

GENERIC SCOPE OF WORK BASIC CONTRACT

CONTRACT TYPE

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

CONTRACT DATE: _____

PROJECT NUMBER: CO 006A-069

PROJECT LOCATION: Vasquez I-270 to 64th Ave

PROJECT CODE: 22922

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 SERVICES AFTER DESIGN
 - SECTION 9 CONTRACT CONCLUSION (CHECKLIST)
- APPENDICES

Comments regarding this scope may be directed to:

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REGION 1, NORTH PROGRAM ENGINEERING

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SECTION 1

PROJECT SPECIFIC INFORMATION

1. PROJECT BACKGROUND

In 2018, The Colorado Department of Transportation (CDOT) completed a Planning and Environmental Linkages (PEL) Study to identify needed improvements to Vasquez Blvd in Commerce City Colorado between East 52nd Ave and East 64th Ave, with a special emphasis on the interchange of I-270 and Vasquez Blvd and the intersection of Vasquez Blvd, 60th Avenue and Parkway Drive.

During the PEL process, the following goals were identified for the study area:

1. Provide reliability
2. Balance access between the transportation network and adjacent land uses
3. Effectively connect current and future modes and networks, including roads, bicycles, pedestrians and transit
4. Improve the ability of freight to efficiently travel through and within the area
5. Minimize and mitigate impacts to the built environment consistent with local master plans
6. Avoid and minimize impacts to the natural environment

Three alternatives were identified which met the purpose and needs identified in the PEL which would address the transportation challenges in the study area, especially with the Interchange at I-270 and Vasquez and the interchange at Vasquez/ 60th Avenue and Parkway Drive.

Also identified were Near-Term projects that could be implemented quickly with available funding and that would have an appreciable impact on the traffic operations and safety of the corridor. These project are described in Appendix G of the Vasquez PEL Study and can be found at:

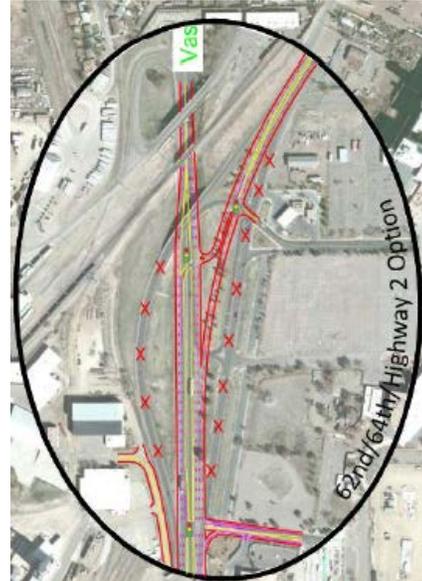
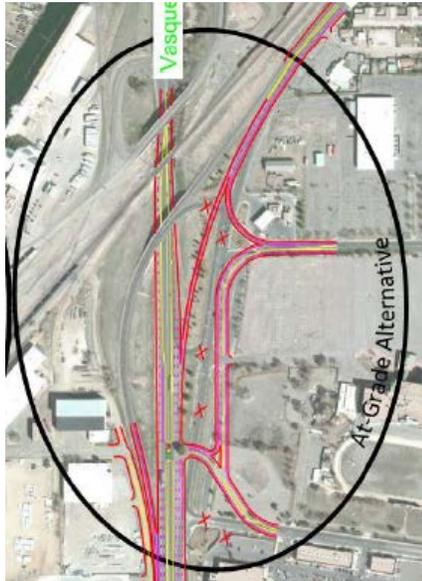
<https://www.codot.gov/library/studies/study-archives/vasquez-pel-study>

For this project, the selected vendor and CDOT will work as a blended team to implement improvements that will improve operations and safety and the intersection of Vasquez Blvd/60th and Parkway Drive. These improvements are as follows:

1. Improve the frontage road system at 60th Avenue on the northwest, southwest and southeast quadrants of the intersection



- Construct an intersection at 62nd Ave. This action would be paired with a full or partial closure at Parkway Dr. In the PEL, two options were analyzed to improve access to Vasquez Blvd at 64th and are shown below. These options will serve as the starting point in the design of improvements in this location.



- Close Parkway Drive or convert Parkway Drive to a right-in/right-out. Again, two options were analyzed in the PEL and will serve as the starting point in determining improvements.



Stakeholder involvement and coordination will be an important component throughout the duration of this project. An early task of this project will include further coordination with Commerce City, Adams County and local business and property owners, which will be required to refine the design and gain consensus, especially with regards to the ultimate configuration of Parkway Dr.

For this project, environmental clearances and final PS&E packages will then be prepared for these projects as a blended team with CDOT.

2 PROJECT GOALS

1. SAFETY

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

2. MOBILITY, AND OPERATIONAL CHARACTERISTICS

- a. Improve the mobility and operational characteristics of the transportation system in the project corridor.
- b. Improve travel time reliability along the Vasquez corridor.
- c. Provide higher level-of-service on the Vasquez corridor.

3. 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 Vasquez PEL, and other CDOT projects.
- c. Facilitate and foster collaboration, communication, and partnerships among all members of the project team.

4. 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 project requirements.
- b. Provide accurate, meaningful, organized, and timely communication to the public.

3. PROJECT LIMITS

This project is located in Adams County, Colorado on Vasquez Blvd (SH 006H), between I-270 and 64th Ave. from milepost 292.7 to milepost 293.8.

4. PROJECT COSTS

The construction cost of all the PEL recommended improvements is estimated to be between \$4 million and \$6 million.

5. WORK DURATION

The time period for the work described in this scope is estimated to begin June 2018 and end June 2021.

6 CONSULTANT RESPONSIBILITY AND DUTIES

AGENCY AND PUBLIC COORDINATION

- The Consultant will perform collaborative agency and public coordination that reflects the unique needs and character of the community and address the concerns and desires of the agencies, businesses and residents. Particular aspects of alternatives identified in the PEL, such as the proposed modifications of Parkway Dr., may be controversial, and strong project manager coordination experience will be required to reach a consensus between CDOT, the local agencies and stakeholders that can be implemented.
- Develop and implement a Public Involvement Plan, including a Stakeholder Involvement Plan and an Agency Coordination Plan to assist in the evaluation of public/agency support or opposition to the alternatives to be analyzed.

- Provide opportunities for community participation and consultation for the proposed project at each stage of the project development process, including opportunities for Spanish language or other language speakers to fully participate.

DESIGN AND TRAFFIC

- 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 these alternatives according to established guidelines and examine the degree to which these alternatives satisfy the Purpose and Need requirements of the project. Set out these evaluations both schematically and in narrative form for review within a reasonable time after the notice to proceed.
- During the Vasquez PEL, traffic analysis was performed to determine the operational characteristics of the study area roadways and intersections under peak conditions using the following tools:
 - Macroscopic: Denver Regional Council of Governments (DRCOG) Regional Travel Demand Model (Focus 2.0)
 - Mesoscopic/Microscopic: Transmodeler 4.0 build 6140
- Building on the model completed during the PEL, analyze existing and future traffic operations for the build alternative(s). Analysis will be completed in accordance with the latest edition of the Highway Capacity Manual or similar methodology. In addition, the Consultant shall use Transmodeler 4.0 build 6140 to evaluate the operations of the entire roadway network and report the appropriate measures of effectiveness for the alternative(s).
- Apply an alternatives screening process to identify the best alternative (practical or feasible from a technical and economic standpoint), which will be subject to a more detailed evaluation. Develop NEPA-appropriate evaluation criteria, and measures of effectiveness, and submit them for review and approval by CDOT and FHWA before beginning the screening process. The rationale for eliminating alternatives will be thoroughly discussed within the documentation.
- Complete Final Engineering and NEPA class of action for the project which can provide and immediate benefit to transportation in the study area based on available funding. CDOT anticipates that the required NEPA class of action will be a Categorical Exclusion.
- Prepare a 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.
- Analyze the optimal configuration of street and business access and vet the issue with stakeholders with the goal of agreeing upon the ultimate design and location of access points.

RIGHT-OF-WAY

- Estimate ROW impacts for each alternative, including the number of partial and full acquisitions and relocations and Section 4(f) and Section 6(f) impacts. Provide an estimate of the cost of ROW impacts for each Alternative and design option.

STRUCTURAL ENGINEERING

None anticipated

UTILITIES

It is anticipated that construction for this project will have an impact such that the project will fall under the requirements of Colorado Subsurface Utility Law (SB18-167) and that Quality Level B utility information in the plans or an explanation from the PE why Quality Level B was not achieved will be required.

CONTRACT EXECUTION

It is CDOT's intent to issue two task orders for this project. The first task order will include preliminary design, environmental investigations, stakeholder and public involvement, and public agency consensus building needed refine alternatives and reach a consensus as to which solution will best satisfy project goals within the available budget. The second task order will be to execute the solution and deliver a final PS&E package with construction anticipated to begin in the spring or summer of 2022.

**SECTION 2
PROJECT MANAGEMENT AND COORDINATION**

1. CDOT CONTACT

The Contract Administrator for this project is:

Ryan Sorensen, P.E.
Resident Engineer
4670 Holly Street
Denver, CO 80216
Phone: (303) 398-6783
ryan.sorensen@state.co.us

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

David Kosmiski, P.E.
Project Manager
4670 Holly Street
Denver, CO 80216
Phone: (303) 398-6767
david.kosmiski@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. Cities and Towns: Commerce City, City and County of Denver
- C. Counties: Adams County
- D. Railroads
- E. Regional Transportation District (RTD)
- F. Denver Regional Council of Governments (DRCOG)
- G. Metropolitan Planning Organizations (MPO's)
- H. U.S. Army Corps of Engineers (USACE)
- I. Urban Drainage & Flood Control District (UDFCD)
- J. Federal Emergency Management Agency (FEMA)
- K. Colorado Parks and Wildlife (CPW)
- L. U.S. Forest Service (USFS)
- M. Environmental Protection Agency (EPA)
- N. U.S. Fish and Wildlife Service (USFWS)
- O. Federal Highway Administration (FHWA)
- P. Federal Transit Authority (FTA)
- Q. Utilities
- R. Colorado Department of Public Health and Environment (CDPHE)
- S. High Performance Transportation Enterprise (HPTE)

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 Vasquez PEL evaluated the existing and future operating conditions, and defined near-term and long-term improvements for the area. The Vasquez PEL evaluated the existing and future operating conditions, and defined near-term and long-term improvements for the area. Some of the near-term improvements may include new turn lanes, improved signal timing or making property access more effective.

It is the intent of this project to utilize previously completed work to the maximum extent practical going forward into NEPA and to complete, advertise and construct a complete PS&E package for the alternative selected and available funding.

2. RAILROADS – BNSF RAILWAY COMPANY, Adams County #Parcel #: 0182307200005 crossing 63rd

3. REGIONAL TRANSPORTATION DISTRICT

Coordination with RTD will be required for bus stops impacted by this project. Currently bus stops exist at the following locations

Dahlia St & 58th Pl – RTD ID#s 13222 and 13223

Dahlia St & 60Ave – RTD ID#s 13224 and 25447

60th Ave & Dahlia St – RTD ID#s 11488 and 11489

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 Vasquez PEL Corridor Conditions Report. The consultant should be alert to the existence of other possible conflicts.

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.

- CE – Civil Engineering, EN – Environmental Engineering, GE – Geotechnical Engineering, HD – Highway & Street Design, HY – Hydraulics, LA – Landscape Architecture, MA – Management (Contract Admin), TP – Transportation Engineering, TR – Traffic Engineering, SU – Surveying and ROW, PI – Public Information/Agency Coordination

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	C D O T (C)/ O t h e r *	C o n s u l t a n t	N o t A p p l i c a b l e
1. PROJECT MEETINGS The types and numbers of meetings shall be flexible and determined by an interactive process as approved by the CDOT/PM.	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. Project Development Plan Consultant shall generate for initial review the Project Development Plan. Once initially accepted by CDOT, the consultant shall gain approval for the PDP by the involved specialty group leaders. The Consultant shall ensure the PDP is maintained with up-to-date information as the project progresses, and make this PDP available to the project team.		X	
D. 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 and Commerce City. 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	C	X	

<p>public, add to the “contact list”, and gather information regarding local concerns, especially concerning Parkway Dr. The meetings may also take the form of a work session or workshop with the affected parties. It is anticipated that no more than two general public meetings will be required for this project.</p>			
<p>Documentation – The Consultant shall develop a summary document of public scoping meetings, public workshops, public hearings, and any other public meetings. 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.</p>	C	X	
<p>E. Meeting Minutes d 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. Meeting minutes will also document any decisions made at the meetings.</p>		X	
<p>F. Contact List Establish and maintain a computerized list of all appropriate interested parties for the communication process.</p>		X	
<p>a The information on the list shall include as a minimum: i Name ii Firm (if any) iii Mailing/E-mail address Phone/Fax number</p>		X	
<p>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 Media Contacts</p>		X	
<p>G. Public Notices/Advertisements e 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”.</p>		X	
<p>H. Communication Aids</p>		X	
<p>I. 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 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>		X	

<p>viii 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>		X	
<p>2. PROJECT MANAGEMENT At the kick-off meeting, or shortly thereafter, create and provide an approach for managing the project (i.e. involved staff, key team positions), including task orders, a schedule, document and agency reviews and other project needs. The Consultant shall coordinate all the work tasks being accomplished by all parties to ensure project work completion stages are on schedule.</p>		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 24 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.</p>		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>	C	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.</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	C D O T (C)/ O t h e r *	Co nsu lta nt	N o t A p p l i c a b l e
1. PROJECT INITIATION			
A. Environmental Scoping Task An early environmental coordination/scoping task 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 Right-of-Way, Maintenance, Hydraulics, Traffic, Property Management, and Utilities, as appropriate..	C	X	
B. Review Applicable Existing Documents Review the Vasquez PEL Study and all associated Final Reports produced during the Vasquez 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 Vasquez PEL Study to determine the extent of study required for each resource to minimize rework. The extent of study can be defined in four categories: 1) complete analysis required; 2) short analysis to define resources/impacts; 3) no analysis required; or 4) analysis already completed as determined by CDOT (for example, by the PEL).		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 Vasquez PEL Study to determine during the scoping phase the extent to which documentation is required for each resource.		X	
F. Project Study Area Limits/Logical Termini Utilize work previously completed in the Vasquez 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		X	

<p>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>			
<p>G. Project File Maintain a NEPA Project File that adheres to the established process. Make available any and all parts of the Project File 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>2. 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 work previously completed in the Vasquez 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 Review previous Purpose and Need work completed in the Vasquez PEL Study to support decision making during the alternatives process. No changes are anticipated for the Purpose and Need as part of the Categorical Exclusion.</p>	X	X	
<p>B. 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 these alternatives according to established guidelines and examine the degree to which these alternatives satisfy the goals of the project. Set out these evaluations both schematically and in narrative form for review within a reasonable time after the notice to proceed.</p>		X	
<p>C. Preliminary Design of Alternatives For the alternative that is identified as the alternative to be carried forward into NEPA, incorporate preliminary design for up to 2 alternatives to a level that clearly allows the identification of impacts within each environmental resource area. If CDOT or another agency or Consultants performs selected alternative studies, the Consultant shall incorporate the results of these studies into the appropriate document.</p>		X	
<p>3. COST ESTIMATES AND FINANCIAL ANALYSIS</p>			
<p>Preliminary Construction Cost Estimates Prepare preliminary construction cost estimates based on design of alternatives identified. 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</p>	C	X	

of estimates, including the year from which the unit costs were assumed, to CDOT's Project Engineer for review and approval prior to development of the cost estimates.			
4. DATA COLLECTION, FIELD INVESTIGATION, MITIGATION MEASURES			
<p>The following analyses are required In order to complete the Categorical Exclusion. Each resource will be summarized concisely, focusing on the project issues of concern.. 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. It is expected that the level of detail for this NEPA document will be as appropriate for a Categorical Exclusion and utilize all appropriate information from the Vasquez PEL so 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 project file.</p> <p>If new or unique resources are identified during scoping, this scope of work will be modified to include these, as appropriate.</p>		X	
A. Existing Roadway and Major Structures			
a Review and utilize information from the Vasquez 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: <ul style="list-style-type: none"> 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. 		X	
c Construction Requirements: <ul style="list-style-type: none"> i General construction impact (of temporary nature) ii Material pits iii Haul roads 	C	X	
B. Geospatial Data Assemble, store, manipulate and display data for resources as needed.		X	
C. Air Quality Review information provided in the Vasquez PEL Study in Section 3.3.3. 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). 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.. Mitigation commitments will be developed, as necessary. The Consultant must get approval from the CDOT Region and/or EPB air specialist		X	

(and possibly FHWA staff) for any methodologies to evaluate hazardous air pollutants. Utilize the most current standard, accepted FHWA language for MSATs.			
Water Quality			
D. Review and utilize information from the Vasquez PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report. Determine the requirement for permanent water quality. Initial preparation of the Stormwater Management Plan. Coordinate with Region 1 water quality specialists to determine appropriate stormwater management approach.		X	
a Municipal Separate Storm Sewer System (MS4) and Colorado Discharge Permit System (CDPS) design and permitting issues.		X	
Floodplains Assessment	C		
E. Review and utilize information from the Vasquez PEL Study Section 3.2.1 including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report.	C		
a Identify location of floodplains and any planned changes to the floodplains from adjacent development.	C		
b Add information to environmental resource mapping of existing conditions.	C		
c Determine the probable impacts of each alternative with respect to floodplains and drainage.	C		
d Identify adverse effects on the project area with respect to floodplains and drainage for each alternative (including during construction and relative to actual operating conditions).	C		
e Develop possible actions to mitigate for the adverse impacts and coordinate with roadway and structural designers.	C		
f Analyze the impacts and mitigation. Included in the analysis will be a determination of significant impacts due to:	C		
g Single community access routes.	C		
i Risk for social or economic losses due to flooding.			
ii Alteration of beneficial floodplain values.			
iii Recommend preparation of Conditional Letter of Map Revision (CLOMR), Letter of Map Revision (LOMR) requirement			
iv 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.			
Wetlands			
F. Wetlands Determination/Delineation:		X	
a Conduct a field evaluation for the presence of wetlands within the project study area. Global Positioning System (GPS) should be used for this activity. During the PEL, and Environmental Scan of wetlands was completed. This was a desktop survey and a field survey but did not prepare a formal delineation nor were soil samples taken.		X	
i 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	
ii Prepare wetlands maps that delineate the wetland boundaries within the corridor. GPS will be used for this mapping.		X	
iii Coordinate the findings with the CDOT Region and the USACE. Obtain jurisdictional determination of the wetlands from the USACE.		X	
iv			
Wetland Finding Report Prepare a Wetland Finding Report. Per the Vasquez PEL Section 3.2.6:		X	

<p>According to the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI), nine wetland types are mapped within the study area (2016c). The majority of NWI-mapped wetlands within the study area occur along Sand Creek throughout the Sand Creek floodplain, adjacent to the stream channel. Additional isolated ponds south of Sand Creek in an industrialized area and an intermittent pond in the southeast loop of the interchange also were present.</p> <p>Other than wetlands, the only waters of the United States located in the study area is Sand Creek, which is identified on the U.S. Geological Survey topographic map as a perennial stream and is not designated as a National Wild and Scenic River. The portion of Sand Creek extending from the confluence of Murphy Creek and Coal Creek in Arapahoe County to the confluence with Toll Gate Creek which includes the study area, is listed on the Colorado 2010 Section 303(d) list of impaired waters because of selenium and Escherichia Coli (E. coli) bacteria concentrations.</p>			
Vegetation and Noxious Weeds			
G. Building on the information provided in the Vasquez PEL Section 3.3.6, 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
a Perform an impact analysis.			X
b Prepare an Integrated Noxious Weed Management Plan			X
Fish and Wildlife			
H. Based on the information provided in the Vasquez PEL Section 4.2.2, conduct necessary field surveys and identify fish and wildlife and their habitat within the project area. As appropriate, GPS will be used to identify habitat.			X
a Coordination with the Colorado Division of Wildlife (CDOW) and US Fish and Wildlife Service (USFWS).			X
b Perform an impact analysis.			X
c Develop appropriate mitigation measures using the wildlife report from the Vasquez PEL as a basis.			X
d Prepare Biological Resources Report			X
Threatened and Endangered (T&E) Species			
I. 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
a In the Vasquez Environmental Scan Section 3.3.7.5, it was determined that no critical habitat for any of the nine federal-listed species for Adams County occurs within the study area (USFWS, 2016a). Additionally, habitat within the study area was evaluated during the field visit, and no suitable habitat for any of the federal-listed species was observed. Coordinate with CDOT Environmental determine next steps, and complete any necessary work needed to obtain a Categorical Exclusion.			
Historic Properties			
Perform and provide the survey report for review by the CDOT Region Historian based on information provided in Section 3.2.3 of the Vasquez PEL and incorporate the information into the NEPA document. The following lists are not meant to be exhaustive.			X
a Collection and Evaluation of Baseline Information as defined by Section 106 of the National Historic Preservation Act of 1966, as amended			X
b According to the Vasquez PEL, three eligible historic properties are present, but are not likely to be adversely affected by the project			
Historic Clearance			
Review and utilize information from the Vasquez PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report.			X

a	CDOT has prepared a preliminary area of potential effect (APE). Base scoping efforts on properties identified within this APE CDOT will provide during scoping.	C	X	
b	Define an APE and determine age eligible (45 year old at time of survey) properties within APE.		X	
A.	Complete re-visitation forms for all properties that have been previously surveyed, if the properties were less than 50 years old at the time of survey and Not Eligible – Officially, or were surveyed more than five years ago and Eligible-Officially: 8 re-visitation forms*		X	
B.	Complete a new survey form for 5AM.1368 (Number 32) determined “field not eligible”: 1 new form		X	
C.	Complete new survey forms for properties that are 45 years old or older at the time of survey and have not yet been surveyed: 35 new survey forms		X	
D.	Draft an eligibility and effects letter for the SHPO.		X	
E.	Complete the appropriate 4(f) if the project includes the “use” of a historic property.		X	
B.	Discuss Vasquez Blvd./US 6 as a potential historic highway segment.		X	
Archaeology				
This resource task will be completed by CDOT.		C		
a	Refer to 4.1.3 Cultural, Historic, and Archaeological Resources of the Vasquez PEL	C		
Paleontological Resources				
Review and utilize information from the Vasquez PEL Study including the Corridor Conditions Report, Environmental Scan Report and Alternatives Report. This task will be completed by CDOT.		C		
a	Coordinate the mitigation plan with the EPB Staff Paleontologist.	C		
Residential/Business/Right-of-Way (ROW) Relocation				
The following activities will be performed and documented 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:			X	
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 which alternatives impact 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.			X	
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.			X	
Compile a ROW acquisition and relocation cost estimate for 2 alternatives.			X	
Prepare a property ownership map based on tax records, which identifies ownerships for 2 alternatives.			X	
a	Develop and document mitigation measures		X	
b	Transportation Resources			

<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. 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 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 		X	

<p>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.</p> <p>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> <p>c</p>			
<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. 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. 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. 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. 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). 7. Near-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. 			X

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.			
Utilities and Railroads 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. It is anticipated that construction for this project will have an impact such that the project will fall under the requirements of Colorado Subsurface Utility Law (SB18-167) and that Quality Level B utility information in the plans or an explanation from the PE why Quality Level B was not achieved will be required.	C	X	
Section 4(f) and Section 6(f) Evaluation	C		
Update inventory and map project area for Section 4(f) and 6(f) facilities using the inventory collected in the Vasquez PEL.	C	X	
Determine if any potential impacts or ROW acquisitions include Section 4(f) properties (e.g., publicly owned parks, recreational facilities, nationally significant historic sites, wildlife refuges) or 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 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)	C		
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.	C		
a 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.	C		
b Prepare evaluation and coordinate reviews with RPEM and EPB staff for review by FHWA.	C		
Noise c 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	
Definition of relevant noise abatement criteria and identification of noise-sensitive land uses.		X	
Determination of existing noise levels (by measurement and/or modeling).		X	
Prediction of future traffic noise levels for proposed project using FHWA’s current Traffic Noise Model.		X	
Determination of traffic noise impacts.		X	
a 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	
b Development of recommendations regarding noise abatement measures.		X	
c Assessment of construction related noise issues.		X	

d	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	
e				
Hazardous Materials				
	Perform and document the following Initial Site Assessment (ISA) and/or Modified Environmental Site Assessment (MESA) activities:		X	
	CDOT will provide database search.	C		
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	
	Identify how the presence of hazardous waste locations may impact each alternative, including the no-action alternative. GIS mapping will be desired.		X	
DELIVERABLES				
J.	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, Drainage Assessment Report, Wetland Finding Report, Biological Resource Report, , Section 4(f) Evaluation, Section 6(f) Evaluation, Safety Assessment, Noxious Weeds Management Plan, Archaeological Report, Paleontological Report, Project Work Plan, Public Involvement Plan,	C	X	
PUBLIC AND AGENCY INVOLVEMENT				
	This section identifies public and agency involvement tasks anticipated for the project.		X	
A. Stakeholder Involvement Plan				
	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:		X	
B. Develop a stakeholder database				
	Identify methods for public notification and dissemination of information, such as newsletters, flyers, postcards, web site, press releases, miscellaneous informational materials, etc.	C	X	
C. NEPA DOCUMENTATION PROCESS				
	Develop, coordinate, write, review, conduct QA/QC and finalize the appropriate NEPA document, assumed to be a Categorical Exclusion in accordance with the current provisions of the following laws, regulations, and standards.		X	
A. Preliminary Data Submission				
a	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	
A. Draft and Final NEPA Document Preparation				
		C	X	

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.			
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	
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	
Determine review process to be used for the NEPA document. Assume the projects will be cleared under a Categorical Exclusion.		X	
Coordinate the impacts and mitigation measures with CDOT, and appropriate agencies, and FHWA. Take necessary actions to resolve issues.		X	
a 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	
b 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	
c Submit the NEPA document to CDOT for signature and routing to FHWA for approval.		X	

**SECTION 7
PRECONSTRUCTION WORK TASK DESCRIPTIONS**

TASK DESCRIPTION	C D O T (C)/ O t h e r *	C o n s u l t a n t	N o t A p p l i c a b l e
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. Identify Design Criteria Submit a copy of Appendix B -Specific Design Criteria with the appropriate items completed.		X	
C. 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.	C		
D. 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	
E. 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	
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	
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 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 Vasquez 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	
i	Material Sources Survey designated material sources as specified.			N/A
j	Supplemental Surveying: As required and specifically requested.			N/A
k	Survey Report:			N/A

Prepare a Survey Report as required in the Survey Manual.			
l	Photogrammetry		N/A
i	Camera Calibration Report		
ii	Flight Plan		
iii	Flight		
iv	Contact Prints		
v	Negatives		
vi	Enlargements		
vii	Photo Index		
viii	Supplemental Survey (wing points)		
ix	Data Reduction		
	A Topographic Contours		
	B Planimetric (Topography)		
x	Map Compilation		
	A Index Maps		
	B Finished Maps		
m	Accuracy Tests:		
	Tests are to be performed on a regular basis throughout the project by the consultant.		N/A
n	Review by Professional Land Surveyor		
	The accuracy tests are to be reviewed by the PLS in responsible charge for the project, and submitted to the project engineer and made part of the project records. Further review of all aspects of the field and office work shall also be the responsibility of the PLS in responsible charge.		N/A
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.	X	
ii	Collect soil samples and test for:		
	A Classification		
	B Moisture – Density Relationship		
	C Resistance Value		
	D Corrosiveness		
	Note locations of high corrosiveness with recommendations		
	E Bearing Capacity		
iii	Prepare and submit a soils investigation report.		
C. Pavement			
a	Pavement Rehabilitation	X	

This section applies if the project includes existing pavement that is incorporated in the design for continued utilization.				
i	Determine the equivalent Design Traffic (18k ESAL) that the existing pavement can carry		X	
ii	Estimate the 18k ESAL's experienced by the existing pavement.		X	
iii	Obtain the projected 18k ESAL for rehabilitated pavement design period.		X	
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>		X	
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>		X	
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>		X	N/A
vii	Determine the remaining load carrying capacity from the above data.		X	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.		X	
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.		X	
c	Pavement Justification		X	
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>			
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.				
D. 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> <i>B Determine the allowable headwater.</i> <i>C Assess the degree of sediment and debris problems to be encountered, including abrasion and corrosion.</i> <i>D Type, size, shape and material of the structures.</i> <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> <i>F Complete the design computations.</i> <i>G Determine high water level.</i>		X	
ii	A water surface profile and complete hydraulic analysis is required for major structures. Determine the following: <i>A Water surface profile and hydraulic analysis</i> <i>B Required hydraulic size and skew of the bridge</i> <i>C Minimum low girder elevation using CDOT criteria</i> <i>D The design year frequency</i> <i>E The design year and 500 year high water elevations</i> <i>F Predicted total scour profile for design year and 500 year scour</i> <i>G The channel erosion protection for structures</i>		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	Initiate a Storm Water Management Plan in accordance with: <i>A Municipal Separate Storm Sewer Systems (MS4)</i> <i>B CDOT's Erosion Control and Storm Water Quality Guide</i> <i>C CDOT's Standard Specifications</i> <i>D CDOT Standard Plans</i> <i>E Other appropriate documents</i>		X	
d	Preliminary Hydraulics and Hydrology Report. Include the following: <i>A Hydrology analysis</i> <i>B Minor structure hydraulic designs</i> <i>C Major structure hydraulic designs</i> <i>D Detour hydraulic designs</i> <i>E Structure cross-sections</i> <i>F Storm Water Management Plan</i> <i>G Appendix:</i> <i>a Drainage basin maps</i> <i>b Hydrology/hydraulic worksheets</i>		X	

E. Utility Coordination			
a Location Maps 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.	C	X	
b Reviews and Investigations 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 techniques. The horizontal and vertical locations will be shown in the FIR plans and cross sections. When “potholing” is required, the Consultant shall be responsible for all necessary excavations It is anticipated that construction for this project will have an impact such that the project will fall under the requirements of Colorado Subsurface Utility Law (SB18-167) and that Quality Level B utility information in the plans or an explanation from the PE why Quality Level B was not achieved will be required	C	X	
c Incorporate utility locations in plans from utility survey	C	X	
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.	C	X	
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.	C	X	
a Final railroad plans Coordinate the following activities through the Region Utility Engineer and in accordance with railroad requirements.			
i Develop the railroad encroachment plan (with cross sections)		X	
ii Define construction responsibilities between the railroad and highway		X	
iii Develop cost estimates based upon cost allocation previously determined		X	
iv Prepare Public Utilities Commission application exhibits as required.		X	
F. Roadway Design and Roadside Development Coordinate all design activities with required CDOT specialty units and other outside entities.			
a Roadway Design		X	
i Input, check, and plot survey data		X	
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.		X	
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.		X	
iv Provide alignments, toes of slope and pertinent design features, including permanent and temporary impacts, to the ROW, Utility and Environmental Managers.		X	
v Plot/develop all required information on the plans in accordance with all applicable CDOT policies and procedures.		X	
vi Using current approved CDOT software, generate a 3 dimensional design model and produce preliminary quantities		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>		X	
i Layouts in the plans		X	
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.		X	
iii Coordinate the roadside items with the Storm Water Management Plan (SWMP).		X	
G. Right-of-Way			
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.			
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		X	

	<i>C Wells</i>			
	<i>D Irrigation ditches and systems</i>			
	<i>E Septic tanks, cesspools, and leaching fields</i>			
	<i>F Landscaping</i>			
	<i>G Other</i>			
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	
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	
H. 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.				
				N/A
I. Preparation for the FIR				
a	Coordinate, complete, and compile the plan inputs from other branches: materials, hydraulics, traffic, right-of-way, utilities and Staff Bridge.		X	
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.		X	
c	Prepare the preliminary cost estimate for the work described in the FIR plans base on estimated quantities.		X	
d	The FIR plans shall comply with CDOT requirements and shall include: title sheet, typical sections, general notes, plan/profile sheets, and preliminary layouts of interchanges/intersections.			
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.				
		C	X	
i	The following items will be mandatory for the FIR plans:		X	

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)			
ii	Typical plan sheet scales will be as follows: A Plan and Profile 1 inch = 50 Feet (Urban) 1 inch = 100 Feet (Rural) B Intersections 1 inch = 20 feet			X
e	The ROW ownership map shall be included in the FIR plan set			X
f	The plans shall be submitted to the CDOT/PM for a preliminary review prior to the FIR			X
g	FIR plan reproduction not to exceed 10 of sets			X
h	The preliminary construction phasing including preliminary traffic control plan with proposed detours will be included in the FIR plan set			X
i	CDOT form 1048 – project scoping procedures completion checklist			X
J. Field Inspection Review				
a	Attend the FIR	C		X
b	The FIR meeting minutes shall be prepared by the C/PM, approved by the CDOT/PM, and distributed as directed			X
c	The FIR original plan sheets shall be revised/corrected in accordance with the FIR meeting comments within thirty (30) working days			X
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
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
K. Post-FIR Revisions				
The Consultant shall complete the revisions required by the FIR before this phase of work is considered to be complete				
4. FINAL DESIGN				
A. Project Review				
a	Update Project Schedule			X
b	Coordinate Activities			
c	Finalize design decisions, variances, justification process, and traffic signal warrants			
B. Roadway Design and Roadside Development				
a	Roadway design. Prepare and provide final roadway design plans incorporating all input from applicable CDOT specialties and outside entities.			X
b	Roadside design			
c	Landscaping			
i	Determine most economic alternative, finalize concept, and complete the plan.			
ii	Verify that an acceptable safe recovery distance exists between traveled way and all trees to be planted.			
iii	Coordinate special permits that may be required.			
iv	Verify availability of plant materials and submit letter to the CDOT/PM certifying that designated plants are available.			
d	Prepare and provide plans for sprinkler systems, bike paths, sound barriers, truck escape ramps, rest areas, and others, as appropriate.			

e	Lighting plans		X	
i	Provide a foundation investigation for each high mast light location.			
ii	After approval of the locations of the lights, the lighting design will be completed with the following information shown on the plan sheets: <i>A Circuit type and voltage of power source</i> <i>B Location of power source (coordinated with the utility engineer)</i> <i>C Lumina ire type and lumens</i> <i>D Light standard type and mounting height</i> <i>E Bracket arm type and length</i> <i>F Foundation details</i> <i>G Size and location of electrical conduit</i> <i>H Locations of power sources(s)/lighting control center(s) (if appropriate)</i> <i>I Location of direct burial cable</i> <i>J Size of wiring and/or direct burial cable</i>			
iii	Coordinate with local entities			
f	Prepare and provide wetland mitigation plan.			
C. Utility Coordination				
Following the finalization of the roadway horizontal alignment and profile grade and the horizontal and vertical location of drainage structures, sewers, and other underground structures, coordinate with the Utility Engineer to identify and resolve any conflicts to finalize utility clearances.			X	
b	Prepare and provide final utility plans			
i	The final utility plans shall be prepared following the resolution of the FIR comments, the completion of the final hydraulic design, and the completion of the design of the other items in the list in paragraph (b) below.			
ii	The final utility plans shall include all horizontal and vertical locations of the existing and proposed utilities and any other details which would indicate possible utility conflicts.			
iii	The new or revised utility locations will be added to the plan topography. Conflicts will be resolved and appropriate pay items and specifications added, if required, to adjust utilities.			
c	Final railroad plans Coordinate the following activities through the Region Utility Engineer and in accordance with railroad requirements.			
i	Develop the railroad encroachment plan (with cross sections)			
ii	Define construction responsibilities between the railroad and highway			
iii	Develop cost estimates based upon cost allocation previously determined			
iv	Prepare Public Utilities Commission application exhibits as required.			
D. Hydraulic Design			X	
a	Data Review Review data and information developed under the Preliminary Hydraulic Investigation and update in accordance with decisions made at the FIR.			
b	Storm Water Management Plan		X	
i	Update the Storm Water Management Plan in accordance with decisions made at the FIR and on additional investigation since the FIR.			
ii	Identify and incorporate MS4 requirements into the final plans.			
c	Major Structure Channel Design The final design shall include:			
i	The configuration, size and skew of the channel(s)			
ii	Water surface elevations			
iii	Elevations, flow lines and hydraulic information			
iv	Channel erosion protection limits for the structure(s)			
v	Recommend a low girder elevation for the selected structure(s)			

vi	Predict scour depth in the channel for the selected structure(s), and recommend mitigation measures			
d	Final Hydraulics Report		X	
i	Review and update the preliminary hydraulics report and provide 5 copies of the final hydraulics report containing all of the revisions			
ii	Bridge hydraulic information incorporated into the plan sheets			
E. Right-of-Way Plans and Activities				
Reference the CDOT ROW and surveying manual' requirements for the following:			X	
a	Initiate ROW authorization process Coordinate with the CDOT/PM to initiate the ROW authorization process. Typically, the corrected FIR plans (with final hydraulic design inputs) will be used as the design basis for the ROW authorization plans.			
b	Ownership Maps			
c	Authorization Plan:			
i	Integrate toes of slopes and other design details such as lane lines, culverts, road approaches, etc. into ownership map (base map for ROW plans)			
ii	Determine new Right-of-Way requirements, access control, and easements from design plans following the FIR and plot on ownership/base maps. Normal scale, 1"=50' in urban areas, 1"=100' in rural areas. Metric units may be required as per PM. Metric scales will be as shown in the CDOT "Metric Conversion Manual". Revise numbering of ownerships to correspond to ROW acquisitions.			
iii	Calculate areas of parcels, easements, and remainders			
iv	Prepare ROW plan sheets			
v	Prepare legal descriptions of parcels, easements and access control			
vi	Prepare tabulation of properties sheet			
vii	Prepare Right-of-Way Title Sheet			
viii	Incorporate the Control Survey and Monumentation Sheets into the plans			
ix	On the Monumentation Sheet, list the ROW, Easement, Control, etc., points to be set and the aliquot corners to be reset			
x	Prepare ROW tabulation of road approaches, if applicable. Show owner milepost/station, right or left of centerline, width of approach, skew angle, and any remark			
xi	Hold ROW Plan Review (ROWPR), with Design, ROW, and Construction to determine if ROW plans are sufficient to proceed with appraisal of property to be acquired for the project			
xii	Transmit originals of the plan sheets, title sheet, tabulation of properties sheet, and revised ownership (memoranda of ownership and title commitments as directed by the ROW manager), calculations and supporting data (i.e., parcel diaries), and final electronic data for all work products.			
d	Right-of-Way Plan Revisions Revise the ROW plans as needed throughout the appraisal and negotiation process for those changes approved by the Region ROW Supervisor. All plan revisions shall be submitted to the Region ROW Supervisor within 5 working days after receiving notice from CDOT to proceed with a Plan Revision.			
e	Final ROW Plans and Monumentation			
i	ROW Plan Review			
ii	ROW Plan Revisions, as needed throughout the negotiation and appraisal process			
f	Appraisals			
g	Appraisal staking Stake the proposed ROW line, easements and existing ROW line, if required by the region supervisor. Set lath or wooden stakes at all angle points and on line as necessary to have at least three stakes visible from any point on line. Mark point numbers on all stakes and color code as required. The appraisal stakes only need to			

be set at an accuracy of +/- 1.0 foot, unless the point fall near improvements, then +/- 0.25 foot is necessary.			
h Title Insurance and Closing Services Provide title insurance and closing services as described in the CDOT ROW Manual and coordinate with the CDOT Region ROW Manager.			
i Acquire needed parcels including title insurance and closing services coordinated with the Region ROW Manager			
F. Traffic Engineering		X	
a Prepare and provide permanent signing/pavement marking plans			
b Signalized intersections:			
i Prepare and provide the signal warrant study			
ii Prepare plan sheet with intersection condition diagrams and required traffic signal design and forward to appropriate agency. Prepare 1 inch to 20 foot scale intersection plan sheet for each intersection which will have a traffic signal designed for it.			
iii Prepare and provide the construction traffic control plans and quantities			
G. Construction Phasing Plan A final construction phasing plan will be developed which integrates the construction of all project work elements into a practical and feasible sequence. This plan shall accommodate the existing traffic movements during construction, and a final traffic control plan will be developed which shall be compatible with the phasing plan.		X	
H. Obtain Permits This activity is concurrent with final design and must be completed prior to the advertisement for construction. Coordinate between the agencies, the Region Environmental Manager and the CDOT/PM and prepare and submit application and design information to the Region Environmental Manager for the following permits:		X	
a 401 Permit Process (Water Quality Certification)			
b 402 Permit Process (Point Source Discharge)			
c 404 Permit Process (Individual Dredge and Fill)			
i Determine impacts			
ii Coordinate with the U.S. Army Corps of Engineers, Region and Staff Design			
iii Incorporate permit stipulations into the final plans			
d Wildlife Certification			
e NPDES Storm Water Permit for Construction Activities			
I. Plan Preparation for the Final Office Review		X	
a Coordinate the packaging of the plans		X	
i Collect plans from all design elements and collate the plan package. Include all items listed in the Project Development Manual.			
ii Calculate plan quantities and prepare the tabulations and Summary of Approximate Quantities.			
b In addition to the plan sheets, the special provisions shall be provided. This will consist of those unique Project Special Provisions which have to be written specifically for items, details and procedures not adequately covered by CDOT's Standard Specifications and Standard Special Provisions. Also a list of the Standard Special Provisions which are applicable to the project shall be prepared. The Project Special Provisions shall be provided in the CDOT format and submitted with the project plans. Appropriate mitigation commitments made within any environmental documents should be included in the plans and specifications.		X	
c Prepare FOR Estimate. Item numbers, descriptions, units and quantities shall be listed and submitted to the CDOT/PM.		X	
d Submit the FOR Plans and specifications (Originals) to the CDOT/PM for a preliminary review prior to the FOR.		X	

e	FOR plan reproduction not to exceed 10 of sets			
J. Final Office Review			X	
a	Attend the FOR			
b	The FOR meeting minutes shall be prepared, approved, and distributed within two weeks of the meeting as directed.			
c	The FOR original plan sheets and the specifications shall be revised in accordance with the FOR meeting comments and submitted to the CDOT/PM within four (4) weeks after the FOR.			
d	Submit the final revision of the plans after CDOT review.			
K. Construction Plan Package				
The bid plan construction contract package shall consist of the revised FOR plans and will completely describe the work required to build the project including project special provisions and detailed quantities.			X	
a	Electronic and hard copies of the following:			
i	Roadway A Horizontal and vertical data B Staking data C Earthwork quantities D Cross sections			
ii	Major structures An independent set of the following shall be submitted to the CDOT Structural Reviewer for each major structure. A Structure grades B Structure geometry			
b	Final engineering package. The consultant shall submit copies, in 3-ring binders of the following:			
i	All project calculations or worksheets			
ii	All final reports and their approvals: Traffic, hydraulics, lighting, pavement design and economic analysis, geology foundation report, etc. All reports will have the latest revisions included.			
iii	Copies of variances, design decisions, and variance approvals			
iv	Project meeting minutes			
v	Utility clearance package Utility agreements and information regarding the utility location and clearance conditions			
vi	Maintain an environmental mitigation tracking tool for all environmental document commitments.			
vii	Bridge construction packet Includes bridge grades, geometry, and quantity calculations or worksheets			
viii	Any other information unique to this project and deemed important to the effectiveness of construction.			
c	Record plans sets Three (3) record plan sets for final design of roadways and structures will be produced which shall bear the seal and signature of the responsible Consultant Engineer on each sheet. One (1) set shall be retained by the Consultant for three (3) years. Two sets shall be submitted to CDOT. The original plan drawings shall not bear a seal.			

SECTION 8 SERVICES AFTER DESIGN

Note: The Consultant shall appoint a responsible member of the firm to be the contact person for all construction services. That person should be available until the end of construction to coordinate the following services.

This list establishes the individual task responsibility. Those tasks identified as CDOT/Other should utilize an abbreviation system to indicate whether the task will be completed by CDOT or another agency (i.e. “C” for CDOT and abbreviations as provided below). The consultant shall maintain the ability to perform all work tasks which are indicated below by an ‘X’ in the consultant column, in accordance with the forms and conditions contained herein, and the applicable CDOT standards. Where appropriate, mark “N/A” for not applicable items.

*Other Agency Abbreviations [ADD/DELETE AS APPROPRIATE]:

- 1) Example – Jefferson County = JC
- 2)
- 3)

	CDOT (C)/ Other*	Consultant	Not Applicable
1. REVIEW OF SHOP DRAWINGS			NA
Review contractor shop and auxiliary drawings as directed by the CDOT/PM.			
A. Maintain a log of all submittals which includes the following information:			NA
a Submittal description			
b Date received			
c Date transmitted back to the sender			
B. The review of submittals shall be done by a licensed professional engineer who is acceptable to the CDOT/PM.			NA
C. Review Shop Drawings			
Review the construction contractor’s shop drawings for conformance and compliance with the contract documents, the provisions of the current “Standard Specifications for Road and Bridge Construction and with the time frames shown in the CDOT specifications in conjunction with the contract work.			
2. CONSTRUCTION SERVICES			NA
When requested by the appropriate Program Manager, the Consultant shall provide the services described below			
A. Coordinate Schedule			
Coordinate and evaluate contractor’s construction schedule at start of construction and continuously throughout construction phase.			
B. Provide field observation prior to, and on the day of, the following:			
a Pile driving and/or caisson drilling			
b All major concrete pours			

	CDOT (C)/ Other*	Consultant	Not Applicable
c Placement of girders			
d Splicing of girders			
e Post-tensioning duct and anchorage placement			
f Post-tensioning operations			
C. Technical Assistance Provide technical assistance to CDOT project personnel on an as-needed basis. This service shall include, but not be limited to, the following:			
a Respond to questions in the field that arise relative to the plans, details or special provisions			
b Provide engineering and drafting services for design revisions required due to changes in construction or field conditions.			
c Review girder erection plan			
D. Report Submittal The following reports/submittals shall be maintained and submitted:			
a Diary - A complete diary will be accomplished daily for each field observation activity.			
b Documentation/justification - Changes/revisions/documentation justifying changes and/or revisions to plans and specifications			
c Progress reports - Monthly progress reports will be submitted for the Consultant's activities.			
d Calculations, drawings, and specifications as needed.			
e Daily time sheets - This will be filled out daily on a form approved by the Project Engineer. This sheet will remain with the Project Engineer.			
3. POST DESIGN PLAN MODIFICATIONS When requested by the Program Manager through the CDOT/PM, the Consultant shall provide design services for plan modifications required by unforeseen field conditions.			NA
4. POST CONSTRUCTION SERVICES			NA
A. Final Earthwork or Interim Determination Compute the final or interim as-built earthwork quantities. This will include the required surveying, engineering technician, and computer support.			
B. "As-Built" Plans Modify the original plans so that the plans will agree with actual construction results.			
C. Revisions to the Final Right-of-Way Plans Review the final Right-of-Way line to identify any excess property due to construction changes. Prepare Final Plan Revisions, including legal Descriptions of excess property			
D. Monument the Right-of-Way a Reset all monuments referenced prior to construction that have been damaged or destroyed.			

	CDOT (C)/ Other*	Consultant	Not Applicable
b Reset any control monuments disturbed or destroyed by construction that are necessary to set Right-of-Way monuments.			
c Set all new Right-of-Way monuments as shown on final plans (or reference monuments, if necessary).			
E. Set property corners on all remainder parcels Required monumentation will be as directed by the CDOT/PM.			NA
F. Deposit ROW Plans A Record Plan Set updated for revisions and showing all monuments set subsequent to construction, must be signed and sealed by the Professional Land Surveyor responsible for the work. The Record Set must be deposited in the appropriate county office in accordance with CRS 38-50-101 and CRS 38-51-107. A copy of the deposited plan set must be delivered to the CDOT/PM.			NA

SECTION 9
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 to support Categorical Exclusion

TABLE 1 – SUBMITTALS

Hard Copy	Electronic Copy		Work Tasks	C D O T (C) / O t h e r* r*	C o n s u l t a n t	N o t A p p l i c a b l e
	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
			Environmental Work Tasks			
X	X	X	Appropriate NEPA Document (CatEx)		X	
X	X	X	Figures and Exhibits from NEPA Document		X	
X	X	X	Air Quality 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	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 FIR 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	FIR 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
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
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