

GENERIC SCOPE OF WORK BASIC CONTRACT

CONTRACT TYPE

- Specific Rate of Pay
- Cost Plus Fixed Fee
- Other

CONTRACT DATE: _____

PROJECT NUMBER:

PROJECT LOCATION: C-470 Wadsworth to I-70

PROJECT CODE: 22238

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

- SECTION 1 PROJECT SPECIFIC INFORMATION
 - SECTION 2 PROJECT MANAGEMENT AND COORDINATION
 - SECTION 3 EXISTING FEATURES
 - SECTION 4 GENERAL INFORMATION
 - SECTION 5 PROJECT INITIATION AND CONTINUING REQUIREMENTS
 - SECTION 6 ENVIRONMENTAL WORK TASK DESCRIPTIONS
 - SECTION 7 PRECONSTRUCTION WORK TASK DESCRIPTIONS
 - SECTION 8 CONTRACT CONCLUSION (CHECKLIST)
- APPENDICES

Comments regarding this scope may be directed to:

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REGION 1, WEST PROGRAM ENGINEERING**

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TABLE OF CONTENTS

	<u>Page</u>
TABLE OF CONTENTS	2
SECTION 1 PROJECT SPECIFIC INFORMATION	3
SECTION 2 PROJECT MANAGEMENT AND COORDINATION	7
SECTION 3 EXISTING FEATURES	9
SECTION 4 GENERAL INFORMATION	10
SECTION 5 PROJECT INITIATION AND CONTINUING REQUIREMENTS	12
1. PROJECT MEETINGS	12
2. PROJECT MANAGEMENT	15
3. DEVELOP A PROJECT SCHEDULE AND ASSIGN TASKS	15
4. QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)	15
5. OBTAIN NECESSARY RIGHT-OF-ENTRY AND PERMITS	15
SECTION 6 ENVIRONMENTAL WORK TASK DESCRIPTIONS	16
1. CONSULTANT DISCLOSURE STATEMENT	16
2. PROJECT INITIATION AND SCOPING	16
3. ENVIRONMENTAL ANALYSIS AND DOCUMENTATION	17
4. COST ESTIMATES AND FINANCIAL ANALYSIS	18
5. DATA COLLECTION, FIELD INVESTIGATION, MITIGATION MEASURES	19
6. DELIVERABLES	33
7. PUBLIC AND AGENCY INVOLVEMENT	33
8. NEPA DOCUMENTATION PROCESS	34
SECTION 7 PRECONSTRUCTION WORK TASK DESCRIPTIONS	38
1. PROJECT INITIATION AND CONTINUING REQUIREMENTS	38
2. PROJECT DEVELOPMENT	39
3. PRELIMINARY DESIGN	40
SECTION 8 CONTRACT CONCLUSION (CHECKLIST)	50
TABLE 1 – SUBMITTALS	51
APPENDIX A REFERENCES	55
APPENDIX B SPECIFIC DESIGN CRITERIA	58
APPENDIX C DEFINITIONS	60

SECTION 1

PROJECT SPECIFIC INFORMATION

1. PROJECT BACKGROUND

C-470 is a 26-mile state highway which runs from I-25 at the southern terminus to I-70 at the northern terminus primarily through Douglas and Jefferson counties. The corridor is a four-lane facility from I-25 to Morrison Road and a six-lane facility from Morrison Road to I-70. Currently Segment 1 of C-470 from I-25 to Wadsworth Boulevard is under design and construction with delivery anticipated in spring of 2019. The project presented in this scope of work, C-470 Segment 2, will encompass the remainder of C-470, from the Segment 1 project at Wadsworth to and including elements of the I-70 interchange. Communities affected include Golden, Lakewood, Morrison, as well as unincorporated Jefferson County.

CDOT, FHWA, and the WestConnect Coalition conducted the WestConnect PEL Study to identify transportation improvements on the corridor that are needed to address safety concerns, recurring congestion, and poor operational performance. The PEL study examined transportation needs and strategies across the study area from C-470 at Kipling at the southern terminus along C-470, SH-6, and SH-93 to the SH-93 and SH-170 intersection at the northern terminus of the study. This study was a precursor to conducting the NEPA process and preliminary design for the corridor. The WestConnect Coalition is a collaborative effort led by local and state agencies to identify transportation needs and projects along the study corridor. The Coalition utilizes a consensus-based decision process to determine the priority transportation solutions.

The recommendations from the PEL study for roadway improvements include additional capacity lanes from Kipling to I-70 both north and southbound, improvement of the I-70 and US 6 Interchange, improvement of the US 285 interchange, intersection improvements, and continuous acceleration and deceleration lanes between on and off-ramps of adjacent freeway interchanges along the corridor. Other recommended improvements identified in the PEL Study include trail and transit enhancements, ramp metering, bicycle and pedestrian grade separations, improved rideshare facilities, wildlife crossings, and technology and corridor management elements. All of these recommendations are described in detail in the WestConnect PEL Study.

In continuing the efforts of all stakeholders of the WestConnect Coalition, the Transportation Commission has dedicated funding for the advancement of NEPA, preliminary design, and Right-of-Way processes for highway infrastructure recommendations and any other incidental elements based upon NEPA mitigations for the C-470 Segment of the WestConnect Corridor as described in the WestConnect PEL Study. It is CDOT's vision to utilize previously completed work from the WestConnect PEL Study, further develop the design to define a preferred alternative for the improvements needed on the C-470 Corridor, and complete NEPA processes so that improvements may be delivered along the C-470 Segment of the WestConnect Corridor.

2. PROJECT GOALS

This project is intended to produce the following:

1. SAFETY
 - a. Improve the safety of all users in the project corridor.

2. MOBILITY, AND OPERATIONAL CHARACTERISTICS
 - a. Improve travel time reliability along the C-470 corridor.
 - b. Improve the mobility and operational characteristics of the transportation system in the project corridor.
 - c. Provide higher level-of-service on the C-470 corridor.

3. SYSTEM FUNCTIONALITY

- a. Produce a project that is consistent with the vision and commitments in place from previous and ongoing projects for the C-470 Corridor and connections to the I-70 and I-25 Corridors.
- b. Deliver a project that is consistent with and builds upon other CDOT endeavors including system management, corridor management, and technology initiatives.

4. SCHEDULE ☒

- a. Implement preliminary design and NEPA environmental processes for WestConnect Corridor C-470 Segment improvements as described in the Project Background between December of 2019 and June of 2020, a period of between 12 to 18 months, for facilitating the delivery of NEPA process and preliminary design. It is anticipated that the extent of previously completed efforts from the WestConnect PEL Study will expedite delivery of NEPA process and preliminary design for this project.

5. ENVIRONMENTAL ☒

- a. Adhere to all environmental compliance requirements and regulations.
- b. Utilize previously completed work in the recently completed WestConnect PEL Study.
- c. Implement innovative methods for environmental stewardship and community supported enhancements within the project scope, schedule, and budget.

6. STAKEHOLDER INVOLVEMENT/DECISION MAKING ☒

- a. Develop and execute a thoughtful stakeholder management plan showing how and when the stakeholders will be engaged in a manner that supports the development of this project.
- b. Provide stakeholder involvement building upon previously completed work and relationships from the WestConnect PEL Coalition, and other CDOT projects.
- c. Facilitate and foster collaboration, communication, and partnerships among all members of the project team.

7. PUBLIC COMMUNICATION ☒

- a. Develop and execute a thoughtful communication plan showing how and when the public will be engaged in a manner that is effective and meets NEPA requirements.
- b. Provide accurate, meaningful, organized, and timely communication to the public.

3. PROJECT LIMITS

This project is located in Jefferson County, Colorado on C-470, between Wadsworth Boulevard and Interstate 70, milepost 217 to 229.5.

4. PROJECT COSTS

The construction cost of all the PEL recommended improvements is estimated to be between \$355 million and \$455 million.

5. WORK DURATION

The time period for the work described in this scope is estimated to begin December 2018 and end between December 2019 and June of 2020, a period between 12 to 18 months. It is anticipated that the extent of previously completed efforts from the WestConnect PEL Study will expedite delivery of NEPA process and preliminary design for this project.

6. CONSULTANT RESPONSIBILITY AND DUTIES

In the effort to deliver preliminary design, NEPA processes, and a NEPA decision document for highway infrastructure recommendations for the C-470 Segment of the WestConnect Corridor as described in the WestConnect PEL Study and any other incidental elements based upon NEPA mitigation, the consultant is responsible for conducting project coordination, agency coordination, public participation, feasibility

study conceptual design and alternatives analysis for any new alternatives not presented in the WestConnect PEL Study, environmental and design data collection and analysis, environmental document requirement determination, preparation and submittal of an environmental assessment using CDOT's EA template or preparation of applicable NEPA documents to appropriate clearance needs based on the selection of a preferred alternative as described in the following sections. The Consultant will utilize all previously completed efforts from the WestConnect PEL study in the process of selecting a preferred alternative and for completing NEPA processes. The Consultant will also be responsible for supporting efforts in conducting the CDOT Project Delivery Selection Matrix. The Consultant may be engaged to aid in the delivery of alternative delivery procurement documents.

The Consultant will not be required to conduct a Tolling and Revenue Study as part of this work. A separate Tolling and Revenue Study will be conducted by CDOT under the Statewide Express Lanes Master Plan project. Coordination with this project will be required.

7. WORK PRODUCT

The work in the scope of services for this project will be contracted on an individual Task Order basis, as needed and if needed as determined by the Department. The Department reserves the right to, at its sole discretion, decide to not issue task orders for any part of the work contained in this scope of services. The Consultant work products may include:

- A. National Environmental Policy Act (NEPA) Report(s) - Technical summary of the engineering and environmental considerations, assumptions, analysis methodologies, and graphic displays of the recommended alternative. A technical report is required for the transition of PEL to NEPA prior to initiating NEPA.
- B. NEPA Decision Document(s)
- C. Action Item Tracking Log
- D. Decision and Issue Tracking Log
- E. Project Coordination
- F. Project Schedule
- G. Project Construction Cost Estimate(s)
- H. Estimated Project Construction Schedule(s)
- I. Meeting Minutes
- J. Preliminary Plans
- K. Public Meeting Materials
- L. Project Delivery Section Matrix Support
- M. Alternative Delivery Procurement Documents

Requirements are further described in the sections that follow. 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. ADDITIONAL PROJECT INFORMATION

Additional information regarding this project is included in the following:

- A. WestConnect PEL Study Corridor Conditions Report (Including Appendices)
- C. WestConnect PEL Study Final Environmental Scan Report
- D. WestConnect PEL Study Alternatives Report (Including Appendices)
- E. WestConnect PEL Study Final Report
- F. Revised Environmental Assessment for C-470 Segment 1 (2015)
- G. Designs of C-470 Express Lanes Segment 1

Copies of these documents may be requested from CDOT. A fee may be required for copies.

10. SCOPE OF WORK

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 a 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:

Jana Spiker, P.E.
Resident Engineer
425A Corporate Circle
Golden, CO 80401
Phone: (720) 497-6959
Jana.Spiker@state.co.us

Active day-to-day administration of the contract will be delegated to the CDOT/PM:

Benjamin Davis, P.E.
Project Manager
425A Corporate Circle
Golden, CO 80401
Phone: (720) 497-6922
Benjamin.Davis@state.co.us

2. PROJECT COORDINATION

Coordination is anticipated to be required with the following:

- A. Colorado Department of Transportation
 - a. CDOT Project Management Team
 - b. CDOT Environmental Management Team
 - c. CDOT Specialty Units
 - d. CDOT Maintenance Units
- B. Coalitions: C-470 Coalition, WestConnect Coalition
- C. Cities and Towns: Lakewood, Golden, Littleton, Morrison
- D. Counties: Jefferson, Douglas
- E. Railroads
- F. Regional Transportation District (RTD)
- G. Denver Regional Council of Governments (DRCOG)
- H. Metropolitan Planning Organizations (MPO's)
- I. U.S. Army Corps of Engineers (USACE)
- J. Urban Drainage & Flood Control District (UDFCD)
- K. Federal Emergency Management Agency (FEMA)
- L. Colorado Parks and Wildlife (CPW)
- M. U.S. Forest Service (USFS)
- N. Environmental Protection Agency (EPA)
- O. U.S. Fish and Wildlife Service (USFWS)
- P. Federal Highway Administration (FHWA)
- Q. Federal Transit Authority (FTA)
- R. Utilities
- S. Colorado Department of Public Health and Environment (CDPHE)
- T. High Performance Transportation Enterprise (HPTE)
- U. Other CDOT Project Teams
 - a. Statewide Express Lanes Master Plan (ELMP)
 - b. Road X

- c. Office of Major Projects
- d. C-470 Ramp Metering Project

The consultant should anticipate that a design which affects another agency will have to be accepted by that agency prior to its acceptance by CDOT. Submittals to affected agencies will be coordinated with CDOT.

SECTION 3 EXISTING FEATURES

1. EXISTING CORRIDOR CONDITIONS REVIEW

The WestConnect PEL Study completed a review of existing corridor conditions along the C-470 corridor. These findings are documented in the WestConnect PEL Corridor Conditions Report. The findings include regional plans, roadway conditions, roadway characteristics, parallel roadway characteristics, railroad and light rail proximity, roadway features, roadway deficiencies, existing structures, environmental resources, major utilities, geotechnical conditions, vehicular traffic operations, crash history, and corridor multimodal mobility.

Additionally, the WestConnect PEL Study completed an Environmental Scan Report that identified environmental resources and environmentally sensitive areas. The scan report is mostly composed of readily available data and limited field survey information. The purpose of this scan report is to identify resources early in the planning process to avoid fatal flaws during the PEL study and to consider sensitive environmental resources in the study area.

It is the intent of this project to utilize previously completed work to the maximum extent practical going forward into the NEPA and Preliminary Design process.

2. STRUCTURES

Along the C-470 portion of the study corridor, there are 30 major and 27 minor structures and 26 major wall structures. Only one of the structures along C-470 has a noted deficiency. The westbound C-470 structure over I-70 has a sufficiency rating of 55.6 and is deemed functionally obsolete. A major structure summary is listed in Appendix A of the WestConnect PEL Study's Corridor Conditions Report.

3. UTILITIES

The WestConnect PEL Study's Corridor Conditions Report documents utilities along the study's corridor. Table 9 of the study lists utility owners with facilities in the WestConnect corridor and Table 10 lists locations of major utilities listed by Owner, Type and Mile Post with a location description. It will be the responsibility of The Consultant to contact Utility Notification Center of Colorado (U.N.C.C.) at 1-800-922-1987 or 811 to complete the work necessary of this project. The C-470 Corridor includes an existing ITS system. This system will be modified with the construction of CDOT project #22366 C-470 Ramp Metering in Fall of 2018. It will be the responsibility of The Consultant to contact CDOT ITS to complete the work necessary for this project.

4. RAILROADS - There is no known railroad involvement at this time.

5. RTD STATIONS

Ken Caryl / C-470 Park-n-Ride
Morrison Park-n-Ride

Note: The above is a list of the known features in this area. It is not to be considered as complete. More detailed information is provided in the WestConnect PEL Study Report. The consultant should be alert to the existence of other possible conflicts not discussed in this RFP or the WestConnect PEL Study Report.

SECTION 4 GENERAL INFORMATION

1. NOTICE TO PROCEED

Work shall not commence until the written Notice-to-Proceed is issued by CDOT. Work may be required, night or day, and/or weekends, and/or holidays, and/or split shifts. CDOT must concur in time lost reports prior to the time lost delays being 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
Routine working contact shall be between the CDOT/PM and the Consultant Project Manager (C/PM) as defined in Appendix C.
- B. Project Manager Requirements
Each Project Manager shall provide the others with the following:
 - a. A written synopsis or copy of their respective contacts by telephone and in person with others
 - b. Copies of pertinent written communications

3. ROUTINE REPORTING AND BILLING

The Consultant shall 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), including monthly drawdown schedules.
- C. 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 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. National Institute for Certification in Engineering Technology (NICET) or other certifications may be required for project inspectors and testers.

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, experience, qualities, or attributes to complete a particular task.

This contract requires that the prime firm or any member of its team, be pre-qualified in the following disciplines for the entire length of the contract.

AC – Acoustical engineering, BR – Bridge Design, BI – Bridge Inspection, CE – Civil Engineering, EL – Electrical Engineering, EN – Environmental Engineering, GE – Geotechnical Engineering, HD – Highway & Street Design, HY – Hydraulics, LA – Landscape Architecture, MA – Management (Contract Admin), SO – Soils Engineering, SE – Structural Engineering, SU – Surveying, TP – Transportation Engineering, TR – Traffic Engineering

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/photogrammetry | CDOT TMOSS, InRoads |
| D. | Bridge check | CDOT Staff Bridge software shall be used in either design or design check |
| E. | Estimating | Transport (an AASHTO sponsored software) as used by CDOT |
| F. | Specifications | Microsoft Word |
| G. | Scheduling | Microsoft Project |

6. COMPUTER DATA COMPATIBILITY

The data format for submitting design computer files shall be compatible with the latest version of the adopted CDOT software as of Notice to Proceed for the contract. 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 Section 8, Table 1 - Submittals, for additional information regarding current formats and the acceptable transmittal media.

7. PROJECT DESIGN DATA AND STANDARDS

- A. General:
Appendix A provides a comprehensive list of state and federal reference material. However, Appendix A does not contain local agency reference material which may be pertinent to some projects. The consultant is responsible for obtaining and ensuring compliance with the most recent CDOT adopted version of the listed references including standards and specifications, manuals, and software or as directed by the CDOT/PM. Conflicts in criteria shall be resolved by the CDOT/PM.
- B. Specific Design Criteria:
Appendix B is a list of specific design criteria. The list is comprehensive and may include items that are not required for 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.
- C. Construction Materials/Methods:
The materials and methods specified for construction will be selected to minimize the initial construction and long-term maintenance cost to the State of Colorado. Non-typical construction materials and methods must be approved in writing by CDOT.

**SECTION 5
PROJECT INITIATION AND CONTINUING REQUIREMENTS**

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
1. PROJECT MEETINGS The types and numbers of meetings shall be flexible and determined by an interactive process as approved by the CDOT/PM. Public Hearing efforts are accounted for in Section 5.	C	X	
A. Initial Project Meeting Schedule and facilitate initial project kick-off meeting. All appropriate disciplines should be included in the scoping meeting. Create an invitation list, send notices with a draft agenda prior to the meeting, and provide meeting minutes to all those invited. Whenever possible, the kick-off meeting will include an on-site inspection to familiarize the entire project team with the character and conditions of the area. The scoping meeting will also be used to clearly identify scope elements, responsibilities and coordination necessary to complete the work.	C	X	
B. Project Management Team (PMT) Meetings The CDOT and Consultant team will meet periodically as required (typically at one-month intervals). The meetings will review: activities required to be complete since the last meeting, problems encountered/anticipated and potential solutions, project schedule update, action items, and coordination required with other agencies.	C	X	
C. Public Meetings The Consultant shall provide the presentation aids, and help conduct the meeting.	C	X	
a Locations and Logistics - The Consultant shall coordinate public meeting locations and meeting logistics with CDOT. Public meetings (scoping and workshops) shall be conducted in close proximity to the project corridor. The Consultant shall ensure that all public meetings are (1) held at locations that meet ADA accessibility requirements, and, (2) are fully accessible at the time of the meetings.	C	X	
b Small Group Meetings (one-on-one) Meet with property and business owners or others directly affected by the project work to identify likely impacts and discuss possible mitigation or resolutions.	C	X	
c 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. Public outreach shall be in coordination with the PMT. These meetings will be facilitated by CDOT with support of the Consultant team.	C	X	
d Jefferson County Commission Updates (4) - The Consultant will develop and present a maximum of four (4) project update presentations and provide the presentations to the Jefferson County Commissioners in collaboration with CDOT.	C	X	
e Douglas County Commission Updates (4) - The Consultant will develop and present a maximum of four (4) project update presentations and provide the presentations to the Douglas County Commissioners in collaboration with CDOT.	C	X	

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
f	WestConnect Coalition Meetings – Technical Working Group The Consultant will develop and present quarterly updates to the technical representatives of members from the WestConnect Coalition.	C	X	
g	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”. Public outreach shall be in coordination with the PMT. These meetings will be facilitated by CDOT with support of the Consultant team.	C	X	
h	Documentation – The Consultant shall develop a summary document of public scoping meetings, public workshops, public hearings, and any other public meetings in coordination with the CDOT. The documents will include relevant summaries of the meeting, displays, handout materials, and comments received. Documents can include, but are not limited to, meeting minutes, member lists, and all communication aids in this scope of work.	C	X	
D. Meeting Minutes Project meeting minutes shall be completed by the Consultant and provided to the CDOT/PM within one week of the actual 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. These “Action Items” shall be tracked separately in an Action Item Tracking Log spreadsheet including information related to the action item.		C	X	
E. Contact List Establish and maintain a computerized list of all appropriate interested parties for the communication process.		C	X	
a	The information on the list shall include as a minimum: i Name ii Firm (if any) iii Mailing/E-mail address iv Phone/Fax number		X	
b	The contacts will be compiled from the list below, as supplemented by the Project Team and the attendees at public meetings: i Public Agencies ii Elected/Appointed Officials iii Neighborhood Groups iv Property Owners/Tenants v Business Interests vi Special Interests vii Railroads viii Media Contacts	C	X	
F. Public Notices/Advertisements Publicize the proposed project in accordance with the CDOT policies and procedures. Copies of the publication shall also be mailed to the individuals on the “contact list”.		C	X	
G. Communication Aids				
a	Graphics Support – The Consultant shall provide necessary graphics for the meetings listed above. These graphics will be used for public presentations, interim reports, the website, and the NEPA process; therefore, they must be in a format that translates easily to all uses. Where possible, graphics will be reused	C	X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>for subsequent meetings. The Consultant shall develop appropriate displays, presentations, boards, maps, and posters that communicate the study's goals, schedule, and other information that is requested by CDOT. Other materials may include slides, overhead projector slides, maps and plan views of conceptual design, computerized presentations and other displays for visual presentations at meetings. All Graphics, displays, and materials shall be reviewed by CDOT and FHWA prior to presentation to the public</p>			
<p>b Internet web pages – All external CDOT-related Web sites shall be hosted on CDOT’s server and developed in-house with assistance from the Web Team and the Office of Public Relations. The use of all Web 2.0 and similar social marketing applications on behalf of CDOT (including all regions, divisions and offices) is strictly prohibited unless authorized by the Director of the Office of Public Relations. No CDOT employee, contractor or consultant working for CDOT will post material on behalf of the agency on such applications without expressed written consent of the Director of the Office of Public Relations.</p>	C	X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>2. PROJECT MANAGEMENT At the kick-off meeting provide an approach for managing the project (i.e. involved staff, key team positions), including a schedule, document and agency reviews and other project needs. Should the overall project budget be \$500 million or more, an official Project Management Plan (PMP) shall be prepared in accordance with the Safe, Accountable, Flexible, Efficient, Transportation Equity Act (SAFETEA-LU) requirements (or newer authorization guidance as applicable). The Consultant shall coordinate all the work tasks being accomplished by all parties to ensure project work completion stages are on schedule.</p>	C	X	
<p>3. DEVELOP A PROJECT SCHEDULE AND ASSIGN TASKS The Consultant is responsible for coordinating the required work schedule for tasks accomplished by CDOT and other agencies. Prepare the initial project schedule for review by the CDOT/PM and consultant team, and refine to provide detail as requested. Modifications will be made as necessary in collaboration with CDOT and appropriate justification. The tasks covered by this Scope of Work are expected to take approximately 12 to 18 Months to complete. The project schedule is required to be completed in Microsoft project utilizing CPM methodologies. The project schedule will be updated monthly for review at the monthly Project Management Team (PMT) meetings. The schedule will identify QA/QC review periods as noted in the QA/QC plan.</p>	C	X	
<p>4. QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) Prepare and submit a QA/QC plan as part of the planning documents noted above, and commit to adhering to the QA/QC process throughout the project. This plan shall be approved by the CDOT/PM. At key milestones, identified in the QA/QC plan, the CDOT/PM or designee will perform QA audits of the project. The QA/QC plan shall identify review time, materials to be reviewed, and process documentation.</p>		X	
<p>5. OBTAIN NECESSARY RIGHT-OF-ENTRY AND PERMITS Some activities may require work on land not controlled by CDOT. In such cases the Consultant shall obtain the necessary written permission to enter the premises. Written permission shall be coordinated with other CDOT staff and consultants that may need right-of-entry such as geotechnical and environmental personnel. Included in this written permission will be the names and telephone numbers of persons to contact should notification prior to entry be necessary. The consultant shall not enter land not controlled by CDOT without CDOT/PM approval.</p>		X	
<p>A. Signature Copies Permissions apply to CDOT personnel as well as Consultant personnel. CDOT Form 730 may be used for this purpose. Signed copies of written permission will be submitted to the CDOT/PM prior to entering private property for survey work.</p>		X	
<p>B. Permits Some activities such as materials testing on existing pavement and structures may require a permit. Permits will be obtained and copies submitted to the CDOT/PM.</p>		X	

**SECTION 6
ENVIRONMENTAL WORK TASK DESCRIPTIONS**

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
1. CONSULTANT DISCLOSURE STATEMENT			
40 Code of Federal Regulations (CFR) Section 1506.5(c) specifies that a disclosure statement to avoid conflict of interest must be prepared. If an environmental document is prepared with the assistance of a consulting firm, the firm must execute a disclosure statement.		X	
2. PROJECT INITIATION AND SCOPING			
A. Environmental Scoping Meeting An early environmental coordination/scoping task order will occur as directed by the CDOT/PM. An environmental scoping meeting should be held with the Regional Environmental Project Manager, the Regional Project Manager, appropriate members of the Environmental Programs Branch (EPB), C/PM, and staff from Regional Staff, Staff Bridge, Geotechnical, Materials, Survey, Right-of-Way, Access, Maintenance, Hydraulics, Traffic, ITS, Property Management, and Utilities, as appropriate. This task will include a meeting with CDOT and the local agency representatives to discuss the initial work efforts of the project.	C	X	
B. Review Applicable Existing Documents Review the WestConnect PEL Study and all associated Final Reports produced during the WestConnect PEL Study process. Examples of other relevant documents are previous studies, planning efforts, access management plans, safety assessments, and other traffic studies. These resources may be CDOT documents or may have been created by local planning agencies or municipalities.	C	X	
C. Extent of Study Required for Resources Utilize work previously completed in the WestConnect PEL Study to determine the extent of study required for each resource to minimize rework. The Westconnect PEL Study has identified next steps for each resource category.		X	
D. Preparation and Coordination of Requirements During the early coordination/ scoping process, determine the effort required for the preparation and coordination requirements to allocate: 1) work to be completed by CDOT Region Staff; 2) work to be completed by CDOT Headquarters Staff; 3) work to be completed by Consultant or its project partners; and 4) outside agency concurrence or approvals required.	C	X	
E. Extent of Narrative Required Utilize work previously completed in the WestConnect PEL Study to determine during the scoping phase the extent to which documentation is required for each resource. The level of documentation can be included in several ways, such as: 1) a complete analysis/ documentation included in the text; 2) a summary of the analysis performed included in the text; 3) a statement that no impacts are expected; or 4) inclusion of information and coordination/documentation, such as technical memoranda, reference/ annotated bibliography, in an appendix of the document, referencing the appendix in the body of the text. This will be detailed to the extent possible using information available during the scoping phase.		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>F. Project Study Area Limits/Logical Termini Utilize work previously completed in the WestConnect PEL Study to establish preliminary project study area limits are established in Section 1 of the Generic Scope of Work document. Perform necessary research and data collection to propose a study area boundary for environmental resources and logical termini for use in scoping. In coordination with the CDOT/PM, prepare a recommendation to the Federal Highway Administration (FHWA) for approval of the logical termini.</p>		X	
<p>G. Administrative Record Maintain a NEPA Administrative Record that adheres to the established process. Make available any and all parts of this Administrative Record to the CDOT/PM (or his or her designee), or the Colorado Attorney General's office (as requested) at any time during the project's duration. All materials associated with the project Administrative Record will be delivered when closing the project in the format specified by the CDOT/PM. Final project invoice payments to the Consultant are conditional upon the professional and complete delivery of these materials to CDOT's office. Given the extent of documentation collected for the NEPA process, it is required that the consultant update the record regularly and provide information to CDOT electronically.</p>		X	
<p>3. ENVIRONMENTAL ANALYSIS AND DOCUMENTATION</p>			
<p>Determine the effort required to examine the transportation needs in the project area definitively and completely, to develop and evaluate transportation alternatives following the NEPA process, and to develop the appropriate NEPA documents. The Consultant shall take into consideration all work previously completed in the WestConnect PEL Study. All environmental documentation, technical reports and technical memos will be submitted to CDOT, and may be required to be supplied to reviewers at CDOT EPB, FHWA, and all participating agencies for early review as appropriate and necessary. Planned schedules should accommodate these review timeframes and list them specifically.</p>		X	
<p>A. Purpose and Need Develop goal, objectives, and issues for the project to refine/define the preferred alternative. Review previous Purpose and Need work completed in the WestConnect PEL Study and the newly developed goals, objectives, and issues to develop, define and refine a Purpose and Need statement, reviewed, and approved by appropriate parties. The objectives of the project should be clearly identified and agreed upon early in the project process to prevent backtracking and limit schedule changes. Develop and refine, as necessary, to address information collected on the project during data collection, transportation analysis, and public and agency scoping and involvement. Review previously prepared studies to help direct Purpose and Need information as appropriate (e.g., local planning studies, engineering feasibility studies, etc.). No more than 2 (two) versions of the Purpose and Need will be submitted for review and comment.</p>		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>B. Alternatives Development and Evaluation Develop a technical report from the PEL to NEPA that identifies the range of reasonable alternatives that will satisfy the Purpose and Need requirements of the project, including, but not limited to, those identified in earlier and ongoing studies of the area. Review and utilize the alternatives development and evaluation work completed previously in the WestConnect PEL Study. The Consultant team, in coordination with CDOT and FHWA, will determine the design year to use for the project. Changes in the design year during the project may be subject to a Scope of Work modification. Assume a Draft and Final version of the technical report.</p>		X	
<p>C. Evaluate Alternatives Impacts The consultant shall take into account the projected design-year traffic volumes and projected opening day traffic volumes for new facilities as developed for this Scope of Work, or as modified through later studies and calculations by CDOT. Evaluate the impacts of additional alternatives according to established guidelines and examine the degree to which these alternatives satisfy the Purpose and Need requirements of the project. The Consultant shall utilize previously developed conceptual schematic and narrative form for alternatives already developed during the WestConnect PEL Study.</p>		X	
<p>D. Alternatives Screening Process Utilizing what was developed for the WestConnect PEL Study & any newly developed alternative(s), apply an alternatives screening process to evaluate the reasonable alternatives (practical or feasible from a technical and economic standpoint), to select a preferred alternative to move forward into NEPA. Develop NEPA-appropriate evaluation criteria, and measures of effectiveness, and submit them for review and approval by CDOT and FHWA before beginning the screen process. The rationale for eliminating alternatives will be thoroughly discussed within the technical report listed in B above. The preferred alternative will move forward into the NEPA process.</p>		X	
<p>E. Preliminary Design of Alternatives For each of the considered alternatives in the screening process, additional conceptual design beyond what was completed in the WestConnect PEL study may be required to come to a determination of the preferred alternative for analysis of resource impacts during NEPA. During NEPA, preliminary design for 1 preferred alternative will be advanced to a level that clearly allows the identification of impacts within each environmental resource area.</p>		X	
4. COST ESTIMATES AND FINANCIAL ANALYSIS			
<p>A. Develop Conceptual Cost Estimates and Financial Analyses Develop cost estimates and financial analyses for inclusion in the NEPA document. Conceptual cost estimates will need to be developed for any alternative developed, but not considered in the WestConnect PEL Study. Utilize research and information previously developed in the West Connect PEL Study. Basic engineering, preliminary engineering, construction engineering, construction, and operating/maintenance for the design life will also be analyzed. A funding package identifying the funding sources necessary to construct and maintain the projects will be developed.</p>	C	X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>B. Incorporate Into NEPA Document Review the cost estimates and financial analysis, provide supplemental analysis as needed to support the preferred alternative and transition from what was done in the PEL to NEPA, and incorporate findings into the draft NEPA document.</p>		X	
<p>C. Preliminary Construction Quantities and Cost Estimate Prepare preliminary construction quantities based on the preferred alternative design identified during the NEPA process. Project right of way acquisition and project environmental mitigation costs shall be included within the cost estimate. Include enough detail to ensure a reasonable degree of accuracy for the level of design performed. Submit the format of quantities, to CDOT's Project Engineer for review. CDOT will develop construction cost estimates based on these quantities to incorporate into the NEPA document.</p>	C	X	
<p>5. DATA COLLECTION, FIELD INVESTIGATION, MITIGATION MEASURES</p>			
<p>The following analyses are required for the preferred alternative. Each resource will be summarized concisely, focusing on the project issues of concern in the NEPA document. The scope shall define the level of documentation, project tasks, and project deliverables for each of the resource areas. Identify the required area and resources to evaluate and determine the early coordination/scoping process as discussed above, but may evolve over the life of the project as new information is discovered through analysis. Reference other projects within the study area (to make sure existing conditions are alike between both projects, understand future planned conditions within the study area, and to appropriately evaluate cumulative impacts to resources); these projects may be related to transportation, but may also be entirely unrelated to transportation (such as a new strip mall, school, park, apartment building, for example). As determined by the Consultant team, the Region, and EPB, a larger area is typically evaluated for cumulative effects. The level of detail and analysis will be determined based on the level of environmental documentation (e.g., Feasibility Study, CatEx, EA, or EIS). It is expected that the level of detail for this NEPA document will be as appropriate for a Template EA and utilize all appropriate information from the WestConnect PEL as to not re-create efforts that have previously been completed. Use of Geographic Information Systems (GIS) for environmental data is required to be in compliance with CDOT GIS standards. All GIS data shall be provided to CDOT in electronic format with the annual updates for the administrative record. Relevant information will be incorporated in the NEPA document sections such as: Affected Environment, Environmental Consequences, and Mitigation Measures. In addition, technical reports may be prepared in support of the project and shall be reviewed and referenced as appropriate in the NEPA document. If new or unique resources are identified during scoping, this scope of work will be modified to include these, as appropriate.</p>		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
A. Existing Roadway and Major Structures			
a Review and utilize information from the WestConnect PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report.		X	
b Evaluate existing conditions to assess the proposed design relative to the following: i existing roadway safety and structure condition ii general traffic concerns iii geometry and conditions including cross-sections, shoulders, medians and lane widths iv noise walls v Americans with Disabilities Act (ADA) accommodations and compliance vi Guardrail vii Lighting viii Traffic Signal Devices ix Signage, signals, lighting, grades, speeds, components, structures, and utilities should be included in the effort.	C	X	
c Construction Requirements: i General construction impact (of temporary nature) ii Material pits iii Haul roads	C	X	
d Multi-modal Transportation: Document existing multi-modal transportation facilities including bike paths/lanes, sidewalks, alignments for transit (heavy rail, light rail, bus routes), transit stops/stations, and multi-modal centers. Signage, signals, lighting, grades, speeds, components, and structures should be included in the effort. Utilize the information developed in the WestConnect PEL Study for these resources.		X	
B. Geospatial Data Assemble, store, manipulate and display data for resources as needed.		X	
C. Air Quality Perform the necessary air quality impact analysis and modeling as required and provide the results for integration into the NEPA document and Air Quality Technical Report (with modeling data assumptions). These will include, but are not limited to, analysis or discussion of: NAAQS, carbon monoxide (CO) hot spots, PM 10 hot spot analysis, regional emissions analysis, Mobile source air toxics (MSAT) —qualitative or quantitative, greenhouse gases (GHG), climate change, construction issues such as fugitive dust emissions, and mitigation measures to demonstrate air quality conformity. CDOT staff will lead coordination with the Colorado Department of Public Health and Environment Air Pollution Control Division (CDPHE-APCD) and U.S. Environmental Protection Agency (EPA) (as necessary). The analytical methodologies (including number of intersections to be modeled) will be determined through the coordination. The Proposed Action and the No-Action Alternative will be analyzed for impacts through the appropriate design year. Mitigation commitments will be developed, as necessary. The Consultant must get approval from the CDOT Region and/or EPB air specialist (and possibly FHWA staff) for any methodologies to evaluate hazardous air pollutants. Utilize the most current standard, accepted FHWA language for MSATs.		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>D. Geologic Resources and Soil Perform and document in the NEPA Document, and a Geologic Technical Report, a thorough investigation of the project area to determine possible geologic influences on the alternative designs under consideration, or vice versa. Constraints, including but not limited to major excavations, unsatisfactory sub-grade materials, present and potential subsidence, potential for rockfall, the presence of abandoned mine sites, etc., will be evaluated. This task includes consideration and description of the corridor water table (i.e., depth/gradient).</p>	C		
<p>E. Water Quality Next steps identified during the WestConnect PEL Study include evaluating impacts to the water quality resources identified during the WestConnect PEL Study, and obtaining all necessary permits for construction depending on impacts of the preferred alternative.</p>		X	
<p>a Review and utilize information from the WestConnect PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report.</p>		X	
<p>b Review status of the water resources (quality, etc.) as identified in the WestConnect PEL study for the purposes of describing the “affected environment” before construction: ground water/aquifers, lakes, rivers, streams, and springs. Locations of drinking water treatment plants and locations of sewage treatment facilities.</p>		X	
<p>c Water resource and quality impacts of the project during and following construction, determined by considering the project location and design concepts in relation to existing water resources including groundwater or alluvial waters or aquifers (particularly sole source), drainage ditches and other State Waters as defined by CDPHE Water Quality Control Division, aquatic as well as riparian habitat, and Sensitive Waters (Class 1 Aquatic Life, Recreation 1, and Water Supply, 303[d] listed, etc).</p>		X	
<p>d Municipal Separate Storm Sewer System (MS4) and Colorado Discharge Permit System (CDPS) design and permitting issues.</p>		X	
<p>e A mitigation plan that includes conclusions of effects, permanent best management practices (BMPs), temporary/construction BMPs, erosion control measures, and definition of maintenance responsibilities.</p>		X	
<p>f Water Quality Technical Report</p>		X	
<p>F. Floodplains Assessment Next steps identified in the WestConnect PEL Study include that dependent on the preferred alternative, floodplain modeling may be required to assess future floodplain impacts and may require a CLOMR and LOMR.</p>		X	
<p>a Review and utilize information from the WestConnect PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report.</p>		X	
<p>b Identify location of floodplains and any planned changes to the floodplains from adjacent development.</p>		X	
<p>c Add information to environmental resource mapping of existing conditions.</p>		X	
<p>d Determine the probable impacts of the preferred alternative with respect to floodplains and drainage.</p>		X	

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
e	Identify adverse effects on the project area with respect to floodplains and drainage for the preferred alternative (including during construction and relative to actual operating conditions).		X	
f	Develop possible actions to mitigate for the adverse impacts and coordinate with roadway and structural designers.		X	
g	Analyze the impacts and mitigation. Included in the analysis will be a determination of significant impacts due to:		X	
i	Single community access routes.		X	
ii	Risk for social or economic losses due to flooding.		X	
iii	Alteration of beneficial floodplain values.		X	
iv	Recommend preparation of Conditional Letter of Map Revision (CLOMR), Letter of Map Revision (LOMR) requirement		X	
h	Prepare a Floodplain and Drainage Assessment Report which will incorporate appropriate water quality control measures and BMPs as per the CDOT MS4 permit, New Highway Development program. If prepared, the report will be reviewed by the Region or EPB specialist and then finalized.		X	
G. Wetlands				
a	Wetlands Determination/Delineation:		X	
i	During the WestConnect PEL Study, a desktop survey and limited field surveys were completed. No mapping or soil samples were completed during the WestConnect PEL study. Additional field evaluations and soil samples may be needed to evaluate the presence of wetlands within the project study area. Global Positioning System (GPS) should be used for this activity.		X	
ii	Delineate the boundaries and size of all anticipated jurisdictional and non-jurisdictional wetlands and waters of the US within the project area using United States Army Corps of Engineers (USACE) guidance listed in Appendix A.		X	
iii	Prepare wetlands maps that delineate the wetland boundaries within the corridor. GPS will be used for this mapping.		X	
iv	Coordinate the findings with the CDOT Region and the USACE. Obtain jurisdictional determination of the wetlands from the USACE.		X	
b	Wetland Finding Report Prepare a Wetland Finding Report. The Functional Assessment of Colorado Wetlands (FACWet) should be used, as appropriate according to current CDOT procedures. Conduct a wetland assessment based on the NEPA document addressing the amount of permanent and temporary wetlands impacts and mitigation. Wetland mitigation should be identified as early as possible in the NEPA process. Mitigation sites must be evaluated for availability and suitability for wetland habitat.		X	
H. Vegetation and Noxious Weeds				
a	Conduct necessary field surveys and identify vegetation and noxious weeds within the project area. GPS will be used for this activity. Plot major vegetation zones/ecosystems, and weed locations and densities on a map.		X	
b	Perform an impact analysis.		X	
c	Prepare an Integrated Noxious Weed Management Plan		X	

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
I. Fish and Wildlife				
a	Utilize work completed in the WestConnect PEL Study to identify fish and wildlife habitats.		X	
b	Coordination with the Colorado Division of Wildlife (CDOW) and US Fish and Wildlife Service (USFWS).		X	
c	Develop appropriate mitigation measures using the WestConnect PEL as a basis.		X	
d	Prepare Biological Resources Report		X	
J. Threatened and Endangered (T&E) Species				
a	Utilizing the information gathered during the WestConnect PEL Study write letters for the CDOT EPB Wildlife Program Manager's signature to the Colorado Division of Wildlife (CDOW), US Fish and Wildlife Service (USFWS), and Colorado Natural Heritage Program (CNHP) requesting a T&E species list.		X	
b	Utilize desktop and field surveys completed during the WestConnect PEL Study to identify T&E species and/or Designated Critical Habitat for NEPA processes. Next steps identified during the WestConnect PEL Study include field surveys of primary and unnamed drainages to identify the presence or absence of sensitive species and survey of existing riparian areas along all drainages for SB 40 trees and shrubs.		X	
c	Identify impacts to species and recommend mitigation based on the preferred alternative.		X	
d	Based on affected environment and habitat, prepare the T&E species impact assessment.		X	
e	Perform a habitat assessment and informal consultation analysis and documentation for Federally Listed Threatened and Endangered Species. Assume formal consultation and preparation of a Biological Assessment will not be required and no critical habitat will be impacted.		X	
f	Develop a HCP with the USFWS if T&E species and/or Designated Critical Habitat will be impacted and if there is a federal nexus.		X	
g	Identify any impacts and develop a mitigation plan to conform to requirements of the Endangered Species Act.		X	
K. Historic Properties				
a	Perform and provide the survey report for review by the CDOT Region Historian or EPB Senior Staff Historian, and incorporate the information into the NEPA document. The following lists are not meant to be exhaustive.		X	
b	Collection and Evaluation of Baseline Information as defined by Section 106 of the National Historic Preservation Act of 1966, as amended		X	
Historic Clearance				
a	Review and utilize information from the WestConnect PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report. No field surveys were completed during the WestConnect PEL Study.		X	

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
b	Determine the area of potential effect (APE), in coordination with CDOT and the State Historic Preservation Officer (SHPO).		X	
c	Conduct a literature and records search for previously recorded historic resources in the APE at the OAHP.		X	
d	Conduct an intensive architectural field survey of the APE and determine National Register of Historic Places (NRHP) eligibility for each resource 45 years or older. Potential resources include man-made structures, ditches, railroads, etc.		X	
e	Identify and coordinate with consulting parties (e.g., public, historic preservation groups, local historical societies, museums) regarding historic properties in the project area.		X	
f	Write a comprehensive Historic Resources Survey Report according to guidelines established by the OAHP to submit for review by the CDOT Region and/or EPB Senior Staff Historian.		X	
g	Determine potential impacts, both direct and indirect, to historic resources and recommend mitigation strategies to avoid, minimize, or mitigate impacts.		X	
h	Prepare correspondence as necessary for the CDOT Region and/or EPB Senior Staff Historian to submit to the SHPO.		X	
i	Collaborate with the CDOT Region Historian or EPB Senior Staff Historian to develop a Memorandum of Agreement, if necessary, with recommended mitigation strategies for adverse effects for agency review and execution.		X	
j	Prepare Section 4(f) documents as required.		X	
k	Work with the CDOT Region historian or EPB Staff Historian to obtain any necessary approvals.		X	
Historic Bridge Clearance (if applicable)				
a	Assist CDOT to research the Statewide Historic Bridge Inventory to determine the eligible or non-eligible status of bridges that may be in the project area.		X	
b	Prepare correspondence as necessary for the CDOT Region and/or EPB Senior Staff Historian to submit to the SHPO.		X	
c	If bridges that have been determined to be eligible or listed on the NRHP are present, develop alternatives to bridge replacement, including: No-Action, rehabilitation, build a companion structure, build a new bridge in a different location, and others dictated by the project circumstances.		X	
d	Collaborate with the CDOT Region and/or EPB Senior Staff Historian to develop a Memorandum of Agreement, if necessary, to mitigate adverse impacts to historic bridges for agency review and execution.		X	
e	Prepare a archival documentation or other creative mitigation of the bridge to mitigate adverse effects according to standards established by the OAHP.		X	
f	When applicable, prepare information for CDOT Adopt-a-Bridge program to mitigate adverse effects.		X	
g	Work with the CDOT Region and/or the EPB Senior Staff Historian to obtain any necessary approvals.		X	
h	Prepare Section 4(f) documents as required.		X	
Archaeology				
a	Review and utilize information from the WestConnect PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report.		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
b A review of historic Sanborn Fire Insurance maps and other appropriate archival sources will be completed to determine if the area may contain significant archaeological sites or features.		X	
c Conduct an intensive field survey of the project corridor(s) and undertake site-specific test excavations, as necessary and appropriate, to determine NRHP eligibility. The Consultant shall not undertake test excavations before consulting with CDOT.		X	
d Complete laboratory analyses of all collected artifacts and ancillary specimens.		X	
e Write a comprehensive survey report according to guidelines established by the OAHP.		X	
f Develop a data recovery plan to mitigate potential adverse effects to significant archaeological localities, as appropriate and necessary.		X	
g Coordinate the mitigation plan with the EPB Senior Staff Archaeologist, SHPO, and other required agencies.		X	
h Conduct data recovery excavations at any significant archaeological site that cannot be avoided during construction.		X	
i Analyze artifacts.		X	
j Prepare and submit a data recovery excavation report which describes, in a thorough and comprehensive fashion, the project results and the nature of the site in the context of the regional archaeological database. The report must also include site management recommendations in the context of the NRHP.		X	
k Coordinate Tribal consultation and support EPB Senior Staff Archaeologist as needed.		X	
l Prepare Section 4(f) documents as required.		X	
L. Paleontological Resources			
a Review and utilize information from the WestConnect PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report. No field surveys were completed during the WestConnect PEL Study. Next steps identified during the WestConnect PEL Study include a site visit and visual survey to identify potential paleontological resources as well as preparation of a report describing the results of the onsite reconnaissance.		X	
b Utilize the literature and museum fossil database search performed in during the WestConnect PEL Study for use during NEPA.		X	
c Determine the presence or absence of paleontological resources.		X	
d Conduct analysis to determine the scientific significance (research and/or educational value) of the resource.		X	
e Write the paleontological technical report, including mitigation proposals, if necessary. The assessment report will be reviewed by the EPB Staff Paleontologist for adequacy.		X	
f Coordinate the mitigation plan with the EPB Staff Paleontologist.		X	
M. Land Use			
Utilize previous information gathered and prepared during the WestConnect PEL Study to map and evaluate baseline information. Present information on land use and zoning, including maps of existing, planned and future uses. Present land use mapping. Mapping may include parcel use categories such as: land in public ownership, commercial, retail, wholesale, industrial, residential, vacant, mixed etc. which identifies jurisdictional boundaries and land usage along the preferred		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>alternative. (Information may be obtained from Department of Local Affairs, from old Sanborn maps, from archival aerial photos, from the local city, town or County, and/or from field verification.) Identify any impacts or consequences, based upon the preferred alternative, to land uses and recommend appropriate mitigation measures as necessary.</p>			
<p>N. Social and Economic Resources Utilize and present previous information gathered and prepared during the WestConnect PEL Study to collect, map, and evaluate baseline information to investigate and document the effects of the project alternatives on community cohesion, safety and security, neighborhoods, and accessibility of facilities and services. Investigate the effects of the preferred alternative on commercial and industrial enterprises, employment, local tax base, regional earnings, etc. When relevant, recent Census data shall be utilized. This will be done at the regional and corridor level, as well as part of a cumulative effects analysis, as appropriate. Identify any impacts or consequences and recommend appropriate mitigation measures as necessary.</p>		X	
<p>O. Environmental Justice Building on what was completed in the WestConnect PEL Study, collect the necessary U.S. Census and other applicable data to identify existing low-income and minority populations, as well as adverse effects and mitigation measures or alternatives that would avoid or reduce the impacts according to environmental justice guidelines. Impacts to these communities will be evaluated using CDOT and FHWA guidance in accordance with Executive Order 12898. Beneficial effects of the project on these populations will also be identified. The analysis will cross-reference other resources as appropriate (e.g., noise, air and water pollution, aesthetics, community cohesion, relocation impacts).</p> <p>As part of the project’s public participation or public involvement program, ensure that meaningful opportunities for all members of the community to provide input to the project exist. Document the degree to which affected low-income or minority populations have been afforded the opportunity to provide input in the NEPA process related to the development of purpose and need, alternatives analysis and screening, impact analysis, preferred alternative identification, and mitigation measures development. Collaborate with EPB’s Environmental Justice specialist to determine the level of Environmental Justice outreach activities necessary to obtain sufficient input from low-income and/or minority populations. Document all outreach efforts and input (or feedback) for low-income and/or minority communities within an Environmental Justice Technical Report.</p>		X	
<p>P. Bicycle and Pedestrian Facilities Utilize previous work completed in the WestConnect PEL Study to identify existing and future planned bicycle and pedestrian facilities in the project area. The necessary data will be collected from project design documents, community transportation plans, local land developers, open space and park trails, or local governmental agency or community interest groups to determine if any facilities will be impacted, and as a result what mitigation is necessary. If the corridor is a heavily traveled biking facility, the scope of work shall include meetings to coordinate with bike</p>		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
users throughout the NEPA process. (If Section 4(f) resources are impacted see Section 4(f) and 6(f) Evaluation.)			
<p>Q. Residential/Business/Right-of-Way (ROW) Relocation The following activities will be performed and documented for the preferred alternative by a qualified member of the Consultant team, in coordination with the CDOT Region ROW manager (or designee), or Headquarters ROW specialist assigned to the project, in accordance with Title 23 CFR 710:</p>		X	
<p>a Prepare a table identifying and listing all potentially affected properties including, at a minimum, ownership names, property and mailing addresses, estimated areas of impacts, and indicating the impact on each property. This table will be submitted to the CDOT Region ROW Manager for review and may be included in the NEPA document (without personal property details) at the discretion of the CDOT Region and/or Headquarters ROW staff.</p>		X	
<p>b Perform a ROW field inspection of each short-listed alternative. Ascertain number of parcels, types of improvements, and possible issues (e.g., historic sites). Estimate family sizes for residential relocations.</p>		X	
<p>c Compile a ROW acquisition and relocation cost estimate for 1 alternative.</p>		X	
<p>d Prepare a property ownership map based on tax records, which identifies ownerships for 1 alternative.</p>		X	
<p>e Develop and document mitigation measures</p>		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>R. Transportation Resources It is the intent of this RFP to fully utilize the work previously completed in the WestConnect PEL Study. Transportation Resources were evaluated and modeled during the WestConnect PEL Study, as much of this previously completed work as possible should be utilized to completed the following tasks.</p>			
<p>Traffic Data Collection</p> <ol style="list-style-type: none"> 1. 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. CDOT will provide the consultant access to INRIX for travel speed data, COGNOS lane volume and speed data, and ramp meter traffic data. The consultant shall compile the available traffic data and determine additional data needs, if any. Multiple recordings will most likely be necessary to establish a “typical” condition. In some cases origin and destination traffic data may be needed to evaluate an existing condition. Daily vehicle classification counts shall 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 CDOT. 2. The Consultant shall map the existing lane volumes and speeds on C-470 within the project boundaries. At a minimum, this will include the mainline of C-470, the mainline of I-70 between CR 93 (Exit 259) and US 6 (Exit 261), all entering and exiting ramp volumes at the merge/diverge points, and weave areas at all interchanges in the project limits. Additional locations to be evaluated will be determined by the Consultant in coordination with CDOT, with input from the project stakeholders. 3. Inventory the existing and any planned transportation infrastructure in the corridor including highway through and auxiliary lanes, interchanges, right-of-way and access; arterial lanes and access and transit types / service levels including station locations, routes and frequency. The document shall also include bicycle and pedestrian facilities, planned and existing intermodal connection facilities and stations. Summarize current roadway features including present lane configurations, roadway and right-of-way widths, adjacent land ownership characteristics, utility, and environmental concerns in a simple and readily understandable format. 		X	
<p>Travel Demand Forecasting</p> <ol style="list-style-type: none"> 1. Document the existing travel markets that use the transportation system by using the DRCOG travel demand model (not field surveys) to establish: <ol style="list-style-type: none"> 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 		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<ol style="list-style-type: none"> 2. Summarize land use and modeling data as provided by the DRCOG travel demand model (Years 2015 and 2040). 3. 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 model specific to the project study area and will utilize one of the DRCOG models that is available for such purposes. This may include; 4. Local agency transportation models, integrated into adopted 2040 regional DRCOG FOCUS II, models. The primary product of this work will be the 2040 travel demand forecasts approved for study use by CDOT, DRCOG and FHWA. These forecasts will be used to develop 2040 AADT and peak hour traffic volumes for the corridor and arterial roadways, and as determined necessary, peak hour turning movements at signalized intersections, freeway and freeway ramp terminals. Previously projected transit utilization may be incorporated into the study without new transit modeling being performed. 5. 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. The Consultant will also be required to coordinate with CDOT Traffic Operations and FHWA at key milestones and as needed. 6. Modeling shall 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. 			
<p>Traffic Operations</p> <ol style="list-style-type: none"> 1. The Consultant may need to develop an appropriate mesoscopic model and provide justification for the proposed model selection to CDOT, DRCOG, and FHWA. The use of the proposed model is subject to the approval of these agencies. Explain why this model could be used to assess traffic redistribution and assignment changes in regard to alternatives that implement access changes to the freeway and/or connecting roadway system. Explain how this model could be used for future studies. 2. It is anticipated that the Consultant will use a micro-simulation model to evaluate the traffic operations of the complete freeway system and report the agreed upon Measures of Effectiveness. The Consultant shall be required to use State of the Practice modeling calibration techniques for the existing conditions. This includes following the guidelines provided in the FHWA Traffic Analysis Toolbox as a framework for methods regarding traffic data collection/validation, and setting up and calibrating the micro-simulation model within the agreed upon spatial and temporal limits of the model. 		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>3. The Consultant will 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.</p> <p>4. Using 2018 data, the Consultant shall perform a corridor travel time reliability analysis developed from INRIX travel time data that screens out 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.</p> <p>5. The Consultant shall prepare a report identifying the existing AM and PM peak hour operational characteristics and roadway geometric assessment along with identified safety issues and provide a summarized problem statement of existing operational, safety and geometric deficiencies.</p> <p>6. Perform corridor and site-specific operational analyses using the appropriately calibrated micro-simulation model for the 2040 model volumes to help develop and screen alternatives that provide safety and operational benefits. Future travel demands shall be compared to existing corridor capacity and inadequately served traffic patterns shall be identified. (I.e. No-Build Alternative).</p> <p>7. 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 CDOT.</p> <p>8. It is anticipated that Synchro and/or micro-simulation software will be used for evaluation of intersection operations at ramp terminals and adjacent intersections as necessary.</p>			
<p>Safety Assessment</p> <p>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. The Consultant shall then perform an LOSS analysis using current CDOT methodologies and prepare a report outlining the findings</p> <p>The recently developed FHWA crash prediction model may be required if determined necessary.</p>		X	
<p>S. Section 4(f) and Section 6(f) Evaluation</p>			
<p>a Update inventory and map project area for Section 4(f) and/or 6(f) facilities using the inventory collected in the WestConnect PEL.</p>		X	
<p>b Determine if any potential impacts or ROW acquisitions for the preferred alternative include Section 4(f) properties (e.g., publicly owned parks, recreational facilities, nationally significant historic sites, wildlife refuges) or</p>		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
Section 6(f) properties (those that have received Land and Water Conservation Funds).			
c Determine and evaluate project impacts on Section 4(f) and/or 6(f) properties using preferred alternative preliminary design information, and the necessary commitments for mitigation measures. Determine whether impacts qualify under the “de minimis” 4(f) use. Prepare an analysis that includes avoidance alternatives, discussion of prudent and feasible, least harm (if necessary), minimization, and mitigation related to Section 4(f) properties. This may include the development of a new alternative(s) as an avoidance alternative(s)		X	
d Determine if the Section 4(f) use could be evaluated as a De Minimis Finding. If so, prepare that documentation in consultation with CDOT Region or EPB Staff.		X	
e Prepare the Draft and Final documentation for Section 4(f) and/or 6(f) evaluation. This will go through the Region Planning and Environmental Manager (RPEM) to the EPB for review.		X	
f Prepare evaluation and coordinate reviews with RPEM and EPB staff for review by FHWA.		X	
T. Farmlands Next steps identified during the WestConnect PEL Study include a detailed analysis of the project impacts to the existing prime farmland. No unique farmlands are present in the project study area.		X	
U. Noise Prepare a technical noise assessment in accordance with the most recent CDOT Noise Analysis and Abatement Guidelines and submit a comprehensive noise assessment document to CDOT for review and acceptance.		X	
The analysis will consist of the following, each of which must be covered in the noise assessment document:		X	
a Definition of relevant noise abatement criteria and identification of noise-sensitive land uses.		X	
b Determination of existing noise levels (by measurement and/or modeling).		X	
c Prediction of future traffic noise levels for the preferred alternative and the No-Action Alternative, using FHWA’s current Traffic Noise Model.		X	
d Determination of traffic noise impacts.		X	
e Identification and evaluation of feasibility and reasonableness of noise abatement measures. Coordinate with Project Engineer with regards to locations and heights of proposed abatement measures.		X	
f Development of recommendations regarding noise abatement measures.		X	
g Assessment of construction related noise issues.		X	
h The above items will be addressed and documented in a Noise Technical Report, which will be prepared and submitted to CDOT for review and acceptance. Prior to beginning this work, the Consultant shall meet with CDOT to review the appropriate noise methodology. Noise modeling should be completed for the model year 2040. The draft and final technical report will be completed and made available to the CDOT Noise Specialist for review; the findings will be incorporated into the NEPA document.		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>V. Visual Resources</p> <p>Significant effort went into completing a VIA during the Westconnect PEL therefore this SOW shall include the confirmation of critical visual elements inventoried in the highway corridor landscape units/types/themes, and project view shed; identify key views, including to and from the highway and other likely locations of viewers; analyze existing visual resources and viewer response/exposure and any impacts expected from the project. Recommend and develop mitigation measures for identified impacts.</p> <p>When specified, the following will be investigated: natural areas (e.g. scenic landscapes such as national parks or forests), wildlife habitat, topography, major drainages, unique land forms, soil types, plant communities. Quality (including vividness, intactness, and unity); viewer sensitivity/exposure (over space and time) and existing aesthetic liabilities. This scope shall include visual impact considerations to other future environmental mitigation elements such as noise walls, retaining walls, etc along the corridor project area appropriate with the conceptual level design.</p>		X	
<p>W. Energy</p> <p>Discuss in general terms the construction and operational energy requirements and conservation potential of the preferred alternative under consideration. The discussion should be reasonable and supportable. A calculation of energy consumption during construction should be included.</p>		X	
<p>X. Hazardous Materials</p> <p>Next steps identified in the WestConnect PEL Study include completing a corridor-wide Modified Phase 1 Environmental Site Assessment or CDOT initial site assessment at site-specific locations to evaluate hazardous materials that may require remediation prior to acquisition or development. Perform and document the Modified Environmental Site Assessment (MESA) activities:</p>		X	
<p>a Utilize regulatory research completed during the WestConnect PEL Study that includes the collection, mapping and Evaluation of data for the following resources:</p>		X	
<p>i Hazardous Waste Lists compiled by U.S. EPA or CDPHE which identify, utilizing a database provider if appropriate.</p>		X	
<p>ii Records kept by U.S. EPA or CDPHE on hazardous waste regulation violations or citations</p>		X	
<p>iii Lists kept by the appropriate fire department</p>		X	
<p>iv Available historic tax records which indicate past land use (coordinate with property ownership and land use data research), such as Sanborn Fire Insurance Maps</p>		X	
<p>v Available historic aerial photos of the corridor (e.g., United States Geological Survey, public libraries, etc.)</p>		X	
<p>vi Historic topographic maps</p>		X	
<p>vii Any pertinent records maintained by CDOT</p>		X	
<p>viii Documented personal interviews, if approved by CDOT/PM</p>		X	
<p>ix Agency file reviews</p>		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
b Analyze results of regulatory research and records review and identify potential impacts construction activities may have on existing hazardous waste sites. Assess potential liability issues and hazards to the public and construction workers and develop potential mitigation options. Prepare the ISA/MESA Document to include the following:		X	
i Prepare the draft and subsequent final ISAs to address comments provided by CDOT.		X	
ii ISAs will conform to American Society for Testing and Materials (ASTM) standards for Phase I reports (with limitations), and make a determination of the necessity of a Phase II report.		X	
iii Identify how the presence of hazardous waste locations may impact the preferred alternative, and the no-action alternative. GIS mapping will be desired.		X	
<p>Y. Cumulative Impacts Consistent with CEQ regulations, the cumulative effects of each proposed action on a resource, ecosystem or human community will be evaluated for each alternative. The analysis will both list and consider incremental impacts of each alternative in conjunction with all past, present, and reasonably foreseeable future actions, no matter what entity (federal, non-federal, local government, or private) is taking or has taken the action; but the analysis should only focus on meaningful effects. Develop the scope of the analysis in consultation with FHWA and CDOT, and, in general, will base temporal and spatial boundaries on the natural boundaries of resources of concern and the period of time that the proposed action’s impacts will persist. The analysis will be incorporated into the NEPA document, and mitigation measures specific to cumulative impacts, if needed, will be identified.</p> <p>i Standard FHWA global climate change language is to be incorporated within every cumulative impacts section of a NEPA document.</p>		X	
6. DELIVERABLES			
The following documents will be considered as official deliverables. Deliverables to CDOT will occur at the dates agreed to within the project contract and related agreements.	C	X	
Environmental Resource Maps of Existing Conditions, Noise Report, Air Quality Report, Hazardous Materials Assessment, Historic Determinations, Water Quality Report, Drainage Assessment Report, Wetland Finding Report, Biological Resource Report, , Section 4(f) Evaluation, Section 6(f) Evaluation, Safety Assessment, Noxious Weeds Management Plan, Geologic Technical Report, Archaeological Report, Paleontological Report, Social Economic and Environmental Justice Report, Project Work Plan, Stakeholder Involvement Plan, Public Involvement Plan, Draft NEPA document, Final NEPA document, Administrative Record	C	X	
7. PUBLIC AND AGENCY INVOLVEMENT			
This section identifies public and agency involvement tasks anticipated for the project.		X	
Develop an Agency Coordination Plan (required for an EIS, optional for an EA)		X	
a. Stakeholder Involvement Plan		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
Prepare a Stakeholder Involvement Plan specific to the nature of this project. The level of effort included in the plan will be in keeping with the complexity and expected controversy of the project. Coordinate with the CDOT/PM and project team to identify the level of effort to be documented in the plan. At a minimum, the plan should:			
a. Develop a stakeholder database		X	
b. Identify methods for public notification and dissemination of information, such as newsletters, flyers, postcards, web site, press releases, miscellaneous informational materials, etc.		X	
8. NEPA DOCUMENTATION PROCESS			
Develop, coordinate, write, review, conduct QA/QC and finalize the appropriate NEPA document, assumed to be a Template EA and or Categorical Exclusions in accordance with the current provisions of the following laws, regulations, and standards.		X	
A. Preliminary Data Submission Provide a report detailing all the data collected for the resources listed under “Data Collection, Field Investigation and Analysis” and “Environmental Analysis and Documentation” of this Scope of Work for the affected environment and impact sections of the NEPA document. The level of effort will be directly commensurate with the class of action and degree of controversy of the project. The Scope of Work will be revisited for possible update at the end of this Preliminary Data Submission task when more is understood about the impacts or analyses that will be necessary (determined during scoping and data collection).	C	X	
B. Draft and Final NEPA Document Preparation Assign a team leader qualified to (1) manage the NEPA process, (2) develop a schedule for document preparation, printing, review, and comment response, (3) will direct the Consultant team in the following tasks in coordination with the CDOT Region, EPB, and FHWA. The CDOT NEPA Manual specifies the number of copies to be provided for document review for each phase of the NEPA process.		X	
a. Distribute the internal draft NEPA document and relevant technical reports for review to a distribution list specified by CDOT. Prepare no more than 3 versions of the draft NEPA document and relevant technical reports with each version. Provide effort for no more than 2 review cycles of the draft NEPA document and relevant technical reports. Coordinate and conduct no more than two comment resolution meetings for distribution list comments. Respond to comments within a reasonable number of working days after received.		X	
b. Lead the effort with Consultant team to determine whether the “class of action” (EA or EIS) decided upon during the scoping process is still valid after the impacts and mitigation measures have been determined. This will be determined with no more than two meetings.		X	
c. Determine review process to be used for the NEPA document.		X	
d. Coordinate the impacts and mitigation measures with CDOT, and appropriate agencies, and FHWA. Take necessary actions to resolve issues.		X	
e. Prepare a NEPA document outline for review by CDOT and FHWA. Prepare no more than two versions of the outline to be submitted and reviewed, with reviews and approvals being conducted by CDOT, FHWA, and other appropriate agencies.		X	
f. Prepare and provide to the CDOT Region up to 3 versions of the complete draft NEPA document and relevant technical reports [in paper format and also in		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
electronic format]. Provide effort for no more than 2 review cycles of the draft NEPA document and relevant technical reports for Region review. Coordinate and conduct no more than two comment resolution meetings for Region comments. If deemed appropriate by the PMT and CDOT, a concurrent review may be conducted between the Region and EPB, at which point combine tasks a and b above may be combined			
g Prepare and provide to CDOT EPB up to 3 versions of the complete draft NEPA document and relevant technical reports. Provide effort for no more than 2 review cycles of the draft NEPA document and relevant technical reports for CDOT EPB review. Coordinate and conduct no more than two comment resolution meetings for CDOT EPB comments.		X	
h Prepare and provide to FHWA Colorado Division and FHWA Legal up to 3 versions of the complete draft NEPA document and relevant technical reports. Provide effort for no more than 2 review cycles of the draft NEPA document and relevant technical reports for FHWA Colorado Division and FHWA Legal review. Coordinate and conduct no more than two comment resolution meetings for FHWA comments.		X	
a Distribute the draft NEPA document and relevant technical reports for review to a distribution list specified by CDOT. Prepare no more than 3 versions of the draft NEPA document and relevant technical reports with each version including a comment/response period. Provide effort for no more than 2 review cycles of the draft NEPA document and relevant technical reports. Coordinate and conduct no more than two comment resolution meetings for distribution list comments.		X	
b After each review cycle, make appropriate revisions to each subsequent version draft NEPA document and relevant technical reports until all comments are sufficiently addressed. Copies of each subsequent draft shall be provided to CDOT for distribution to CDOT, and appropriate agencies, and FHWA. A review meeting will be held to discuss review comments, if needed.		X	
c For the review cycles listed above, prepare a comment/response matrix for each draft NEPA document and relevant technical reports that describes how each comment was addressed. This matrix will be distributed with each version of the draft document and relevant technical reports that CDOT and FHWA review.		X	
d Submit the NEPA document to CDOT for signature and routing to FHWA for approval.		X	
e Draft NEPA Document Distribution, Advertising and Public Review, Review and Concurrence, and Public NEPA Document Availability and Advertisement		X	
f Provide the following services in coordination with the CDOT Region or EPB specialist [or CDOT Public Relations specialist as appropriate]:			
g Create draft and final text for the public Notice of Availability of the NEPA document and the date, time and location of the public hearing [if appropriate for NEPA document] for placement in all appropriate local papers and within the Federal Register [if for an EIS] and provide to the FHWA Operations Engineer for processing.		X	
h Follow the signature process outlined in the CDOT NEPA Manual.		X	
i Prepare all aspects of the project necessary for public review of the NEPA document and relevant technical reports, including placing the documents in libraries, on the project web site, and with agencies. For public dissemination		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
the Consultant shall provide an agreed upon number of copies of the signed NEPA document.			
j Compile public comments in determined format by CDOT/PM.		X	
k Provide an electronic version of the NEPA document and relevant technical reports on the CDOT website in PDF, or other read only format.		X	
l Make revisions to the final draft NEPA document and relevant technical reports. The resulting NEPA document and relevant technical reports will be provided to CDOT for distribution and final review, prior to preparing the signature copy. Provide certification that all comments have been addressed. The Consultant shall submit a signature copy of the NEPA document and relevant technical reports [to CDOT] for signatures and routing to FHWA for approval, and then will provide copies of the signed final NEPA document to CDOT.		X	
C. Public Hearing			
a Provide the following services, in coordination with the CDOT Region and EPB:		X	
b Determine location for public meeting and ascertain that facilities are ADA compliant		X	
c Advertise the public hearing/meeting date and location. The following media will be used for advertisement: Select from the following or add others.		X	
d Hire translator, or sign language communicator, as needed		X	
e Provide audio/visual equipment and support for presentations, as needed		X	
f Prepare the graphics/display boards to include, at a minimum, the following features:		X	
Purpose of and need for project			
D. Maps showing alternatives			
a Description of social, environmental and economic impacts			
b Design features			
c Consistency with federal and local plans			
d Right-of-way information, acquisition, and construction			
e Source and amount of funding			
f Location of 4(f) properties if required			
i Any other project-specific resource impacts deemed appropriate			
ii Mitigation measures that warrant public disclosure or relevance			
iii Anticipated project schedule and next steps			
iv How and where the public can provide comments			
v Provide a court reporter (if public hearing) and prepare a certified transcript of the public hearing within 5 working days after the public hearing/meeting.		X	
E. Decision Document (Template FONSI/ROD) Preparation			
a. There is no guarantee of the outcome of the NEPA process in order to determine next steps after an EA, and therefore a scope of work cannot be prematurely developed for the NEPA decision document. This scope of work and contract will be reevaluated once the preliminary EA process is complete and the lead agency has made a decision on how to proceed.		X	
b. In the event that significant impacts are identified in the EA, the NEPA process would be required to continue to the preparation of an EIS rather than a FONSI. Continuing to preparation of an EIS after completion of an EA is at CDOT's and FHWA's discretion, and should not be considered part of the initial EA		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
scope of work. At this point, a separate Consultant contract would be required, with a new scope of work.			
c. In the event that a decision document is deemed necessary, this contract and scope of work would be amended with the concurrence and agreement of both CDOT and FHWA (and other applicable agencies). At the conclusion of the public comment period, (if the project is determined to have no significant impact, a Finding of No Significant Impact (FONSI)) (if determined to have a significant impact then a Record of Decision (ROD)] document may be prepared. In the event a scope of work is prepared for a NEPA decision document to be drafted, the following services would be addressed in coordination with the Region and EPB:		X	
i. Prepare draft NEPA decision document and relevant supporting documentation for incorporating comments received at the public hearing/meeting or from the NEPA document public review period.		X	
ii. Submit draft NEPA decision document (note how many copies: electronic vs. paper) and relevant supporting documentation to CDOT Region, EPB, and FHWA for 6 reviews.		X	
iii. Coordinate and conduct a draft NEPA decision document and relevant supporting documentation review meeting and modify the draft decision document to respond to comments received. Provide certification that comments have been addressed.		X	
iv. If necessary, re-submit the draft NEPA decision document and relevant supporting documentation for review to ensure that all comments have been made.		X	
v. If necessary, modify the draft NEPA decision document and relevant supporting documentation to respond to comments received.		X	
vi. Submit final NEPA decision document and relevant supporting documentation for signature using the signature process outlined in the CDOT NEPA Manual. Make no more than 6 hard copies and 1 electronic versions of the final NEPA decision document and relevant supporting documentation on compact disc.		X	
d. This Scope of Work could be supplemented for additional as-yet unidentified work, if CDOT determines additional work is warranted or needed. In the event that none of the alternatives are selected at the conclusion of the [EA/EIS] process, this portion of the scope and contract will be voided.		X	

**SECTION 7
PRECONSTRUCTION WORK TASK DESCRIPTIONS**

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
1. PROJECT INITIATION AND CONTINUING REQUIREMENTS			
A. Environmental Mitigation and Requirements Ensure that any mitigation commitments within the NEPA documentation are incorporated into the project design plans and transferred in to CDOT's Mitigation Tracking Form.		X	
B. Independent Design Review An independent design review shall be performed on any design accomplished by others that will be used in this project. A report identifying the results of these reviews shall be submitted to the CDOT/PM within one week of the review.	C		
C. Identify Design Criteria Submit a copy of Appendix B -Specific Design Criteria with the appropriate items completed.		X	
D. Initiate Survey Arrange Preliminary Field Survey and/or Aerial Survey. CDOT Form 1217a is an outline of a complete survey request and may be used as a guide for completing the survey plan.		X	
E. Traffic Control Consultant field activities that interfere with traffic operations within existing roadways will require control of traffic. The Consultant shall plan and provide any required traffic control for the survey, testing, or the design process. Traffic control operations will be in accordance with the MUTCD. The proposed Method for Handling Traffic (MHT) must be submitted to the CDOT/PM. Also, certification of the Traffic Control Supervisor as a Worksite Traffic Supervisor by the American Traffic Safety Services Association (ATSSA) or as a TCS (Traffic Control Supervisor) by the Colorado Contractors Association (CCA) shall be required.		X	
F. Structure Review Meeting While the major structural design work is progressing, the Consultant shall meet periodically with the CDOT Structure Reviewer to review the work. These meetings may be in addition to, or in conjunction with, the Project Progress Meetings. The complexity of the structure shall be considered by the CDOT Structure Reviewer to determine the frequency of review meetings. Other required meetings are described in subsequent sections.	C	X	
G. Initial Submittals Submit the following samples to the CDOT/PM for approval:			
a An original plan sheet that complies with this scope of work		X	
b Photogrammetric and/or survey data and a drawing or photograph in accordance with the requirements specified in this scope of work		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
Note: No original plan sheets or photogrammetric survey work will be accomplished until satisfactory samples have been received and approved by the CDOT/PM.			
2. PROJECT DEVELOPMENT			
A. Survey Surveys will be conducted in accordance with the CDOT Survey Manual, the latest addendum thereof, and applicable state statutes. The completed survey shall be reviewed by the Region survey unit. Two weeks should be provided in the schedule to complete the review and sufficient time should be provided to address all comments provided by this review. Design shall not proceed until all comments resulting from this review have been satisfactorily addressed.		X	
a Presurvey Conference A presurvey conference shall be held. The consultant shall attend the Presurvey conference prior to any right of way or survey work		X	
b. Survey Data Research. Research shall be done as per current CDOT manuals		X	
c Project Control Survey:			
i Surveying and mapping work, upon which all planning, studies and engineering designs are based, shall use the established CDOT project datum. Unless otherwise determined and approved by CDOT Region Survey Coordinator, the horizontal datum shall be the most recent realization of the North American Datum of 1983 (NAD83) as defined by the National Geodetic Survey (NGS). The horizontal control may utilize accepted CDOT and NGS ground based monuments (such as former HARN) and CORS (Continuously Operating Reference Stations). (See CDOT Survey Manual Chapter 3 Addendum dated March 5, 2012)		X	
ii Monumentation Materials will be supplied by CDOT. Care is to be taken to install said monumentation in locations that are readily usable for the project and in a safe location so that they can be utilized throughout construction (no monumentation shall be set on or near the centerline of the proposed roadway).		X	
iii Local Project Control Survey the required project control (centerline/baselines and elevation reference) as required. Prepare a control survey diagram showing graphical representation of all monuments used for control. Tabulate coordinates and physical descriptions of all found monuments and other physical evidence.		X	
d Land Survey/Boundary Survey Tie aliquot, property and other land monuments to the control survey. Prepare a Land Survey Control Diagram showing graphical representation of all found aliquot, property and land monuments and their relationship to the project control. Tabulate the coordinates and physical description of all found monuments and other physical evidence.			N/A
e TMOSS (Topographic) Survey Collect the data required to produce a planimetric map and submit in TMOSS format. Features located will include, but not be limited to signs, mailboxes, fences, driveways, curb cuts, curbs, sidewalks, and edges of pavements. Horizontal accuracy shall be as specified for a CDOT class C or D TMOSS survey.		X	

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
f	Terrain (Relief or Elevation) Survey Collect elevation data and submit in TMOSS format. Natural ground elevations shall be as specified.			N/A
g	Utility Survey Collect utility location key maps for all existing and planned utilities in the area in coordination with the CDOT Region utilities specialist. Conduct all field utility locates. The potential impacts on or from utilities in the project area will be analyzed as well as any appropriate mitigation measures. Locate utility poles, manholes, valves, pedestals, guy wires, and other visible utility features. Survey underground utilities as marked by the utility companies. Determine invert elevations of manholes and vaults and survey the locations of utilities exposed by "potholing". Develop a utility matrix identifying all known utilities in the corridor. Develop and verify this information with previously completed work from the WestConnect PELStudy.	C	X	
h	Hydraulic Survey Locate culverts, storm sewer pipes, inlets, vaults, manholes and determine invert elevations. Locate inlets and determine invert elevation of pipes. Accomplish drainage situation surveys for designated culverts and bridges.		X	
3. PRELIMINARY DESIGN				
A. Traffic Engineering				
a	Review locations with "potential for accident reduction map" and or traffic operations analysis and or the safety assessment report as provided by CDOT to determine which safety improvements will be incorporated into the project.		X	
b	Analyze the proposed project design with the traffic projection data		X	
c	Recommend the appropriate geometry (i.e., number of lanes, auxiliary lanes, storage lengths, weaving distances, etc.) in accordance with the current version of Highway Capacity Manual.		X	
d	The proposed design shall be reviewed to ensure compatibility with existing signing procedures throughout the preliminary roadway design process		X	
e	Use traffic data appropriate to the anticipated construction timing in developing detour alternatives.		X	
f	Develop the total ESAL for the design life and submit to the CDOT/PM for the pavement design.		X	
g	Submit the traffic data and recommendations to the CDOT/PM for review.		X	
B. Materials Engineering				
a	Preliminary Soil Investigation			
i	Determine test hole locations (horizontal and vertical) and coordinate with the CDOT/PM.	C		
ii	Collect soil samples and test for: <i>A Classification</i> <i>B Moisture – Density Relationship</i> <i>C Resistance Value</i> <i>D Corrosiveness</i> <i>Note locations of high corrosiveness with recommendations</i> <i>E Bearing Capacity</i>	C		
iii	Prepare and submit a soils investigation report.	C		

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
C. Pavement				
a	Pavement Rehabilitation This section applies if the project includes existing pavement that is incorporated in the design for continued utilization.	C		
i	Determine the equivalent Design Traffic (18k ESAL) that the existing pavement can carry	C		
ii	Estimate the 18k ESAL's experienced by the existing pavement.	C		
iii	Obtain the projected 18k ESAL for rehabilitated pavement design period.	C		
iv	Perform a distress survey <i>A Determine the types of distress present in the pavement</i> <i>B Determine the extent of each distress type</i> <i>C Develop a distress map for the existing pavement</i> <i>D Determine the causes of the existing distress utilizing tests and required and analyses.</i> <i>E Determine the drainage conditions of the existing surface and subsurface</i>	C		
v	Investigate the existing pavement structure <i>A Subgrade: soil classifications, moisture/density relationship, resistance value and corrosiveness</i> <i>B Base: thickness, gradation, plasticity index, liquid limit, resistance value, strength coefficient</i> <i>C Pavement: thickness, strength coefficient</i>	C		
vi	Perform deflection testing to obtain the following: <i>A Deflection profile</i> <i>B Maximum deflection</i> <i>C Deflection basin</i> <i>D Differential deflections at transverse joints for portland cement concrete pavement (pccp)</i> <i>E In place determination of the appropriate modulus for each layer and subgrade</i>			N/A
vii	Determine the remaining load carrying capacity from the above data.			N/A
viii	Design the feasible alternatives for the required rehabilitation (and widening if appropriate) utilizing the above investigations and test results. The design of the feasible alternatives shall be checked against the following: <i>A The basic cause of distress which shall be corrected</i> <i>B Effect on the rate of future deterioration</i> <i>C Effect on surface characteristics</i> Where appropriate, any new pavement widening shall be included in the analysis.	C		
b	New Pavement Structure The feasible alternatives of new pavement structure shall be designed utilizing procedures accepted by the CDOT/PM. New pavement designs for widening shall be compatible with adjacent rehabilitated existing pavement.	C		
c	Pavement Justification			
i	Basic factors: <i>A Desired life expectancy (obtain design life from CDOT).</i> <i>B Required maintenance activities intervals.</i> <i>C Basis for performance life.</i>	C		

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
ii	Analyze life cycle cost of the selected alternatives <i>A Perform analysis with unit and maintenance costs from CDOT. Determine present worth and annual costs in accordance with the procedures in the CDOT Pavement Design Guide.</i> <i>B Compare alternatives over the same life span.</i> <i>C Recommend the pavement structure and provide the basis for the recommendations.</i>			N/A
d	Pavement Design Report Include all the above tests, investigations, analyses, and calculations performed as a result of this section. Submit to the CDOT/PM for acceptance.	C		
D. Structures				
a	Existing bridge condition investigation Condition of existing bridge deck, superstructure and substructure material is provided to the Consultant in the WestConnect PEL Study final reports.	C	X	
b	Foundation Investigation Report	C		
i	Prepare a Foundation Investigation Request showing requested test hole locations.	C		
ii	Formulate drilling pattern, perform the necessary subsurface investigation and collect samples as required.	C		
iii	Perform the appropriate laboratory tests and analyze the data. Determine strength, allowable bearing capacity and corrosiveness of foundation material.	C		
iv	Perform lateral analyses (deformation, moment, and shear) for the caissons and/or piles which are subjected to lateral loadings. This may be a computer analysis which will consider the group effect and selection of the soil parameters.	C		
v	If appropriate, a pile driving analysis using a wave equation will be accomplished.	C		
vi	Submit the Foundation Investigation Report to the CDOT/PM for approval.	C		
vii	Prepare engineering geology plan sheet and copies of the Foundation Investigation Report foundation report with recommendations for type, size, and tip (bottom) elevation of the required foundation. Specify if pre-drilling, pile tip, casing, dewatering, etc., are needed for foundation construction.	C		
E. Hydrology/Hydraulic Engineering				
a	Hydrology			
i	Establish drainage basin data: delineate, determine size, waterway geometrics, vegetation cover, land use.		X	
ii	Collect historical data; research flood history and previous designs in the project proximity; and obtain data from other sources (e.g., Urban Drainage & Flood Control District, Colorado Water Conservation, CDOT Maintenance, and local residents).		X	
iii	Select a storm frequency based on the established criteria.		X	
iv	Complete a hydrological analysis using existing studies or approved methods.		X	
v	Perform a risk analysis.		X	
b	Hydraulics			
i	Accomplish the preliminary design of minor drainage structures: <i>A Determine location and crossing alignment. Identify channel centerline by highway station or coordinates, as appropriate.</i>		X	

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
	<p><i>B Determine the allowable headwater.</i></p> <p><i>C Assess the degree of sediment and debris problems to be encountered, including abrasion and corrosion.</i></p> <p><i>D Type, size, shape and material of the structures.</i></p> <p><i>E Prepare preliminary structure cross-sections to determine the elevations, flow lines, slopes and lengths of the structures. Show the flow quantity on the sections.</i></p> <p><i>F Complete the design computations.</i></p> <p><i>G Determine high water level.</i></p>			
ii	<p>A water surface profile and complete hydraulic analysis is required for major structures. Determine the following:</p> <p><i>A Water surface profile and hydraulic analysis</i></p> <p><i>B Required hydraulic size and skew of the bridge</i></p> <p><i>C Minimum low girder elevation using CDOT criteria</i></p> <p><i>D The design year frequency</i></p> <p><i>E The design year and 500 year high water elevations</i></p> <p><i>F Predicted total scour profile for design year and 500 year scour</i></p> <p><i>G The channel erosion protection for structures</i></p>		X	
iii	If required, identify and assist CDOT in coordinating any required potential funding participation of local municipalities or agencies.		X	
iv	Recommend culvert pipe sizes, type, shape and material for proposed detours.		X	
c	Storm Water Management Plan		X	
i	<p>Initiate a Storm Water Management Plan in accordance with:</p> <p><i>A Municipal Separate Storm Sewer Systems (MS4)</i></p> <p><i>B CDOT's Erosion Control and Storm Water Quality Guide</i></p> <p><i>C CDOT's Standard Specifications</i></p> <p><i>D CDOT Standard Plans</i></p> <p><i>E Other appropriate documents</i></p>		X	
d	<p>Preliminary Hydraulics and Hydrology Report. Include the following:</p> <p><i>A Hydrology analysis</i></p> <p><i>B Minor structure hydraulic designs</i></p> <p><i>C Major structure hydraulic designs</i></p> <p><i>D Detour hydraulic designs</i></p> <p><i>E Structure cross-sections</i></p> <p><i>F Storm Water Management Plan</i></p> <p><i>G Appendix:</i></p> <p><i>a Drainage basin maps</i></p> <p><i>b Hydrology/hydraulic worksheets</i></p>		X	
F. Utility Coordination				
a	<p>Location Maps</p> <p>Obtain utility location maps from the Utility Companies which identify utility features in the project area. Requests and receipt of maps will be coordinated with the Region Utility Engineer via copies of request and transmittal letters.</p>	C	X	
b	<p>Reviews and Investigations</p> <p>Conduct field reviews and utility investigations with the Region Utility Engineer and Utility companies, as required, to ensure correct horizontal and vertical utility data. When possible this will be done utilizing non-destructive investigative</p>	C	X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p>techniques. The horizontal and vertical locations will be shown in the FIR plans and cross sections.</p> <p>When “potholing” is required, the Consultant shall be responsible for all necessary excavations</p>			
<p>c Incorporate utility locations in plans from utility survey</p>	C	X	
<p>d Relocation Recommendations Submit necessary information for the relocation or adjustments of affected utilities to the Region Utility Engineer. The Region Utility Engineer will process the required agreements.</p>	C	X	
<p>e Ditch Company Coordination Contact ditch companies through the Region Utility Engineer to coordinate ditch requirements and restrictions. Develop the plans for the necessary irrigation structures and submit to the Region Utility Engineer for Ditch Company review. Including the development of Irrigation Agreement.</p>	C	X	
<p>G. Roadway Design and Roadside Development</p>			
<p>Coordinate all design activities with required CDOT specialty units and other outside entities.</p>			
<p>a Roadway Design</p>		X	
<p>i Input, check, and plot survey data</p>		X	
<p>ii Verify that a project specific coordinate system approved by CDOT is used to identify the horizontal locations of key points. The coordinate systems used for roadway design and ROW shall be compatible.</p>		X	
<p>iii Input and check horizontal and vertical alignments against all design criteria. Necessary variances and/or design decisions will be identified with justification and concurrence by CDOT & FHWA.</p>		X	
<p>iv Provide alignments, toes of slope and pertinent design features, including permanent and temporary impacts, to the ROW, Utility and Environmental Managers.</p>		X	
<p>v Plot/develop all required information on the plans in accordance with all applicable CDOT policies and procedures.</p>		X	
<p>vi Using current approved CDOT software, generate a 3 dimensional design model and produce preliminary quantities</p>		X	
<p>b Roadside Development: For roadside items including but not limited to, guardrails, delineators, landscaping, sprinkler systems, sound barriers, bike paths, sidewalks, lighting, curb ramps, truck escape ramps, and rest areas provide the following:</p>			
<p>i Layouts in the plans</p>		X	
<p>ii Critical locations in the plans for irrigation sleeves and other utility conduits underneath the proposed roadways. Including power poles, pedestals, hydrants and above ground utility facilities.</p>		X	
<p>iii Coordinate the roadside items with the Storm Water Management Plan (SWMP).</p>		X	
<p>H. Right-of-Way</p>			
<p>The following work shall be done by, or under the immediate supervision of, a Professional Land Surveyor (PLS). The following work may be included as part of a Surveying contract or part of a Right-of-Way plans preparation contract.</p>			

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
a	Research			
i	Identify affected ownership from preliminary design plans		X	
ii	Obtain assessor's maps for the project		X	
iii	Locate documents which transfer title		X	
iv	Prepare chain of title as described in the manual or as directed by the CDOT Project Manager		X	
v	Look for encumbrances, liens, releases, etc.		X	
vi	Make physical inspection of property. Note any physical evidence of apparent easements, wells, ditches, ingress, and egress		X	
vii	Check with local entities such as the County Road Department or County Engineer for location of existing roads or easements		X	
viii	Check for and obtain latest subdivision plats and vacations of streets		X	
b	Ownership Map For additional detail on required drafting software, see Section 8 Submittals. Project coordinate system ownership map shall be submitted along with a "Project Narrative".			
i	Review preliminary design and survey report.		X	
ii	Review project coordinate system and basis of bearing from Control Survey prior to calculations		X	
iii	Compute alignment of ROW centerline and store coordinates of all found monuments within the first tier of properties left and right of Centerline		X	
iv	Review ownership documents (Memoranda of Ownership and/or title commitments, deeds and supporting plats)		X	
v	Calculate coordinates of lost or obliterated aliquot corners using guidelines established by the Bureau of Land Management. (To be used in resetting corners according to Colorado Revised Statutes)		X	
vi	Establish subdivisions of sections using Bureau of Land Management Guidelines. Show all section lines and ¼ section lines on the ownership map and ROW plans		X	
vii	Determine existing Right-of-Way limits from deeds of record, CDOT plans and found ROW markers. Previous Right-of-Way plans, if available, will be provided by CDOT as an aid		X	
viii	Determine ownerships and their property boundary locations. Locate the intersection of these property boundary lines with the existing CDOT Right-of-Way. Determine location and ownership of existing easements of record.		X	
ix	Secure additional property ties and additional topography where the highway improvement may affect improvements adjacent to the Right-of-Way. This additional topography should include: A Proximate buildings, sheds, etc. B Underground cables and conduits C Wells D Irrigation ditches and systems E Septic tanks, cesspools, and leaching fields F Landscaping G Other		X	
x	Reconcile overlaps and gaps in ownerships as required by CDOT, documenting method used (may require additional field work). Include reasons for decisions in the "Project Narrative".		X	

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
xi	Plot OWNERSHIP MAP. If entire ownership will not fit on the sheet at this scale, an additional abbreviated OWNERSHIP MAP may be used at a scale of 1"=1 mile, or other suitable scale, to show the configuration of large ownerships. Metric equivalents may be required.		X	
xii	Label all monuments found with description of monument and project coordinates (from Control Survey Diagram)		X	
xiii	Show improvements and topography within the ownerships and existing access to the street/county road system.		X	
xiv	Number ownerships alternately as they occur along the centerline from south to north or west to east in the same direction as the stationing. Show current names of owners and lessees		X	
xv	Calculate the total area of all ownerships affected, including coordinates of all property corners. Deduct areas for existing road Rights-of-Way. Bearings and distances do not need to be shown on 1" = 1 mile abbreviated OWNERSHIP MAPS		X	
xvi	Different land uses within a property should be cross-hatched or shaded.		X	
xvii	In the lower right corner of the OWNERSHIP MAP, show seal, number and name of Professional Land Surveyor supervising the work		X	
xviii	Transmit finished reproducible OWNERSHIP MAP, electronic drawing files, and Memoranda of Ownership to CDOT along with all calculations, field notes, and supporting data. Including utility easements needed. The OWNERSHIP MAP will include a copy of the control and monumentation sheet		X	
I. Major Structural Design				
Major structures are bridges and culverts with a total length greater than twenty feet or retaining walls with a total length greater than one hundred feet and a maximum exposed height at any section of over five feet. This length is measured along centerline of roadway for bridges and culverts, and along the top of wall for retaining walls. Overhead sign structures (sign bridges, cantilevers, and butterflies extending over traffic) are also major structures, but are exempt from the structure preliminary design activity defined here.				
The CDOT Structure Reviewer will participate in coordinating this activity.				
a	Structural Data Collection			
i	Obtain the structure site data. The following data, as applicable, shall be collected: (Typical roadway section, roadway plan and profile sheets showing all alignment data, topography, utilities, preliminary design plan) Right-of-Way restrictions, preliminary hydraulics and geology information, environmental constraints, lighting requirements, guardrail types, recommendations for structure type, and architectural recommendations.	C	X	
ii	Obtain data on existing structures. When applicable, collect items such as existing plans, inspection reports, structure ratings, foundation information, and shop drawings. A field investigation of existing structures will be made with notification to the Resident Engineer.	C	X	
b	Structure Selection and Layout			
i	Review the structure site data to determine the requirements that will control the structure size, layout, type, and rehabilitation alternatives. On a continuing	C	X	

TASK DESCRIPTION		CDOT (C)/ Other*	Consultant	Not Applicable
	basis, provide support data and recommendations as necessary to finalize the structure site data.			
ii	Determine the structure layout alternatives. For bridges, determine the structure length, width, and span configurations that satisfy all horizontal and vertical clearance criteria. For walls, determine the necessary top and bottom of wall profiles.	C	X	
iii	Determine the structure type alternatives. For bridges, consider precast and cast-in-place concrete and steel superstructures and determine the spans and depths for each. For walls, determine the feasible wall types.	C	X	
iv	Determine the foundation alternatives. Consider piles, drilled caissons, spread footings, and mechanically stabilized earth foundations based on geology information from existing structures and early estimates from the project geologist. To obtain supporting information, initiate the foundation investigation as early as possible during the preliminary design phase.	C	X	
v	Determine the rehabilitation alternatives. Continued use of all or parts of existing structures shall be considered as applicable. The condition of existing structures shall be investigated and reported. Determine the modifications and rehabilitation necessary to use all or parts of existing structures and the associated costs.	C	X	
vi	Develop the staged construction phasing plan, as necessary for traffic control and detours, in conjunction with the parties performing the roadway design and traffic control plan. The impact of staged construction on the structure alternatives shall be considered and reported on.	C		N/A
vii	Compute preliminary quantities and preliminary cost estimates as necessary to evaluate and compare the structure layout, type, and rehabilitation alternatives.	C	X	
viii	Evaluate the structure alternatives. Establish the criteria for evaluating and comparing the structure alternatives that, in addition to cost, encompass all aspects of the project's objectives. Based on these criteria, select the optimum structure layout, type, and rehabilitation alternative, as applicable, for recommendation to CDOT.	C	X	
ix	Prepare preliminary general layout for the recommended structure. Prepare structure layouts in accordance with current standards. Special detail drawings and a detailed preliminary cost estimate shall accompany the general layout. The special detail drawings shall include the architectural treatment. Perform an independent design and detail check of the general layout.	C	X	
c	Structure Selection Report Prepare a structure selection report to document, and obtain approval for, the structure preliminary design. By means of the structure general layout, with supporting drawings, tables, and discussion, provide for the following:	C	X	
i	Summarize the structure site data used to select and layout the structures. Include the following: A Existing structure data, including sufficiency rating and whether or not the structure is on the "select list". B Project site plan C Roadway vertical and horizontal alignments and cross sections at the structure D Construction phasing E Utilities on, below, and adjacent to the structure F Hydraulics:	C	X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<p><i>Channel size and skew, design year frequency, minimum low girder elevation, design year and 500 year high water elevations, estimated design year and 500 year scour profiles, and channel erosion protection</i></p> <p><i>G Preliminary geology information for structure foundation</i></p> <p><i>H Architectural requirements</i></p>			
<p>ii Report on the structure selection and layout process. Include the following:</p> <p><i>A Discuss the structure layout, type, and rehabilitation alternatives considered</i></p> <p><i>B Define the criteria used to evaluate the structure alternatives and how the recommended structure was selected</i></p> <p><i>C Provide a detailed preliminary cost estimate and general layout of the recommended structure</i></p>	C	X	
<p>iii Obtain acceptance by CDOT on the recommended structure and its layout. Allow approximately two weeks for review of the structure selection report. The associated general layout, with the revisions required by the CDOT review, will be included in the FIR plans. The structure selection report, with the associated general layout, must be accepted in writing by CDOT prior to the commencement of further design activities.</p>	C	X	
<p>d Foundation Investigation Request Initiate the foundation investigation as early in the preliminary design phase as is practical. On plan sheets showing the project control line, its stations and coordinates, utilities, identify the test holes needed and submit them to the project geologist. The available general layout information for the new structure shall be included in the investigation request.</p>	C	X	
<p>J. Construction Phasing Plan A construction phasing plan shall be developed for all projects which integrates the construction of all the project work elements into a practical and feasible sequence. This plan shall accommodate the existing traffic movements during construction (detours). A preliminary traffic control plan will also be developed which will be compatible with the phasing plan.</p>			N/A
<p>K. Preparation for the FIR</p>			
<p>a Coordinate, complete, and compile the plan inputs from other branches: materials, hydraulics, traffic, right-of-way, utilities and Staff Bridge.</p>		X	
<p>b If a major structure is included in the project, a general layout (which has been accepted by CDOT) will be included in the FIR plans.</p>		X	
<p>c Prepare the preliminary cost estimate for the work described in the FIR plans based on estimated quantities.</p>		X	
<p>d The FIR plans shall include: typical sections, plan/profile sheets, and preliminary layouts of interchanges/intersections.</p> <p>The plan/profile sheets will include the following: all existing topography, survey alignments, projected alignments, profile grades, ground line, existing ROW, rough structure notes (preliminary drainage design notes, including pipes, inlets, ditches and channels), and existing utility locations.</p>	C	X	
<p>i The following items will be mandatory for the FIR plans:</p>		X	

TASK DESCRIPTION	CDOT (C)/ Other*	Consultant	Not Applicable
<ul style="list-style-type: none"> A Preliminary earthwork (plotted cross sections at critical points with roadway template and existing utility lines at known or estimated depths) B Catch points C Proposed Right-of-Way D Pit data (if required) E Soil profile and stabilization data F Structure general layouts (if applicable) 			
<ul style="list-style-type: none"> ii Typical plan sheet scales will be completed in roll plot format as follows: <ul style="list-style-type: none"> A Plan and Profile 1 inch = 200 Feet 		X	
<ul style="list-style-type: none"> e The ROW ownership map shall be included in the FIR plan set 		X	
<ul style="list-style-type: none"> f The plans shall be submitted to the CDOT/PM for a preliminary review prior to the FIR 		X	
<ul style="list-style-type: none"> g FIR plan reproduction not to exceed 1 of sets 		X	
<ul style="list-style-type: none"> h The preliminary construction phasing including preliminary traffic control plan with proposed detours will be included in the FIR plan set 			N/A
<ul style="list-style-type: none"> i CDOT form 1048 – project scoping procedures completion checklist 		X	
L. Field Inspection Review			
<ul style="list-style-type: none"> a Attend the FIR 	C	X	
<ul style="list-style-type: none"> b The FIR meeting minutes shall be prepared by the C/PM, approved by the CDOT/PM, and distributed as directed 		X	
<ul style="list-style-type: none"> c The FIR original plan sheets shall be revised/corrected in accordance with the FIR meeting comments within thirty (30) working days 		X	
<ul style="list-style-type: none"> d Design decisions concerning questions raised by the FIR will be resolved in cooperation with the CDOT/PM. The C/PM shall document the decision and transmit the documentation to the CDOT/PM for approval. 		X	
<ul style="list-style-type: none"> e A list of all deviations from standard design criteria along with the written justification for each one shall be submitted to the CDOT/PM 		X	
M. Post-FIR Revisions			
<ul style="list-style-type: none"> The Consultant shall complete the revisions required by the FIR before this phase of work is considered to be complete 		X	

SECTION 8
CONTRACT CONCLUSION (CHECKLIST)

1. SUPPLEMENTAL WORK

It is anticipated that this contract may be supplemented for:

- A. Preliminary Design
- B. Final Design
- C. Construction Services
- D. Construction Engineering
- E. Final Earthwork Determination
- F. Completion of the “as-built” plans and/or final ROW plans

2. CONTRACT COMPLETION

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

- A. Project Schedule
- B. Project Progress Meeting Minutes
- C. Traffic Control Plan(s)
- D. All Documents Found During Research
- E. All Permission to Enter Property Forms
- F. Monumented & Surveyed Ground Control Diagram(s)
- G. Legally Deposited Control Survey Diagram(s)
- H. Digital TMOSS Data
- I. Photography Products
- J. Ownership Map
- K. Survey Report (including monument recovery forms)
- L. Completion of review of contract submittals
- M. Preliminary Design Plans, Specifications, and Final Estimate
- N. Preliminary Hydraulic Report
- O. Preliminary Structural Report
- P. Preliminary Geotechnical Report
- Q. Preliminary Materials Report
- R. Environmental Technical Resource Reports
- S. Environmental NEPA Documents

TABLE 1 – SUBMITTALS

Hard Copy	Electronic Copy		Work Tasks	CDOT (C)/ Other*	Consultant	Not Applicable
	PDF	Orig.				
X		X	Periodic Reports	C	X	
X	X		Billings		X	
X		X	Meeting Minutes		X	
X	X		Project Schedule		X	
X		X	Completed Specific Design Criteria		X	
X	X		Survey Plan	C	X	
X	X		Approved MHT's			N/A
X	X		Traffic Control Supervisor Certification			N/A
X	X		Permissions to Enter			N/A
		X	Initial Submittal of TMOSS (?)			
			and or MOSS Compatible Data		X	
X	X	X	Initial Submittal of an Original Plan Sheet		X	
			Project Development			
X		X	Public Communication Contact List		X	
			Route Location Survey			
X	X		Traffic Control Supervisor Certification			N/A
X	X		Approved MHT's			N/A
		X	Survey data in raw, unedited formats	C	X	
X		X	Pothole data including invert elevations	C	X	
X	X		Culverts report	C	X	
X	X		Access report	C	X	
X	X		Topographic survey notes		X	
X	X	X	Contour plan checked for errors		X	
X	X	X	Survey control diagram		X	
X			Field books		X	
		X	Electronic Survey Files	C	X	
		X	Survey TMOSS Data	C	X	
X		X	Monument Records		X	
X	X	X	Control & Monumentation Plan Sheets		X	
X	X		Aerial Photography Index Map Sheets			N/A
X	X		Aerial Photography Contact Sheets			N/A
			Permits			
X	X		401 Permit			N/A
X	X		Dewatering / 402 Permit			N/A
X	X		404 Permit			N/A
X	X		SB 40 Permit			N/A
X	X		Wildlife Certification			N/A
X	X		CDPS Storm Water Permit			N/A
X	X		CDPHE Discharge Permit			N/A

Hard Copy	Electronic Copy		Work Tasks	CDOT (C)/ Other*	Consultant	Not Applicable
			Environmental Work Tasks			
X	X	X	Appropriate NEPA Document (CatEx, EA, EIS, FONSI or ROD)		X	
X	X	X	Figures and Exhibits from NEPA Document		X	
X	X	X	Air Quality Technical Report		X	
X	X	X	Geologic Technical Report		X	
X	X	X	Water Quality Technical Report		X	
X	X	X	Wetland Finding Report		X	
X	X	X	Integrated Noxious Weed Management Plan		X	
X	X	X	Biological Resources Report		X	
X	X	X	Biological Assessment		X	
X	X	X	Historic Resource Technical Reports		X	
X	X	X	Section 4(f) Documents		X	
X	X	X	Paleontological Technical Report		X	
X	X	X	Environmental Justice Technical Report		X	
X	X	X	Transportation Technical Report		X	
X	X	X	Noise Technical Report		X	
X	X	X	Hazardous Materials Documentation (ISA/MESA)		X	
			Preliminary Design			
		X	Electronic Survey Data	C	X	
X	X		Traffic Data & Recommendations		X	
X	X		Geology & Soils Investigation Report	C		
X	X		Pavement Design Report	C		
X	X		Existing Bridge Condition Report	C	X	
X	X		Foundation Investigation Report	C	X	
X	X		Engineering Geology Plan Sheet(s)	C		
X	X		Preliminary Hydraulics & Hydrology Report		X	
X	X	X	Preliminary Storm Water Management Plan		X	
X	X		Utility Relocation Recommendations	C	X	
X	X	X	Ditch Structure Plans		X	
			Right-of-way			
X	X		Memorandum of Ownership			N/A
X	X	X	Preliminary Ownership Map (include in Preliminary Plan set)		X	
X	X		Structural Selection Report		X	
X	X		Foundation Investigation Request		X	
X	X		Final Materials Recommendations		X	
X	X		Final Pavement Selection Report		X	
X	X		Intersection Traffic Report		X	
X	X		Traffic Report		X	
X	X		Preliminary Cost Estimate		X	
X	X	X	Preliminary Plan Set		X	
X	X		List of deviations from Standard Design Criteria		X	
X	X	X	Corrected FIR Plan Set		X	
X	X		Final Hydraulics & Hydrology Report		X	
			Final Design			N/A
X	X	X	ROW Authorization Plans			N/A

Hard Copy	Electronic Copy		Work Tasks	CDOT (C)/ Other*	Consultant	Not Applicable
X	X	X	Final Utility Plan Set			N/A
X	X	X	Final Railroad Plan Set			N/A
X	X		PUC Exhibit			N/A
X			Bound Final Geotechnical Report _____ copies			N/A
X	X		Correspondence with Agencies, Entities, and Public			N/A
			Right-of-way			
X	X		Area Calculations			N/A
X	X	X	Authorization Plans			N/A
X	X		Legal Descriptions			N/A
X	X	X	Final Right-of-way Ownership Map			N/A
X	X	X	Stabilization Plans			N/A
			Traffic Engineering			
X	X		Safety Assessment			N/A
X	X	X	Signing/Pavement Marking Plans			N/A
X	X		Signal Warrant Study			N/A
X	X	X	Signalized Intersection Plans & Specifications			N/A
X	X	X	Traffic Control Plan			N/A
			Roadside Planning			
X	X	X	Landscape Plan & Specifications			N/A
X	X		Certification of Plant Availability			N/A
X	X	X	Irrigation Plans & Specifications			N/A
X	X	X	Bike path Plans & Specifications			N/A
X	X	X	Sound Barrier Plans & Specifications			N/A
X	X	X	Truck Escape Ramp Plans & Specifications			N/A
X	X	X	Rest Area Plans & Specifications			N/A
X	X	X	Lighting Plans & Specifications			N/A
X	X	X	Structure Final Review Plans & Specifications			N/A
X	X	X	Construction Phasing Plan			
X	X	X	Storm Water Management Plan			
X	X		FOR Plans & Specifications			N/A
X	X		FOR Cost Estimate			N/A
X	X	X	Final Review Revisions			N/A
			Construction Plan Package			
X	X	X	Final Plans (11X17), Specifications (duplex) & Estimate Package for Ad.			N/A
X	X	X	Final Cross Sections			N/A
X	X		Schedule of Quantities			N/A
X	X		Design Decisions			N/A
X	X		Variances			N/A
X	X		Findings In the Public Interest			N/A
		X	Original Surface Digital Terrain			N/A
		X	Final Surface Digital Terrain Model			N/A
		X	Design Digital Terrain Model			N/A
X		X	Staking Data			N/A
X	X	X	Earthwork Quantities			N/A
X	X	X	Mass/Haul diagram			N/A
X	X		Project Calculations (2 copies)			N/A
X	X		Worksheets (2 copies)			N/A

Hard Copy	Electronic Copy	Work Tasks	CDOT (C)/ Other*	Consultant	Not Applicable
X	X	Design Notes		X	
X	X	Independent Design Review Reports	C	X	
X	X	Roadway Design Data Submittal		X	
X	X	Major Structure Design Final Submittal			N/A
X	X	Bridge Construction Pack			N/A
X		Record Plan Sets			N/A

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 I, Specifications and Part II, Tests
 - H. Highway Design and Operational Practices Related to Highway Safety
 - I. Roadside Design Guide
 - J. Load Resistance Factor Design (LRFD) Specifications

- 2 **COLORADO DEPARTMENT OF TRANSPORTATION PUBLICATIONS** (using latest approved versions):
 - A. Design Guide (all volumes)
 - B. Bridge Design Guide
 - C. Bridge Detailing Manual
 - D. Bridge Rating Manual
 - E. Project Development Manual
 - F. Erosion Control and Stormwater Quality Guide
 - G. Field Log of Structures
 - H. Cost Data Book
 - I. Drainage Design Manual
 - J. NEPA Manual
 - K. Environmental Stewardship Guide
 - L. Quality Manual
 - M. Survey Manual
 - N. Field Materials Manual
 - O. Standard Plans, M & S Standards
 - P. Standard Specifications for Road and Bridge Construction and Supplemental Specifications
 - Q. Item Description and Abbreviations (with code number) compiled by Engineering Estimates and Market Analysis Unit (“Item Book”)

- R. Right-of-Way Manual
 - 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
- 3 **CDOT PROCEDURAL DIRECTIVES** (using latest approved versions):
- A. No. 27.1 Social Marketing – Use of Web 2.0 and Similar Applications
 - B. No. 31.1 Web Site Development
 - C. No. 400.2 Monitoring Consultant Contracts
 - D. No. 501.2 Cooperative Storm Drainage System
 - E. No. 514.1 Field Inspection Review (FIR)
 - F. No. 516.1 Final Office Review (FOR)
 - G. No. 1217a Survey Request
 - H. No. 1304.1 Right-of-Way Plan Revisions
 - I. No. 1305.1 Land Surveys
 - J. No. 1601.1 Interchange Approval Process
 - K. No. 1700.1 Certification Acceptance (CA) Procedures for Location and Design Approval
 - L. No. 1700.3 Plans, Specifications and Estimates (PS&E) and Authorization to Advertise for Bids under Certifications Acceptance (CA)
 - M. No. 1700.5 Local Entity/State Contracts and Local Entity/Consultant Contracts and Local Entity/R.R. Contracts under C.A
 - N. No. 1700.6 Railroad/Highway Contracts (Under Certification Acceptance)
 - O. 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. Executive Order 12898

- F. FHWA Federal-Aid Policy Guide
 - G. Technical Advisory T6640.8A
 - H. U.S. Department of Transportation Order 5610.1E
 - I. Geometric Geodetic Accuracy Standards and Specifications for Using GPS Relative Positioning Techniques
 - J. ADAAG Americans With Disabilities Act Accessibility Guidelines
 - K. 23 CFR 771, the FHWA Technical Advisory T6640.8A
- 5 **AREA:**
- A. Manual for Railway Engineering
 - B. Any appropriate local agencies references as appropriate

APPENDIX B SPECIFIC DESIGN CRITERIA

Note: The following criteria will be developed by the consultant and coordinated with the CDOT/PM prior to starting the design. The Consultant shall develop the CDOT Form 463 and insert a copy upon completion.

1. ROADWAY

A. BASIC DESIGN

The basis for design will be the data in CDOT Form 463, Design Data. A copy of the latest applicable design Data form will be furnished to the consultant.

B. GEOMETRIC AND STRUCTURE STANDARDS:

- a Design Speed, horizontal alignment, curvature, vertical alignment, sight distance and superelevation is specified in Form 463.
- b Use of Spirals –
- c Passing Sight Distance -
- d Decision Sight Distance -
- e Frontage Roads, Separation Width -
- f CDOT Access Code -
- g Airway – Highway Clearances Design Guide -
- h Bridges and Grade Separation Structures, Clearances to Structures and Obstructions, CDOT Design Guide -
- i Curb and Gutters, Type -

C. GEOMETRIC CROSS SECTION are as specified in Form 463

D. INTERSECTIONS AT GRADE:

- a Type -
- b Special Considerations –

E. TRAFFIC INTERCHANGES:

- a Type –
- b Ramp Type –
- c Special Considerations –

F. DESIGN OF PAVEMENT STRUCTURE:

- a Pavement Type & Percent Trucks are as specified in Form 463-
- b Economic Analysis Period –
- c Design Life –

G. MISCELLANEOUS DESIGN CONSIDERATIONS:

- a Fence Type -
- b FEMA Category –
- c Design Flood Frequency -

H. ROADSIDE DEVELOPMENT

- a Landscaping -
- b Specifications for Revegetating Disturbed Areas to be provided by CDOT
- c Noise Control -
- d Type -
- e Guardrail and End Treatments -

I. LIGHTING:

- a Type -

APPENDIX C DEFINITIONS

Note: For other definitions and terms, refer to Section 101 of the CDOT Standard Specifications for Road and Bridge Construction and the CDOT Design Guide.

1	AASHTO-	American Association of State Highway & Transportation Officials
2	ADT-	Average two-way 24-hour Traffic in Number of Vehicles
3	AREA-	American Railway Engineering Association
4	ATSSA-	American Traffic Safety Services Association
5	AT&SF-	Atchison, Topeka & Santa Fe Railway Company
6	ADAAG-	Americans with Disabilities Accessibility Act Guidelines
7	BAMS-	Bid Analysis and Management Systems
8	BLM-	Bureau of Land Management
9	BNRR-	Burlington Northern Railroad
10	CA-	Contract Administrator. The CDOT Manager responsible for the satisfactory completion of the contract by the consultant.
11	CAP-	CDOT's Action Plan
12	CBC-	Concrete Box Culvert
13	CDOT-	Colorado Department of Transportation
14	CDOT/PM-	Colorado Department of Transportation Project Manager – The CDOT Engineer responsible for the day to day direction and CDOT Consultant coordination of the design effort (as defined in Section 2 of this document)
15	CDOT/STR-	Colorado Department of Transportation Structure Reviewer – The CDOT Engineer responsible for reviewing and coordinating major structural design
16	CDPHE-	Colorado Department of Public Health and Environment
17	CEQ-	Council on Environmental Quality
18	COG-	Council of Governments
19	COGO-	Coordinate Geometry Output
20	CONSULTANT-	Consultant for this project
21	CONTRACT ADMINISTRATOR-	Typically a Region Engineer or Branch Head. The CDOT employee directly responsible for the satisfactory completion of the contract by

the Consultant. The contract administration is usually delegated to a CDOT Project Manager (as defined in Section 2 of this document).

22	C/PM- Consultant Project Manager – The Consultant Engineer responsible for combining the various inputs in the process of completing the project plans and managing the Consultant design effort.
23	DEIS- Draft Environmental Impact Statement
24	DHV- Future Design Hourly Volume (two-way unless specified otherwise)
25	DRCOG- Denver Regional Council of Governments
26	D&RGW- Denver & Rio Grande Western Railroad
27	EA- Environmental Assessment
28	EIS- Environmental Impact Statement
29	ESAL- Equivalent Single Axle Load
30	ESE- Economic, Social and Environmental
31	FEIS- Final Environmental Impact Statement
32	FEMA- Federal Emergency Management Agency
33	FHPG- Federal Aid Highway Policy Guide
34	FHWA- Federal Highway Administration
35	FIPI- Finding In Public Interest
36	FIR- Field Inspection Review
37	FONSI- Finding of No Significant Impact
38	FOR- Final Office Review
39	GPS- Global Positioning System
40	MAJOR STRUCTURES- Bridges and culverts with a total clear span length greater than twenty feet. This length is measured along the centerline of roadway for bridges and culverts, from abutment face to abutment face. Retaining structures are measured along the horizontal distance along the top of the wall. Structures with exposed heights at any section over five feet and total lengths greater than a hundred feet as well as overhead structures including (bridge signs, cantilevers and butterflies extending over traffic) are also considered major structures.
41	MPO- Metropolitan Planning Organization (i.e. Denver Regional Council of Governments, Pikes Peak Area Council of Governments,

Grand Junction MPO, Pueblo MPO, and North Front Range Council of Governments).

42	MS4-	Municipal Separate Storm Sewer System
43	NEPA-	National Environmental Policy Act
44	NGS-	National Geodetic Survey
45	NICET-	National Institute for Certification in Technology
46	NOAA-	National Oceanic and Atmospheric Administration
47	PAPER SIZES-	See Computer-Aided Drafting Manual (CDOT); Table 6-13 and Table 8-1
48		PE- Professional Engineer registered in Colorado
49	PM-	Program Manager
50		PLS- Professional Land Surveyor registered in Colorado
51	PRT-	Project Review Team
52	PS&E-	Plans, Specifications and Estimate
53	PROJECT-	The work defined by this scope
54	ROR-	Region Office Review
55		ROW- Right-of-Way: A general term denoting land, property, or interest therein, usually in a strip acquired for or devoted to a highway
56	ROWPR-	Right-of-Way Plan Review
57	RTD-	Regional Transportation Director
58	T/E-	Threatened and/or Endangered Species
59	SH-	State Highway Numbers
60	TMOSS-	Terrain Modeling Survey System
61		TOPOGRAPHY- In the context of CDOT plans, topography normally refers to existing cultural or man-made details.
62	UDFCD-	Urban Drainage and Flood Control District
63	USACE-	United States Army Corp of Engineers