez Blvd, US 85 from E. 56th Ave to E 62nd Ave, especially including the intersection of State Highway 2 (US 85), E. 60th Ave, E. Parker Dr., and 56th Ave from Eudora Street to Brighton Blvd (Study Area). This Study Area is located in Adams County and Commerce City.



2 PROJECT BACKGROUND

The intent of this PEL Study is to define an ultimate vision interchange of I-270 and Vasquez Blvd, US 85 from E. 56th Ave to E 62nd Ave, especially including the intersection of State Highway 2 (US 85), E. 60th Ave, E. Parker Dr., and 56th Ave from Eudora Street to Brighton Blvd. During the Study, CDOT intends to coordinate with Commerce City, Adams County and the City and County of Denver to define the best transportation alternative for the Study Area. Environmental and resource concerns, right-of-way issues, traffic and signalization issues will also be addressed in the Study with recommendations for addressing these issues during further NEPA actions and final design.

3 PROJECT GOALS

The objective of this Project is to work with Public Stakeholders to develop a common vision for the future of the Study Area that will address existing safety and capacity issues and to recommend an alternative that will better serve the traveling public and long-term transportation needs. Transportation improvement alternatives that balance anticipated access needs with mobility will also be identified in the study.

This study should follow the established CDOT PEL process so information and recommendations identified in the study may be used to streamline the NEPA process for future projects.

CDOT Region 1 anticipates that Commerce City, Adams County, and the City and County of Denver (Agencies) will participate in the study.

The objectives of the Study are:

1. To identify the goals, objectives and visions of various jurisdictions for each element of the Study Area.
2. To complete the study in a manner that will provide a foundation from which CDOT and the Agencies can build support for implementing the identified vision. This will include:
 - Public Outreach
 - Outreach to State and Federal Resource agencies
 - Documentation consistent with commonly accepted standards so information developed in this study can be used as a starting point for any future NEPA processes and the FHWA Interstate Access Request process.
3. Identify existing transportation related deficiencies from an operational and a safety perspective.
4. Identify the existence of any major environmental and/or resource agency concerns which could have a substantially negative impact on implementing improvements.
5. Assist CDOT, Public Agencies, and resource agencies in identifying issues of importance to each respective agency

6. Assist stakeholders to determine needs for preservation of public right-of-way.
7. Establish a common vision and supporting goals and objectives for the Study Area as a whole. This vision must address both regional needs and the discrete local needs of the each element of the Study Area.
8. Recommend a set of alternatives which;
 - a) Balances regional mobility with local access and connectivity needs
 - b) Enhances aesthetics, safety and urban design components and multi-modal objectives.
 - c) Provide economical immediate and long-term benefits.
9. Provide layout and template for each element of the Study Area
10. Provide right-of-way footprints for the proposed alternatives

In order to meet these objectives the Study shall:

1. Recommend appropriate cross sections and horizontal envelopes which will enable CDOT and the Local Agencies to preserve and enhance ROW to accommodate projected future needs.
2. Document the existing conditions in the Study Area including highway through lanes, right-of-way and access; arterial lanes and access; and transit types / service levels.
3. Document the travel markets that use the transportation system. Travel markets may be defined in terms of:
 - Geographic locations of the origins and destinations
 - Trip purpose
 - Length of trip
4. Estimate future travel demands in the study area using DRCOG's 2015 base year model and 2040 out year model
5. Estimate the present and future levels-of-service and determine if the existing transportation infrastructure will operate or may operate in the future at unsatisfactory levels (recently completed traffic studies and information from DRCOG may be used to supplement this information).
6. Compare future travel demands to existing capacity at select screenlines and identify the kinds of travel patterns that are inadequately served.
7. Assist CDOT and the jurisdictions in arriving at a common vision of the Study Area's transportation functions and the desired environment.
8. Advise the Agencies as to the existence of environmental concerns discovered during the course of the study which could have a substantially negative impact on future implementation of the common vision
9. Provide an easy-to-read pictorial summary guide that helps evaluate the pros and cons of each alternative in a creative and meaningful way.
10. Develop and analyze conceptual cost of proposed improvements.
11. Conduct a public outreach effort

4 PLANNED IMPROVEMENTS

CDOT has decided to hire a consultant to assist in managing and conducting a Planning and Environmental Linkage Study to provide an improved overview and understanding of the interchange of I-270 and Vasquez Blvd, US 85 from E. 56th Ave to E 62nd Ave, especially including the intersection of State Highway 2 (US 85), E. 60th Ave, E. Parker Dr., and 56th Ave from Eudora Street to Brighton Blvd. The selected consultant team (hereinafter referred to as the Consultant) shall evaluate the existing and future operating conditions and features of the Study Area. The consultant shall produce a Study Area Conditions Assessment Report with the goal of identifying existing and anticipated problem areas and identifying both the conflicting and the congruent visions of each jurisdiction and CDOT. The consultant shall then produce a PEL Study for the project location with the goal of expressing a common vision.

Descriptions of the consultant responsibilities and duties are further described in this document.

5 WORK DURATION

The time period for the work described in this scope is approximately 15 months from the date of the notice to proceed.

6 CONSULTANT RESPONSIBILITIES AND DUTIES

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

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.

7 WORK PRODUCT

The Consultant work products are:

- A. Reports
 - a) Study Area Conditions Assessment Report
 - b) Planning and Environmental Linkage Report
 - c) Conceptual Design Plan Set
- B. Agency Coordination and Public Outreach Plan
- C. Project Coordination
- D. Schedules
- E. Meeting Minutes
- F. Monthly Progress Reports
- G. Task Work Products as described in Section 6
- H. Federal Highway Administration Planning/Environmental Linkages Questionnaire

Detailed work product requirements are described in the following sections. All work required to complete this Scope of Work requires the use of English Units.

8 WORK PRODUCT COMPLETION

All submittals must be accepted by the CDOT Contract Administrator or designee.

9 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 with input from the selected Consultant.

SECTION 2 PROJECT MANAGEMENT AND COORDINATION

1 CDOT CONTACT

The Contract Administrator for this project is: Markos Atamo, Ph.D., P.E. Region 1 North Engineering Program Resident Engineer. Active day-to-day administration of the contract will be done by:

- A. David Kosmiski, P.E.
- B. Title: Project Manager
- C. Address: 4670 Holly Street Unit D, Denver Colorado 80216
- D. Telephone: (303) 398-6745
- E. Fax: (303) 398-6781

2 PROJECT COORDINATION

Coordination may be required with the following:

- A. Cities
 - a) Commerce City
 - b) City and County of Denver
- B. Counties
 - a) Adams

Note: Entities listed above shall be referred to as Stakeholders.

- C. Regional Transportation District (RTD)
- D. Denver Regional Council of Governments (DRCOG)
- E. Federal Highway Administration (FHWA)
- F. Urban Drainage and Flood Control District
- G. CDOT Region 1 and CDOT Environmental Programs Branch (EPB)

SECTION 3 EXISTING FEATURES

1 STRUCTURES

See CDOT Field Log of Structures

2 UTILITIES

Contact Utility Notification Center of Colorado (U.N.C.C.) at 1-800-922-1987.

3 IRRIGATION DITCHES

TBD

4 RAILROADS

TBD

Note: The above is a list of the known features in the area. It should not be considered as complete. The Consultant should be alert to the existence of other possible conflicts.

SECTION 4 REFERENCE ITEMS NEEDED BY THE CONSULTANT

1 CURRENT CDOT MANUALS, SPECIFICATIONS, STANDARDS, PEL HANDBOOK, ETC.

The consultant shall obtain and utilize the most recent CDOT adopted references including standards and specifications, manuals and software or as directed by the CDOT Project Manager.

SECTION 5 GENERAL INFORMATION

1 NOTICE TO PROCEED

Work will not commence until the written Notice-to-Proceed is issued by the State with certification from the Consultant that the work will be completed within the allotted time. Work may be required, night or day, on weekends, on holidays, or on split shifts. CDOT must concur in time lost reports prior to the time lost delays are subtracted from time charges. Subject to CDOT prior approval the time charged may exclude the time lost for:

- A. Reviews and Approvals.
- B. Response and Direction

2 PROJECT COORDINATION

A. Routine Working Contact

The routine working contact will be between the CDOT Project Manager (CDOT/PM) and the Consultant Project Manager (C/PM).

B. Project Manager Requirements

Each Project Manager will provide the others with the following:

- a) A written synopsis or copy of their respective contacts (both by telephone and in person) with others.
- b) Copies of pertinent written communications.

3 ROUTINE REPORTING AND BILLING

The Consultant will provide the following on a routine basis:

A. Coordination

Coordination of all contract activities by the C/PM

B. Periodic Reports and Billings

The periodic reports and billings required by CDOT Procedural Directive 400.2 (Monitoring Consultant Contracts).

C. Minutes of all Meetings:

The minutes will be completed and provided to the CDOT/PM within five (5) working days after the meeting. When a definable task is discussed during a meeting, the minutes will identify the "Action Item", the party responsible for accomplishing it, and the proposed completion date.

D. General Reports and Submittals

In general, all reports and submittals must be approved by CDOT prior to their content being utilized in follow-up work effort.

4 PERSONNEL QUALIFICATIONS

The Consultant Project Manager (C/PM) must be approved by the CDOT Contract Administrator. Certain tasks must be done by Licensed Professional Engineers (PE) or Professional Land Surveyors (PLS) who are registered with the Colorado State Board of Registration for Professional Engineers and Land Surveyors. All tasks assigned to the Consultant must be conducted by a qualified person on the Consultant team. The qualified person is a professional with the necessary education, certifications, (including registrations and licenses), skills, experiences, qualities, or attributes to complete a particular task.

5 CDOT COMPUTER/SOFTWARE INFORMATION

The consultant shall utilize the most recent CDOT adopted software. The primary software used by CDOT is as follows:

A.	Earthwork	InRoads
B.	Drafting/CADD	InRoads and Microstation with CDOT's formatting configurations and standards
C.	Survey	CDOT Inroads TMOSS
D.	Geometry	CDOT COGO (Coordinate Geometry)

E.	Bridge	CDOT Staff Bridge software shall be used in either design or design check
F.	Estimating	Transport (an AASHTO sponsored software)
G.	Specifications	Microsoft Word
H.	Traffic	Highway Capacity Software (HCS)
I.	Traffic Operations	Approved micro-simulation software
J.	Traffic Signals	Passer II-90, Synchro or HCS
K.	Traffic Model	Quick Response System (QRS) II, Synchro or HCS
L.	Hydraulics	Hydrologic Engineering Center's River Analysis System (HEC-RAS)
M.	Pavement Design	DARWin (AASHTO)
N.	Scheduling	Microsoft Project
O.	GIS	ESRI, ArcMap geodatabases (Projection: UTM NAD 83, Zone 13) (all maps and GIS data disseminated to Adams County should be projected into NAD 83, SP-Colorado central FIPS 0502 feet)
P.	Noise Modeling	TNM v2.5
Q.	Misc	Microsoft Word, Excel, Power Point
R.	Reports	Adobe Acrobat 7.0 Professional

6 COMPUTER DATA COMPATIBILITY

CDOT presently utilizes a data format which Consultants shall be required to use for submitting survey, photogrammetry and the design data: Inroads

The data format used by the Consultant to submit surveying and photogrammetric data shall be as determined by the CDOT/PM in coordination with the respective Region PLS. The data format for submitting design computer files shall be compatible with the latest version of the adopted CDOT program. The Consultant shall immediately notify the CDOT/PM if the firm is unable to produce the desired format for any reason and cease work until the problem is resolved. Refer to Table 1, Submittals, for additional information regarding the InRoads and TMOSS formats and the acceptable transmittal media.

7 PROJECT DESIGN DATA AND STANDARDS

A. General:

Appendix A is a list of technical references applicable to CDOT work. The consultant is responsible for ensuring compliance with the latest CDOT adopted version of the listed references. Conflicts in criteria shall be resolved by the CDOT/PM.

B. Specific Design Criteria:

Appendix B is a list of specific project criteria. The list is comprehensive and may

include items that are not required for a tasks defined in this scope. The Consultant shall submit any proposed changes to the pertinent criteria to the CDOT/PM at one of the periodic progress meetings prior to initiating design.

SECTION 6 STUDY WORK TASK DESCRIPTIONS

This section establishes the consultant's individual task responsibility. 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 .318 and Appendix A of 23 CFR 450 are to be followed.

The Study will be developed and documented 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. All final deliverables identified in this contract will be of such quality that they could be incorporated directly or by reference into these NEPA documents.

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 CDOT standards. Selected work tasks shall be assigned only after coordination and consultation with CDOT. The Consultant is also responsible for coordinating the required work schedule for those tasks accomplished by CDOT and other agencies. The Consultant should review this entire section to identify applicable material. Contact the Colorado Department of Transportation/Project Manager (CDOT/PM) if clarification is required (see Section 2.01).

The following activities of communication, consensus building, project team reviews, conceptual design, data gathering, documentation, and formal public notice should be planned by the Consultant and coordinated with the CDOT/PM. The time 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. A project plan shall be developed by the Consultant which satisfies the requirements of the project development. This plan must be approved by the Contract Administrator (see Section 2.01) before starting the work.

TASK 1 - PROJECT INITIATION AND CONTINUING REQUIREMENTS

A. Initial Project Meeting

An initial project kick-off meeting will be held, coordinated by the Consultant, and conducted by CDOT. 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 with the character and conditions of the area. The Consultant shall develop an invitation list in coordination with CDOT, 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. At the beginning of work under this contract, the Consultant shall prepare a detailed Project Management Plan. The Project Management Plan shall:

1. Include a detailed work plan, including schedule and cost breakdown for each sub-task 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
6. A detailed work plan, including schedule and cost breakdown for each sub-task described in this scope of services
7. Establish the key decision points and inform all participants as to how and when they can provide input

C. Project Management Communication

The Consultant and the CDOT Project Manager shall meet at least monthly to review the cost, schedule status and progress of the work, as well as address unanticipated problems and potential solutions. Twelve (12) monthly progress meetings with the CDOT Project Manager and the Consultant will be held. The Consultant shall prepare status presentations at key milestones to update the Agencies on the status and progress of the work. The project milestones include: Scoping, Purpose and Need Statement, Alternatives Development/Analysis, Preferred Alternative(s), Funding/Prioritization/Phasing, and PEL Report. The Consultant shall be responsible for preparing and keeping a record of meeting minutes. The Consultant should carefully anticipate the number of meetings that shall be necessary, as the cost of all meetings shall be included as part of the contract price. 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.

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.

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. The Consultant invoices shall be prepared to show cost against major milestone tasks.

D. Consensus Building Process and Public Outreach

CDOT will assist the Consultant in organizing all Stakeholder meetings and Public Meetings. It is anticipated that a minimum of two Consultant/Stakeholder meetings will be necessary in this Task. In addition to this, it is anticipated that numerous other contacts will need to be made with all of the public agency stakeholders, both at the staff level and the elected official level, to communicate and negotiate the stakeholders' concerns about specific problems and visions for the Study Area.

1. Key Stakeholder Interviews: Understanding ideas, perspectives and needs of the key stakeholders in the corridor is critical for broadly supported decisions. At the start of the project, as coordinated with and approved by the CDOT Project Manager, interviews will be conducted with key stakeholders (identified in Section 2, Part A and B) subsequent to the first Technical Working Group (TWG) meeting described below to understand their respective interests, goals, issues and desired outcomes for the Study Area. 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 the public participation plan. These interviews will be conducted by phone. It is anticipated that up to 6 (six) Key Stakeholder Interviews will be held.

The Consultant shall develop an Agency Coordination and Public Outreach Plan which shall at a minimum include:

- Preliminary identification of critical issues and problems in need of resolution.
- Recommend the proper level and means of involvement in the study by the public
- Identification of Resource Agencies with an interest in the Study Area and the level of consultation required with each agency for successful completion of the study.
- Identification of stakeholders, resource agencies, community leaders, elected officials and key community groups and recommend level and means of involvement in the study by those identified.
- Identification of planned community events near the highway, interchange and intersection that are scheduled during the study.
- Description of participation methods, objectives, and where each fits into the schedule.

2. **Technical Working Group (TWG) Coordination and Meetings:** The TWG will be composed of representatives from the City and County of Denver, Commerce City, Adams County, CDOT, RTD, DRCOG, the Consultant team, and FHWA, and will serve as the focal point for the stakeholder engagement process and is the primary mechanism to directly interact and engage the Study Area communities and stakeholders. The project team will coordinate with the TWG to determine the proper level of involvement and engagement required for their respective elected officials and other associated stakeholder groups. It is anticipated that there will be eight (8) facilitated TWG meetings that will be the forum for addressing issues and making recommendations as a group. As coordinated with and approved by the CDOT Project Manager, specific issues will be addressed through consultations with the affected jurisdictions. Meeting agendas, associated materials and summaries will be prepared for each meeting. Community coordination and follow up will occur for each meeting as needed. Operating guidelines and a TWG work plan will be established to define the group's goals and how it will function.
3. **Resource Agency Scoping Phone Calls/Meetings:** As coordinated with and approved by the CDOT Project Manager, individual meetings will take place (five (5) total) to coordinate and consult with CDPHE (Water Quality and Air Quality), SHPO, USACE, EPA, and UDFCD.
4. **Public Meetings:** public meetings will be held at the beginning of the process to educate the public on the PEL process and to collect input about the vision for the Study Area and associated concerns, and later to present the range of alternatives to the public and collect input for recommendations. It is anticipated that there will be two (2) meetings total. Both meetings are anticipated to be an open house format. Community coordination and communication efforts will be carried out in conjunction with the meetings. Public meetings will include Study Area wide public notifications such as press releases, post card mailing or other notice.
5. **Outreach to Regional Partners and Small Groups:** The consultant will coordinate closely with the TWG and elected officials to develop effective strategies for involving their respective constituencies and other key stakeholders 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. It is anticipated that up to four (4) separate meetings will be required to develop these strategies.
6. **On-going Outreach and Public Involvement Efforts:** The consultant team will support CDOT 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 including website pages for CDOT's project website; to support the creation and distribution of media advisories; to distribute project exhibits, and to advertise and communicate the public meetings.

TASK 1 WORK PRODUCT: Project Management Plan, contract budget and schedule and quality control plan, monthly progress report, and payment

and review milestones; Agency Coordination and Public Outreach Plan presentation materials, and meeting minutes.

NOTE:

For Tasks 2 and 3, the Agencies will assist the Consultant in the preparation of the different work products. For these tasks, the responsibilities of the Agencies and of the Consultant are defined.

TASK 2 – STUDY AREA CONDITIONS ASSESSMENT REPORT

The work product of this task is a Study Area Conditions Assessment Report. The report shall:

1. Collect and Consolidate existing information on the Study Area. An appendix to the Study Area Conditions Assessment Report shall be created to document, in list form, the sources of the existing information. This existing information shall be used to the task below.
 2. Document the existing transportation system in the Study Area including highway through and auxiliary lanes, right-of-way and access; arterial lanes and access; transit types / service levels including station locations, routes and frequency, safety records and ridership and major concentrations of riders. The document shall also include bicycle and pedestrian facilities, planned and existing intermodal connection facilities and stations.
 3. Document Traffic Data Collection and Existing LOS Calculation, Travel Demand Forecasting, and Traffic Operations resulting from requirements described below.
 4. Summarize current roadway features including present roadway categorization per State of Colorado State Highway Access Code, lane configurations, roadway and right-of-way widths and adjacent land ownership characteristics, building set-backs, utility and environmental concerns, and those areas of the Study Area that have been identified by past CDOT Safety Assessment Reports as having safety related issues.
 5. The typical existing cross sections for all existing roadways shall also be illustrated in the report along with an assessment of the operational and safety adequacy of the cross-sections based on both existing and future (2040) travel demands.
 6. Reference the list of issues that resulted from contacts with stakeholders and general knowledge of the Study Area to identify a list of key needs in the Study Area.
 7. Prepare a preliminary list of existing and anticipated transportation deficiencies in the Study Area. The list should describe the existing or anticipated deficiencies in the transportation system and the growth or changing needs in the Study Area along with an estimate as to the timeframe in which deficiencies will occur.
- B. Traffic Control
- The Consultant shall be prepared to provide traffic control for any of their field activities or for any supplemental survey that CDOT may perform during the course of this project.
- C. Traffic Data Collection and Existing LOS Calculation

1. The Consultant shall collect and consolidate crash data and traffic counts (including truck traffic) for the project limits and surrounding roadway network impacted by the project to be used for the safety and operational analyses. Crash data will be obtained by the consultant from the CDOT database, and requested by the consultant from local municipalities as required for the purposes of the study. 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.
2. The Consultant shall calculate levels of service at relevant locations within the Study Area boundaries. At a minimum, this will include the mainline of I-270 at the Quebec St, Vasquez Blvd, and York Street interchange connections, on relevant ramps themselves, and US 85 from E. 56th Ave to E 62nd Ave, especially including the intersection of State Highway 2 (US 85), E. 60th Ave, E. Parker Dr., and 56th Ave from Eudora Street to Brighton Blvd. Specific locations to be evaluated will be determined by the Consultant in coordination with the Agencies. Daily vehicle classification counts will be collected at locations determined to be relevant to the Study (a minimum of two). Intersection turning movement count locations are to be determined by the Consultant in coordination with the Agencies. If necessary to supplement existing traffic count data, daily traffic counts shall be completed on mainline I-270 and US-85, and at the I-270 and Vasquez interchange on and off ramps, in a manner that will allow a full evaluation of merge, diverge, and weave operations. As determined to be relevant to the Study and necessary for the development of alternatives, additional traffic counting locations (e.g. Parkway Drive) may be determined to be necessary.
3. Document the existing and any planned transportation systems in the Study Area including highway through and auxiliary lanes, interchanges, right-of-way and access; arterial lanes and access; transit types / service levels including station locations, routes and frequency, safety records and ridership and major concentrations of riders. The document shall also include bicycle and pedestrian facilities, planned and existing intermodal connection facilities and stations.
4. Document the existing travel markets that use the transportation system by using the DRCOG 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
 - d. Average Length of Trip
5. Summarize current roadway features including present lane configurations, roadway and right-of-way widths, adjacent land ownership characteristics, utility and environmental concerns.

D. Travel Demand Forecasting

1. Summarize land use and modeling data as provided by the DRCOG travel demand model (Years 2015 and 2040).
2. If it is determined to be 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 and will utilize the DRCOG model that is available for such purposes.

This may include the adopted 2040 regional DRCOG model – FOCUS with their assistance, and DRCOG’s previous model – COMPASS. At this time, we do not anticipate using the DynusT model. Previously projected transit utilization may be incorporated into the study without new transit modeling being performed. The primary product of this work will be 2040 travel demand forecasts approved for study use by CDOT, DRCOG and FHWA. These forecasts will be used to develop 2040 traffic volumes on mainline I-270 and US-85, arterial roadways, and peak hour turning movements at signalized intersections and interstate ramp terminals.

3. The consultant shall be responsible for performing "reasonableness" checks on information developed and derived from use of the DRCOG model. The Consultant shall use the approved DRCOG data sets and road network to ensure that the traffic analysis is compatible with the NEPA process.

E. Traffic Operations

1. Future travel demands shall be compared to existing capacity at select screen lines and inadequately served travel patterns shall be identified.
2. Summarize future traffic (2040) operations in the Study Area for both the AM and PM peak hours.
3. Traffic operational analysis will include an evaluation of the existing conditions as well as a 2040 analysis for the No-Action and a preferred set of alternatives.
4. Modeling will be used to help understand the regional distribution of traffic, possible diversions for different design alternatives and to help determine the limits of the micro-simulation analysis. The specific model(s) to be used will be determined during the course of the study and must be acceptable to both CDOT and FHWA.
5. Perform a sketch plan sensitivity analysis for future traffic operations (beyond 2040) based on anticipated growth in traffic.
6. It is anticipated that Synchro will be used for evaluation of intersection operations.
7. The Consultant will use a micro- simulation model to evaluate the traffic operations of the complete roadway system, particularly the interstate from Quebec to York, but possibly from I-70 to I-25, if budget allows, and report the agreed upon measures-of-effectiveness (MOE's) for the existing conditions, No-Action and the preferred set of alternatives. Site specific operational analysis (i.e. turning movement delays, weaving analysis, queue length determination, etc) may also be required at strategic locations within the Study Area boundaries to help identify preferred short-term improvements that may provide operational benefits while remaining consistent with the long-term preferred alternative. Specific locations will be determined by the Consultant in coordination with the Agencies. The Consultant is required to follow the guidelines provided in the FHWA Traffic Analysis Tools for methods for collecting traffic data, setting up and calibrating the micro-simulation models. The Consultant will also be required to coordinate with CDOT Traffic and FHWA at key milestones in the traffic modeling and approval process (i.e. model validation and calibration, MOE selections, etc) before additional work proceeds.

8. Based on the initial traffic data collection, travel demand forecasting, and traffic operational analyses, the consultant shall identify traffic problem areas and determine the effects to the surrounding roadway network and intersections. This analysis shall consider traffic volumes, travel/access patterns, LOS, delays, travel times, and speeds in neighborhoods and other areas of anticipated traffic congestion. The Consultant shall coordinate this work with other studies in the immediate area, as appropriate. A Commerce City -sponsored study of transportation options in the triangle between I-270, I-70 and I-25 is anticipated to be in progress during portions of this study.
 9. The Consultant shall also analyze existing bicycle and pedestrian facilities for safety, adequacy, connectivity, and Americans with Disabilities Act Accessibility requirements and make recommendations for improvements in accordance with CDOT Statewide Bicycle and Pedestrian Plan, if available, and the local bicycle and pedestrian master plans.
 1. The consultant shall obtain all available Safety Assessment Reports from CDOT which identify existing safety problems within the project limits to the extent that they are readily available. In the alternatives evaluation portion of the PEL Study and of the EA, and any other sections that pertain to Safety, the consultant shall specifically identify how the "Build" alternatives propose to mitigate the existing safety problems based on the Safety Assessments and on crash data collected as part of this PEL.
- F. Conduct an environmental scan and list of critical environmental issues within the Study Area that includes the following tasks:
- Map environmental resources and prepare a list of environmental issues. Include, at a minimum:
 - Floodways and 100-year flood plain boundaries
 - Likely locations of wetlands
 - Known Archaeological sites
 - Mines
 - Hazardous waste sites
 - Community or public wells
 - Historical buildings, sites, and districts
 - Rivers and lakes (identifying any designated wild and scenic rivers)
 - State and national forests
 - Wildlife reserves
 - Critical wildlife habitat
 - Threatened and endangered species (locations or likely presence)
 - Public parks
 - Prime agricultural land
 - Pedestrian and bicycle access
 - Noise
 - Neighborhood/business displacement
 - Summarize results from consultations with Resource Agencies as defined in Task 1.
 - Identify those areas expected to require further analysis for NEPA purposes.
 - Prepare an environmental scan report for CDOT and public review.
 - Identify and describe any features that may require context sensitivity.

G. Expected Products (Results)

- An environmental scan map of key socioeconomic and environmental resources;
- A list of environmental issues within the Study Area, and identification of areas that require further analysis.
- A report summarizing the results of the research of land uses and other characteristics of the region. The report should include:
 - Community profile, including population, growth trends, and employment trends, for use in future forecasts
 - Current land uses
 - Planned land uses
 - Historical and cultural buildings and site

Agency Responsibilities - The Agencies will provide the Consultant with existing local land use and transportation plans, traffic counts, roadway striping plans (illustrating lane/roadway/right-of-way widths), on-street parking inventory/utilization, digital photographs of different roadway segments, information on sidewalk and parkway features, and building set-back, when available. The Agencies will assist the Consultant in obtaining any other data which may be necessary in completing the existing conditions report. The Agencies will appoint one individual as their designated liaison to CDOT and the Consultant in order to better facilitate communication.

Consultant Responsibilities - The Consultant shall prepare a Study Area Conditions Assessment Report which includes all elements as described above.

TASK 2 WORK PRODUCT: Study Area Conditions Assessment Report which presents the findings from the Responsibilities described above in a clear and concise manner. A summary of comments and key issues received at Public-Stakeholder meetings.

TASK 3 DEVELOP A STATEMENT OF PURPOSE AND NEED AND IDENTIFY GOALS FOR THE STUDY AREA

Develop an Executive Summary containing the following:

1. Identify the visions CDOT and each jurisdiction have for the future of the Study Area and points of disagreement and congruence.
2. Refer to data identified in the Study Area Conditions Assessment Report regarding existing and expected deficiencies in the transportation system serving the Study Area to compile a list of system deficiencies. Where possible, locate the deficiencies on a base map for use at the public meetings.
3. Prepare a draft or general Mission Statement and key issues to be discussed at a stakeholder meeting and at public meetings.

4. Prepare visual displays summarizing data compiled to date. Include key factors of the Study Area including the preliminary list of deficiencies already identified.
5. Produce a written statement of purpose and need. This statement should be an "umbrella" statement for the Study Area, based in identification of needs and deficiencies. The statement should reflect the context sensitivity of the Study Area's communities to help reach their transportation goals by encouraging the consideration of land use, transportation, environmental and infrastructure needs in an integrated manner.
6. Identify goals and visions for the Study Area.

TASK 3 WORK PRODUCT: An executive summary which presents the findings from the Responsibilities described above in a clear and concise manner. A summary of comments and key issues received at Public-Stakeholder meetings.

TASK 4 – PLANNING AND ENVIRONMENTAL LINKAGE (PEL) STUDY

A Planning and Environmental Linkage Study shall be prepared with the following objectives.

1. Express a common vision between CDOT and the Agencies as to the future operational functionality of the Study Area.
2. Develop a set of alternatives in which:
 - a) Meets the Purpose and Need identified in the previous task.
 - b) Balances regional mobility with local connectivity needs.
 - c) Enhances aesthetics, safety and urban design components and multi-modal objectives as previously identified for each element of the Study Area.
 - d) For highway expansion or other modal use of CDOT right-of-way, an analysis should be conducted to identify alternatives for the most appropriate use of the existing right-of-way. A determination then has to be made if this represents the maximum right-of-way capacity or if additional right-of-way should be acquired
It is expected that three long-term and three short-term alternatives will be developed and analyzed along with the No-action alternative, and that AM and PM peaks will be modeled in the microsimulation models.
Five basic measures should be used to judge alternatives. This evaluation is intended to illuminate the issues and provide a coherent discussion prior to selecting a preferred Study Area strategy.
- Assess Effectiveness – This analysis should quantify how each alternative addresses deficiencies and needs as identified in Tasks 2 and 3.

- Assess Land Use Consequences - This analysis should quantify how the alternatives will affect accessibility and mobility in the Study Area. Resultant land use implications should then be assessed and compared to adopted comprehensive plans and zoning. Any inconsistencies between the proposed transportation investment and levels or types of development in local plans should be clearly identified and understood by all decision-makers. It should be noted that land use planning is not the purview of CDOT. Consequently, CDOT staff can only assist by providing information useful to those agencies with jurisdiction over land use and development policies, planning and decision-making.
 - Assess 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 – the distribution of costs and benefits.
 - Assess Environmental Feasibility - Impacts of each alternative on important environmental resources and feasibility regarding environmental issues and regulations. Conceptual avoidance and minimization measures should be developed following the identification of impacts and concerns.
 - Assess the feasibility of each alternative regarding conformity with local comprehensive plan goals and policies.
3. If the study identifies sections of the Study Area which in the future will no longer have sufficient capacity, forecast the time period in which this is expected to occur.
 4. Provide an easy-to-read pictorial summary guide that helps evaluate the pros and cons of each alternative in a creative and meaningful way.
 5. Present Alternatives to the Public though whatever means is agreed to in Task 1.
 6. Recommend ROW needs of the Study Area.

Consultant Responsibilities - The consultant shall coordinate with CDOT and the other jurisdictions prepare a Feasibility Study Report which will describe the findings, alternatives and visions developed in Task 4

TASK 4 WORK PRODUCT: PEL Study Report which presents the findings from the Responsibilities described above in a clear and concise manner. A summary of comments and key issues received as a result on the implementation of the Public Participation Work Plan as per Task 1.

TASK 5 PUBLIC INVOLVEMENT COORDINATION

CDOT will assist the Consultant in organizing all Stakeholders Meetings and Public Meetings. The Consultant is responsible for creating and providing all materials for these meetings. It is anticipated that a minimum of two meetings between the Consultant and the Public. Stakeholders will be necessary in this Task. In addition to this, it is anticipated that numerous other contacts will need to be made with all of the public agency stakeholders, both at the staff level and the elected official level,

to communicate and negotiate the stakeholders' concerns about specific problems and visions for the corridor.

The Consultant shall provide the presentation aids, and help conduct the following meetings:

- a) General Public Meetings (Information and Workshops)
The format of these meetings will be dictated by the project and goals for the meetings. These meetings may be used to establish communications with the public, add to the "contact list", and gather information regarding local concerns. The meetings may also take the form of a work session or workshop with the affected parties.
- b) Public Review Meetings
These meetings are intended to disseminate project progress information to the public and representatives of local entities. Notices will be mailed at least 14 days in advance of these meetings to those on the "contact list".

TASK 5 WORK PRODUCT: Presentation aids which will be used during public involvement coordination.

TECHNICAL AND PEER REVIEW

All study reports and design work products will be reviewed by the Agencies

PROJECT SCHEDULE

The contract period shall be 12 months from the date of execution of the contract.

CONTRACT COMPLETION

This Contract will be satisfied upon acceptance of the following items if applicable:

- A. Project Schedule
- B. All work products as described above
- C. Project Progress Meeting Minutes
- D. All documents found In Research
- E. All Permission to Enter forms
- F. Photography Products
- G. Ownership Map
- H. Original Field Notes
- I. Completion of review of contract submittals

APPENDIX A REFERENCES

1 AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) PUBLICATIONS (using latest approved versions):

- A. A Policy on Design Standards-Interstate System
- B. A Policy on Geometric Design of Highways and Streets
- C. Guide for Design of Pavement Structures
- D. Standard Specifications for Highway Bridges
- E. Guide for the Design of High Occupancy Vehicle and Public Transfer Facilities
- F. Guide for the Development of Bicycle Facilities
- G. Standard Specifications for Transportation Materials and Methods of Sampling and Testing –
Part 1, Specifications and Part II, Tests
- H. Highway Design and Operational Practices Related to Highway Safety
- I. Roadside Design Guide

2 COLORADO DEPARTMENT OF TRANSPORTATION PUBLICATIONS (using latest approved versions):

- A. CDOT Design Guide (all volumes)
- B. CDOT Bridge Design Guide
- C. CDOT Bridge Detailing Manual
- D. Bridge Rating Manual
- E. Project Development Manual
- F. Erosion Control and Storm Water Quality Guide
- G. Field Log of Structures
- H. Cost Data Book
- I. Drainage Design Manual
- J. CDOT Quality Manual
- K. CDOT Survey Manual
- L. CDOT Field Materials Manual
- M. CDOT Design Guide, Computer Aided Drafting (CAD)
- N. Erosion Control and Storm water Quality Guide
- O. Standard Plans, M & S Standards
- P. Standard Specifications for Road and Bridge Construction and CDOT Supplemental Specifications
- Q. Item Description and Abbreviations (with code number) compiled by Engineering Estimates and Marked Analysis Unit, CDOT

R. Right-of-Way Manual, Chapter 2, Plans and Descriptions Procedures and General Information

S. The State Highway Access Code

T. Utility Manual

U. TMOSS Generic Format

V. Field TMOSS Topography Coding

W. Topography Modeling Survey System User Manual

X. Interactive Graphics System Symbol Table

Y. Study area Optimization Guidelines

3 CDOT PROCEDURAL DIRECTIVES (using latest approved versions):

A. No. 400.2 Monitoring Consultant Contracts

B. No. 501.2 Cooperative Storm Drainage System

C. No. 514.1 Field Inspection Review (FIR)

D. No. 516.1 Final Office Review (FOR)

E. No. 1217a Survey Request

F. No. 1304.1 Right-of-Way Plan Revisions

G. No. 1305.1 Land Surveys

H. No. 1601 Interchange Approval Process

I. No. 1700.1 Certification Acceptance (CA) Procedures for Location and Design Approval

J. No. 1700.3 Plans, Specifications and Estimates (PS&E) and Authorization to Advertise for

Bids under Certifications Acceptance (CA)

K. No. 1700.5 Local Entity/State Contracts and Local Entity/Consultant Contracts and Local Entity/R.R. Contracts under C.A

L. No. 1700.6 Railroad/Highway Contracts (Under Certification Acceptance)

M. No. 1905.1 Preparation of Plans and Specifications for Structures prepared by Staff Bridge

Branch

4 FEDERAL PUBLICATIONS (using latest approved versions):

A. Manual on Uniform Traffic Control Devices

B. Highway Capacity Manual

C. Urban Transportation Operations Training – Design of Urban Streets, Student Workbook

D. Reference Guide Outline – Specifications for Aerial Surveys and Mapping by Photogrammetric Methods for Highways

E. FHWA Federal-Aid Policy Guide

F. Technical Advisory T6640.8A

10/23/2015

G. U.S. Department of Transportation Order 5610.1E

H. Geometric Geodetic Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques

I. ADAAG Americans With Disabilities Act Accessibility Guidelines

5 TRANSPORTATION RESEARCH BOARD:

A. Access Management Manual

Federal Highway Administration

Planning/Environmental Linkages Questionnaire

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. Without knowing how far, or in how much detail a planning study provided, NEPA project teams are not aware of and may often 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 are considered to have the same meaning as a PEL study.

At the inception of the PEL study, the study team must decide how the work will 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 in determining if an effective PEL process has been applied before NEPA processes are authorized to begin. 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 cannot be considered viable 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 the long-range transportation plan?
 - 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 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 it 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 land owners and/or groups, contact information for stakeholders, special or unique resources in the area, etc.

Traffic Modeling Sample Scope of Work Micro-Simulation Analysis

This task order is for project specific traffic engineering services to evaluate improvement alternatives to the Study Area in Commerce City, Colorado. The purpose is to model the interchange of I-270 and Vasquez Blvd, US 6/85 (Vasquez Blvd.) from E. 56th Ave to E 64th Ave, especially including the intersection of US 6/85 (Vasquez Blvd.) at E. 60th Ave / Parkway Dr., I-270 between the York and Quebec Interchanges in a manner consistent with requirements for the Interstate Access Request/1601 process, and the surrounding local street network using micro-simulation; to use the modeling results to identify and refine preferred improvement alternatives; and to provide 3D animations of alternatives for presentation to stakeholders.

Section 1 – Project Initiation and Continuing Requirements

This task includes progress meetings with CDOT, management of in-house staff, preparation of meeting minutes, communication and coordination with CDOT, and preparation of monthly progress reports.

Anticipated Meetings:

- Project kickoff meeting
- Baseline model review meeting
- Alternatives model review meetings (2)
- Final presentation meeting

Section 2 Project Development micro-simulation Traffic Study

Exhibit A shows the limits of the study area. The analysis time periods are: AM peak period (6-9 am), Noon peak period (11 am -1 pm), and PM peak period (3-6 pm).

The micro-simulation model development and study shall include the following work tasks:

1. Data Collection

- a) Project Kickoff Meeting
- b) Organize Collected Data
- c) Configure COM control module for data manipulation
- d) Field Review and Observations (AM, Noon and PM peak periods)
- e) Data Requirements
 - i. Intersection turning movement counts (10 locations, AM, Noon and PM peak periods)
 - ii. I-270 mainline volume and speed (4 locations, AM, Noon, and PM peak periods)
 - iii. I-270 entrance and exit ramp volume (11 locations, AM, Noon, and PM peak periods)

2. Existing Conditions Baseline Model Development

- a) Set-up base map (aerials and CAD import)
- b) Review / Set base simulation parameters
- c) Draw links and connectors
- d) Create volume and routing input points
- e) Create speed changes / mainline calibration points
- f) Intersection Configuration
- g) Transit Inputs (bus time tables and routes)
- h) Output Configuration (for use in calibration, with COM module)
- i) Project Evaluation and Internal Review

3. Calibrate Existing Conditions Model

Model calibration will conform to an established FHWA-approved microsimulation protocol and include the following:

- a) HCS Facilities / Synchro Analysis
 - i. Estimate / confirm exit node speeds and densities
 - ii. Confirm observed demand overflow timeframe ("shoulders" of the PM Peak)
 - iii. Estimate signal operations
- b) Uncongested Conditions Calibration (Off-Peak Period)
 - i. Endpoint Speeds / Densities
 - ii. Lane Change Parameters
 - iii. Movement Delays
- c) Critical Conditions Calibration (AM and PM Peak Period)
 - i. Endpoint Speeds / Densities
 - ii. Lane Change Parameters
 - iii. Movement Delays
- d) Simulation Runs
- e) Internal Review
- f) Progress Meeting (Baseline Model)

4. Develop Alternative Networks for Opening Day Scenario

- a) Set-up base map (aerials and CAD import)
- b) Draw/modify links and connectors
- c) Modify volume and routing input points
- d) Adjust speed changes / mainline calibration points

- e) Reconfigure Interchange Details (Critical Intersections)
- f) Configure Ramp Meter Parameters
- g) Develop network traffic signal coordination plans
- h) Review Calibration Parameters
 - i. Endpoint Speeds / Densities
 - ii. Lane Change Parameters
 - iii. Ramp Meter Parameters
 - iv. Movement Delays
- i) Output Configuration / Simulation Runs
- j) Internal Review

5. Develop Alternative and No-Build Networks for 2040 Future Year Scenario

- a) Set-up base map (aerials and CAD import)
- b) Draw/modify links and connectors
- c) Modify volume and routing input points
- d) Adjust speed changes / mainline calibration points
- e) Reconfigure Interchange Details (Critical Intersections)
- f) Configure Ramp Meter Parameters
- g) Develop network traffic signal coordination plans
- h) Review Calibration Parameters
 - i. Endpoint Speeds / Densities
 - ii. Lane Change Parameters
 - iii. Ramp Meter Parameters
 - iv. Movement Delays
- i) Output Configuration / Simulation Runs
- j) Internal Review

6. Project Delivery and Documentation

- a) Presentation of Findings to TWG
- b) Prepare Draft and Final Traffic Technical Report

Exhibit A

